

Pursuing Quality Wine in South Australia: Materials, Markets, Valuations.

Submission for D.Phil. in Geography and the Environment

Jeremy Brice

Jesus College

School of Geography & the Environment

University of Oxford

Michaelmas 2014



Abstract

This thesis presents an ethnography of the processes and practices through which Australian grape and wine producers attempt to produce, and to assess, quality and value in the materials with which they work. Drawing on participant observation research conducted within two wine companies in South Australia – one owned by a multinational beverage conglomerate, one a family-owned boutique winery – this thesis engages with three overarching questions, which engage with the concerns of agro-food studies and of social studies of markets. First, how – and with what economic effects – are the sensory qualities of materials made to matter within the Australian wine industry? Second, how do grape and wine producers pursue wine quality in a more-than-human world, and in what ways might their endeavours problematise extant theorisations of economic agency? Finally, what might be the consequences of Australian wine producers' recent engagements with principles of grape and wine quality centred upon geographical origin?

In response to these questions, this thesis explores time-reckoning and value production in viticultural practice, the pricing of winegrapes during a fungal disease epidemic, the commercial relationships convened through the production of large-volume mass-market wine blends, and Australian wine producers' recent attempts to produce 'wines from somewhere.' These empirical engagements lead it to argue that the qualification and valuation practices deployed within the Australian wine industry do not simply affect the qualities and prices of grapes and wines. They also shape economic agencies and vulnerabilities, organise and value commercial relationships among grape growers and wine producers, and reassemble the economic geographies of Australian grape production. This thesis concludes that because different ways of pursuing quality enact these phenomena in different ways, much may depend not only upon how successfully, but also upon how – through what techniques, practices, and associations – quality is pursued.

Table of Contents

Abstract.....		
Acknowledgements.....	v	
Table of Acronyms.....	vii	
List of Figures.....	viii	
List of Tables.....	x	
Chapter 1	Introduction: Quality in-the-making.....	1
	The Emergence of Quality Wine: The Australian wine industry, 1970-2010.....	6
	Studying the Pursuit of Quality: Theoretical orientations and opening questions	17
	Where, How, and Why: Introducing South Australia.....	26
	Summary and Outline of Chapters.....	33
Chapter 2	Literature Review: Terms and modes of engaging.....	37
	Political Economy: Agriculture’s recalcitrant nature.....	38
	Cultural Economy: Beyond Value and values.....	44
	Actor-Network-Theory: Materialising and distributing agencies	51
	Marketisation Studies: Enacting the economic	55
	After ANT: Performativity and multiplicity	61
	Conclusion: Methodological reflexes	68
Chapter 3	Methodology: Ethnography and experiment.....	71
	Introduction: Do you want to talk to me about your hypothesis?.....	71
	Inventive Methodologies	73
	Ethnography as Experimental System	76
	Fieldwork: Places and practices	79
	Sites and Cases	82
	The Clare Valley.....	86
	The Barossa Valley.....	87
	The Limestone Coast.....	88
	The Riverland	90
	Regions or companies?	92

Fungible Growers.....	235
Conclusions.....	239
Chapter 7	'Wines from Somewhere': Valuing provenance, reassembling
geographies.	241
A Turn to <i>Terroir</i> ?	248
Tasting Places.....	253
Valuing by the Palate.....	262
(Re)assembling a Regional Hero	269
Another Geography of Quality.....	276
Conclusions.....	286
Chapter 8	Conclusion: The difference that pursuing quality makes.
Economic Agencies.....	292
Qualifying Materials.....	296
How Provenance Matters	300
Changing the Question.....	306
Bibliography.....	312

Acknowledgements

It is impossible to do justice to the innumerable people without whose assistance, kindness, and inspiration this thesis could never have come to be – not least because most of those in Australia who generously contributed their time and insights to my research must remain anonymous. Nevertheless, I would like to draw attention to a few people who have gone far beyond the call of duty in supporting my research – and often in supporting me personally – over the past five years. My supervisor, Professor Sarah Whatmore, has shown extraordinary patience during the somewhat tortured development of this thesis and has been an invaluable source of advice, feedback, and assistance throughout this project. My internal assessors – Andrew Barry, Jamie Lorimer, and Derek McCormack – also provided indispensable guidance, and I have often benefitted from Tim Schwanen’s wise recommendations and incisive comments on my work. However, I would never have made it to Oxford at all had I not benefitted from some truly inspiring teaching – most memorably delivered by Jim Smith at Clevedon School (who first made me interested in human geography) and by Steve Lyon at Durham University (who convinced me that I had the ability to write a PhD).

I remain deeply indebted to James McColl, Alan Schwarz, James Unwin, Richard Hawker, Marjorie Moncrieff, and Peter Magarey – among many others – for helping me to find my feet (and to find research participants) in South Australia. I am also obliged to Elspeth Probyn, Katrina Jaworski, Gilbert Caluya, and the wider Hawke Research Institute community for offering me friendship, support, and an intellectual home from home at the University of South Australia. I am exceptionally grateful to Pete and Lou Bissell, Andy and Lisa Wood, Ann Aldersey, Sally Gudgeon, and Matthew Albert and Emily Forbes for taking me into their homes at various points during my field research. Meanwhile Nick Coates, Pete Lloyd, Ben Pratt, John and Pam Mitchell, and John and Karen Crosten deserve special thanks

for their immense hospitality and hearty welcome during my time in Australia. Most importantly, an enormous thank you is once again due to all of those who contributed to this research by taking me into their homes, workplaces, and confidences, and who I am unable to name here: without you this thesis would never have been written.

In Oxford Joe Gerlach, Tom Jellis, Vicky Mason, Maan Barua, Becky Caterelli, Nihan Akyelken, Rory Hill, Myung-Ae Choi, Tim Hodgetts, Tom Turnbull, Alex Littaye, Tanya Kumar, Eveliina Lyttinen, Kate Fayers-Kerr, Elizabeth Rahman, Alejandro Reig, Amy McLennan, and the wider DPhil community at SoGE have been an ever-reliable source of friendship and inspiration. In Amsterdam the company of Anna Mann, Filippo Bertoni, Sebastian Abrahamsson, Annemarie Mol, and the Eating Bodies Research Group has both enriched my work and lifted my spirits, while in Anders Munk in Copenhagen and Anna Krzywoszynska in Durham I have found not just a lively pair of colleagues but also two great friends. I would also like to thank Lesley Head, Jenny Atchison, and Catherine Phillips at Wollongong for believing that the material which would later become chapter four of this thesis was worthy of publication, and for their unstinting assistance in getting it there. For funding, meanwhile, I am much obliged to the Economic and Social Research Council and Jesus College, Oxford.

Finally, to Heather Brice and Alicia Davies: thank you both from the bottom of my heart for your unfailing love and support over the past years, and for your seemingly inexhaustible capacity to put up with even the most unreasonable of this DPhil project's many demands. Thank you for keeping me housed, fed, and – most importantly – sane during many of the more trying moments of this rather drawn out process. And thank you most of all for believing that I could and would eventually complete this thesis, especially when I did not.

Table of Acronyms

ABS	Australian Bureau of Statistics
BGWA	Barossa Grape & Wine Association
BOM	Australian Bureau of Meteorology
CRWGA	Clare Region Winegrape Growers Association
CVWI	Clare Valley Winemakers Incorporated
MVGWTA	McLaren Vale Grape, Wine & Tourism Association Incorporated
PGIBSA	Phylloxera and Grape Industry Board of South Australia
PIRSA	Primary Industries and Resources South Australia
RWIDC	Riverland Wine Industry Development Council
SAWIC	South Australian Wine Industry Council
WFA	Winemakers' Federation of Australia
WGCSA	Wine Grape Council of South Australia
WGGA	Wine Grape Growers Australia
WOWA	Wines of Western Australia

List of Figures

Figure 1: Bush-trained Grenache vines in Don's vineyard.	2
Figure 2: Australian fortified wine and table wine production by volume, 1970-2012.	7
Figure 3: Domestic and export sales of Australian wine by volume, 1986-2011.	10
Figure 4: Total Australian vineyard area, 1992-2011.	11
Figure 5: Exchange rates – units of major export currencies per Australian dollar, 1991-2011	13
Figure 6: Average value per litre of Australian wine exports, 1986-2011.	13
Figure 7: The 'Brand Australia positioning challenge.'	16
Figure 8: Map of the wine regions of South Australia.	83
Figure 9: Map of the Limestone Coast GI Zone.	89
Figure 10: Semillon grapes displaying and advanced-stage botrytis infections.	109
Figure 11: A seasonal calendar of the southern hemisphere viticultural working year.	112
Figure 12: A technician tests the sugar content of freshly-collected juice samples.	115
Figure 13: Winemakers assess grapes in preparation for harvesting.	127
Figure 14: The crusher at The Company's Barossa Valley winery.	134
Figure 15: Fermenters and tank farm map within The Company's winery.	136
Figure 16: Botrytised Shiraz grapes at the Bartoli winery.	151
Figure 17: Technicians inspect and sample bins of grapes at a winery weighbridge.	156

Figure 18: Semillon grapes hosting multiple species of fungus.	164
Figure 19: Vines whose leaves are changing colour.	174
Figure 20: Wall chart used to identify contamination with Matter Other than Grapes.	176
Figure 21: Botrytised Riesling grapes left to decompose on the vine.	184
Figure 22: The tasting laboratory at The Company's winery.	194
Figure 23: Joe swirls a ferment sample around in his tasting glass.	198
Figure 24: Wine samples arranged in preparation for Joe's pre-centrifuging tasting.	209
Figure 25: Map of the wine regions of Australia.	218
Figure 26: Map showing Mean January Temperature across South Eastern Australia.	243
Figure 27: Defoliated vines photographed in the Riverland.	244
Figure 28: Two labelled fermentation tanks within the Bartoli winery.	254
Figure 29: The Bartoli winery's laboratory bench.	257
Figure 30: Average prices paid to growers in the ten South Australian cool climate GIs producing the largest volumes of grapes, 2001-2013.	279

List of Tables

Table 1: The five wine market segments currently recognized by the WFA.	15
Table 2: Statistical comparison of viticultural sectors in South Australian wine regions.	86
Table 3: Climatic profiles of selected South Australian viticultural regions.	91
Table 4: Differences in average grape prices between MacLennan’s Drive Prestige GIs and non-Prestige South Australian cool climate GIs.	278

Chapter 1

Introduction: Quality in-the-making

“It’s all about quality these days. Three things that count: quality, quality, and quality. That’s all. Yeah, it’s tough. You know, if you’ve got ordinary fruit, you’re going to struggle. ‘Cause the winery will say, ‘Well we can get that sort of fruit anywhere we like. Here’s \$600 a ton, take it or leave it.’ If you leave it, well, they’ll go somewhere else and get it. Get it for \$400 a ton.”

- Don,¹ Clare Valley grape grower.

Quality makes all the difference, and quality is *all* that makes a difference, to a grape grower’s economic prospects in today’s Australian wine industry. Don is very clear about this. That is why he has designed his five-hectare vineyard – at which we are looking as I interview him on the veranda of his house in May 2011 – to produce small yields of the highest quality grapes possible. As a result, Don’s is a rather unusual-looking vineyard. It still contains old-fashioned free-standing ‘bush-trained’ Grenache vines which sprawl messily outwards in all directions from a central trunk, and some of Don’s Riesling vines are trained barely two feet above the ground to stabilise the air temperature around the grapes. Few growers still pursue quality in this way, because such vines cannot be picked by a mechanical grape harvester. They must instead be hand-harvested – a slow, labour-intensive, and therefore expensive business. So Don’s pursuit of quality makes his vineyard visibly different – and, rather more importantly, it makes his *grapes* different – from those of other growers. One cannot buy fruit like Don’s just anywhere. His Shiraz, for instance, is of such singular

¹ All individual participants in this research, the companies for which they work, and those companies’ wine brands are referred to under pseudonyms throughout this thesis in order to hinder the identification of participants and of their employers. This is intended to protect participants against potentially harmful consequences of participating in this research, such as disciplinary action by employers, reputational damage to companies or brands, or the inadvertent exposure of sensitive operational or commercial information (Bernard 2006; Crang & Cook 2007).



Figure 1: Bush-trained Grenache vines in Don's vineyard.

quality that Bartoli Wines, a local wine company, will use no other grapes in producing one of their most prestigious and expensive wines, and is willing to pay Don around double the average price per tonne for Clare Valley grapes to secure them.

Pursuing quality may be paying off financially for Don, but times are tough for those of his neighbours whose vineyards do not produce such outstanding grapes. There are a lot of 'ordinary' vineyards out there, and no shortage of 'ordinary' grapes. Amid a widely-discussed national 'oversupply' of winegrapes (Hackworth 2011; SAWIC 2006; WFA et al. 2009) some Australian wine producers have attempted to cut the cost of sourcing fruit by shifting their custom frequently from supplier to supplier in order to negotiate ever-lower prices from growers who may be unable to find alternative buyers. In Don's estimation, growing quality grapes is possibly the only means of escaping this predicament. But Don's fellow Clare Valley grape growers are apparently not the only ones who face intensifying price competition and daunting financial pressures, and Don is not alone in suggesting that the solution to such

problems lies in the pursuit and delivery of quality. In its most recent flagship strategy document, *Directions to 2025: an industry strategy for sustainable success*, peak Australian wine industry body Wine Australia (2007: 10) described the commercial challenges faced by Australian wine producers in the late 2000s in terms strikingly similar to those used by Don, observing that:

“The factors that drove Australia’s success between 1985 and 2005 are no longer dominant nor exclusive. Indeed, many other wine producing countries are now producing consumer-friendly labelling and marketing, promoting the approachability of their winemakers and developing techniques to produce high volumes of affordable, good-quality, fruit-forward wines. There is far greater global competition from a reinvigorated Old World and the emerging New World. Furthermore, the consolidation of retail channels and wine brands has brought about competitive challenges internationally and in Australia. For Australian wineries to achieve sustainable and profitable growth, they must continue to pursue competitive advantages on the global stage, based on the delivery of quality. The challenge for Australia’s winemakers is to combine [...] a passion for quality, uniqueness and innovation.”

Wine Australia’s strategy documents are addressed to Australian wine producers struggling to maintain both their products’ sales volumes and their prices despite intensifying competition from overseas wine companies, rather than to grape growers unable to sell their crop profitably in an oversupplied market. Nevertheless, Wine Australia’s proposed solution to the economic predicament of such wine producers is identical to Don’s advice to his fellow grape growers. Both identify the pursuit and delivery of quality as a privileged – perhaps even the sole – means by which their audience might ward off competitors, restore the value of their products, and secure their commercial future. Quality is made to bear great weight in these proposals (and often in those of other Australian wine industry organisations; for instance Sheales et al. 2006; WFA 2000; 2013; WOWA 2014). Indeed, Wine Australia’s account even seems to suggest that the economic future of the Australian wine industry itself, and of the roughly 28,000 people employed in grape and wine production within Australia (ABS 2008), is at stake in its successful delivery.

This assessment resonates with the arguments of a broad body of scholarship spanning geographies of food and agriculture (or agro-food geographies) and the sociology of

economic markets. Agro-food geographers often identify a 'quality turn', in which the distribution of economic value within numerous agro-food sectors – and therefore both the uneven geographies of rural economies and the livelihoods of food producers – is becoming increasingly pervasively mediated by the differentiation of foodstuffs according to various quality criteria (Allaire 2004; Goodman 2003; Hébert 2010; 2014; Ilbery & Kneafsey 2000; Marsden & Arce 1995; Whatmore et al. 2003). Meanwhile, economic sociologists describe the emergence of an 'economy of qualities' within which the dynamics of commercial competition and market organisation are centred upon the task of adjusting an ever more subtly differentiated array of goods to correspond precisely to consumers' increasingly individualised desires (Beckert & Musselin 2013; Callon et al. 2002; Karpik 2010; Musselin & Paradeise 2005; Ponte & Gibbon 2005). Apprehending how quality is produced and evaluated appears, therefore, to be vital not only to effective scholarly engagement with many aspects of the economic lives of Australian grape and wine producers but also to understanding the socio-spatial formations which both emerge from and condition contemporary economic life (Mansfield 2003a; 2003b; Wilkinson 1997).

In this thesis I will respond to these empirical and theoretical imperatives to explore the role of quality within economic life by asking what difference the pursuit of wine quality might make, and more specifically what effects – what economic orderings and geographies – this activity might bring about, within the Australian wine industry. Building on the argument that quality is defined and enacted in practice, this thesis will present an ethnographic exploration of the techniques, activities, and associations through which Australian grape and wine producers go about pursuing quality, based upon participant observation research within two wine companies in South Australia. Through examining how these producers engage with wine and grape quality in practice I will investigate what might be at stake, for those caught up in the contemporary Australian wine industry, in the pursuit – and the successful or unsuccessful delivery – of quality.

In so doing, this thesis seeks to contribute to the literatures on quality and its economic implications emerging from agro-food geographies and the sociology of markets in three main ways. First, in examining wine production it engages with an agro-food production process which mobilises a uniquely elaborate repertoire of specialised arrangements and practices for testing and evaluating the sensory characteristics of materials. It thus broadens the focus of an agro-food geographies literature which has predominantly concentrated upon cases in which the qualities of foodstuffs symbolise or embody social, moral, or political values by asking what effects – and what enactments and distributions of value – might emerge from practices in which judgments of quality focus upon the tangible characteristics of materials. Second, in examining the processes and practices through which the tastes, textures, and composition of grapes and wines are made to matter economically, I will encounter situations in which the activities of nonhuman entities and forces influence the quality and value of these materials. This enables me to contribute to social studies of markets by exploring how nonhuman materials, organisms, and energies that are indifferent (or even inimical) to human designs might participate actively in economic life, and by asking how extant theorisations of qualification and valuation – and of economic agency – might need to be rethought in a more-than-human world. Finally, this thesis builds upon a burgeoning literature on Geographical Indication (GI) schemes and the concept of *terroir* by moving beyond the predominantly European empirical focus of previous studies to explore a setting in which organising quality distinctions among wines on the basis of their place of origin is a relatively novel practice. Through examining how Australian wine producers go about forging relationships between the geographical origin of wines and grapes and their qualities, I investigate what might be the consequences of making the provenance of materials matter within an agro-food economy already organised, to a large extent, through other principles and practices of quality assessment.

In addition, this research makes a novel empirical contribution to the field because although social researchers have been engaging with questions of quality for some time – and

despite a recent expansion of scholarly interest in wine production in particular – the Australian wine industry has hitherto attracted limited scholarly attention. Moreover, even within the rather sparse academic literature devoted to the Australian wine industry (Aylward 2007; 2008; Banks & Sharpe 2006; Browett 1989; Bryant & Garnham 2013; Easingwood et al. 2011; Haughton & Browett 1995; Swinburn 2013), the importance of quality has generally been accorded only cursory consideration (although see Pritchard 1999). My research did not, however, focus upon the Australian wine industry simply because it is relatively little-studied, or because (as discussed above) it currently accords great attention, importance, and concern to quality. Australian wine producers have also been at the forefront of a number of key innovations and shifts in quality conventions which this most quality-conscious of agro-food sectors has undergone in recent decades. The following section will detail some of these historical developments in order to outline how and why quality became the focus of such intense discussion and activity within the Australian wine industry during the late 2000s. The remainder of this introductory chapter then explains my theoretical and methodological approach to studying the pursuit of quality and its consequences, arguing that this endeavour demands empirical attention to quality in-the-making – that is, to the processes through which qualities are enacted and imparted to materials – and outlines this thesis' key questions and intellectual contributions in greater depth.

The Emergence of Quality Wine: The Australian wine industry, 1970-2010

The history of wine production in Australia reaches back to the establishment of the continent's first vineyard (alongside its first British penal colony) at Sydney Cove in 1788

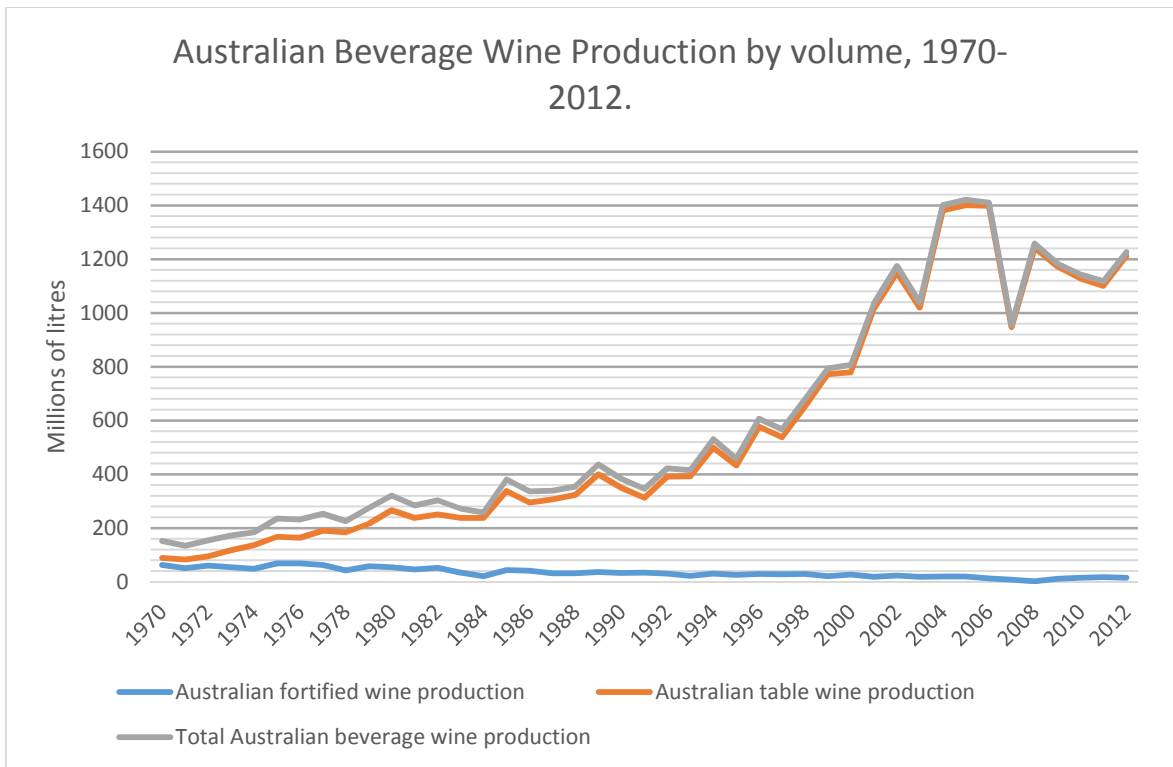


Figure 2: Australian fortified wine and table wine production by volume, 1970-2012.²

(McIntyre 2012). However, the forms of quality and of industrial organisation with which today's Australian wine industry is closely identified began to take shape during the 1970s (Faith 2003), and it is therefore from this decade that my account begins. The 1970s were a challenging decade for Australian wine producers who had, since the late nineteenth century, predominantly produced highly-alcoholic, sugary fortified wines for both domestic consumption and export to Britain, the former colonial power. Sales of Australian fortified wines had been declining since the end of the Second World War, and exports dropped so precipitously following the United Kingdom's abolition of preferential import tariffs upon its entry into the European Economic Community (EEC) in 1973 that Australia briefly became a net wine importer during the late 1970s and early 1980s (Anderson 2004; Osmond & Anderson 1998). Moreover, Australian drinking habits were also changing as taste for non-

² Data source: Wine Australia (2012).

fortified table wines³ – initially introduced by post-war immigrants from Southern Europe – began spreading among the wider Australian public (Beeston 2001). In consequence, fortified wines became increasingly difficult to market and prices for grape varieties considered unsuitable for table wine production declined – particularly following the Australian government’s abolition of winegrape price controls in 1988.⁴ By the mid-1980s the financial viability of most wineries focused on producing fortified wines and of the grape growers who supplied them was becoming precarious at best (Bryant & Garnham 2013), and during 1985 and 1987 the South Australian and Federal governments jointly provided a vine removal subsidy targeted at ‘low quality’ grape varieties associated with fortified wines (Browett 1989; Hackworth 2011).

The increasingly bleak future faced by wine and grape producers committed to fortified products gave both additional impetus and new prestige to Australian wine producers’ experiments with developing and marketing table wines (Dunphy & Lockshin 1998). Throughout the 1980s and 1990s, the transition from fortified to table wine production was widely referred to as the adoption of ‘premium’ or ‘quality’ production practices (Pritchard 1999). However, producing ‘quality’ table wines required novel winemaking equipment and access to vineyards planted with unfamiliar grape varieties. Establishing a presence within the emerging table wine market could therefore be extremely expensive. As a result, many family-owned wine companies were compelled to seek outside investment to finance new vineyard plantings and modifications to their wineries (Charters 2006), while numerous small-scale grape growers were forced to abandon viticulture entirely (Browett 1989). Due to this appetite for external capital, most of Australia’s larger family-owned wine companies had been sold to shareholder-owned investment groups by

³ In an Australian context, any non-fortified beverage wine may be described as a table wine. The term does not specifically denote a low-quality wine denied an appellation or quality classification as it often does in European wine nomenclature (see Garcia-Parpet 2008; Teil 2010).

⁴ Between 1966 and 1988, a legally-mandated minimum price for winegrapes in South Australia – Australia’s dominant wine-producing state – had been determined by a government-appointed Wine Grape Prices Commissioner (Browett 1989).

1980 (Beeston 2001) and by the early 1990s all Australian cooperative wineries had been either closed or demutualised (Faith 2003).

While these developments precipitated a series of mergers and acquisitions among established larger-volume wine producers which would, by 2005, leave six companies in control of over 73% of Australian wine production by volume (Moore 2006), a new kind of independent wine producer also began to emerge during the 1970s. These 'boutique wineries' produced small volumes of table wine in cool climate viticultural regions which were acquiring a growing reputation for quality wine production, and sold it directly to consumers – generally at comparatively high prices – via a shop attached to the winery (or 'cellar door'). By the early 1980s, therefore, the Australian wine industry had begun to bifurcate into a handful of predominantly shareholder-owned large volume wine producers and a multitude of boutique wineries (Beeston 2001; Browett 1989; Haughton & Browett 1995; Swinburn 2013) in a trend which would later lead former Winemakers' Federation of Australia (WFA) president Brian Croser (2010: 1) to claim that:

“There are two distinct and separate segments of Australian wine, the fine wine community of more than 2000 committed and regionally diverse producers and the branded commodity wine industry dominated by less than 10 very large multi-region operators.”

Beeston (2001: 250-251) claims that the former group's primary response to the emergence of boutique competitors:

“was to move down-market, leaving the peaks of marketing mostly to the established regional wineries and to the boutiques. Keen to increase market share, they rapidly [...] lowered the standards of popular bottled brands to suit the market's packet.”

However, this 'move down-market' helped to make non-fortified wine a mainstream consumer product in Australia and, in the process, gave rise to a new breed of branded table wines. Produced predominantly by Australia's emerging wine conglomerates and targeted at mass markets, these products were defined by a distinctive set of characteristics: approachably fruity flavours, consistency in taste, and accessible marketing campaigns emphasising grape variety above region of origin (Allen 2012; Aylward 2008; Easingwood et

al. 2011; Overton et al. 2012). Novice British wine drinkers found this combination of qualities remarkably appealing when such wines were introduced to them during the mid-1980s, as (later) did their North American counterparts (Anderson et al. 2003; Beeston 2001; Shapin 2012), who Faith (2003: 156) claims:

“were bewildered and put off by the typically French language of vintages, estates, and *terroir* [...] They were looking for wines that were fruitier and more approachable than their European rivals”.

Such products also held a particular commercial appeal for the supermarket chains which, during the 1980s and 1990s, achieved a dominant share both of the British and Australian markets in off-premises wine sales (Gwynne 2008; Ponte 2009) and of the distribution of exported Australian table wines (Croser 2010; Faith 2003). The novel commercial formations which developed around such wines even, by some accounts,

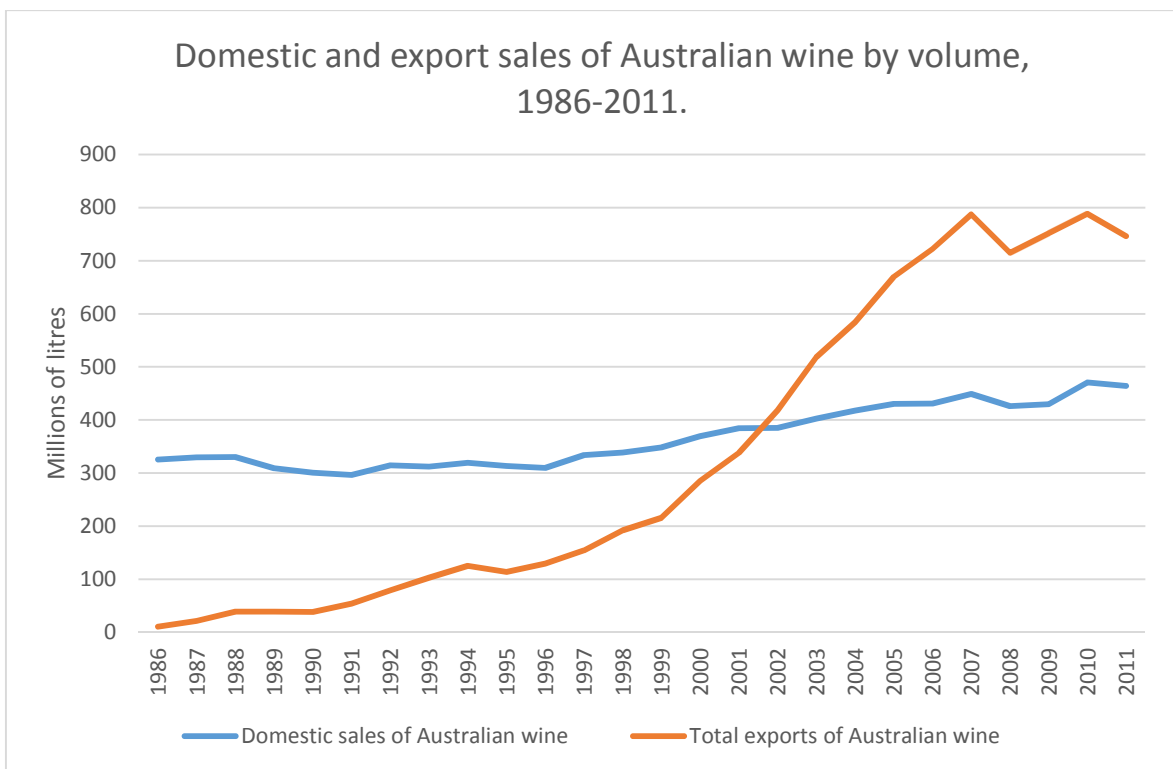


Figure 3: Domestic and export sales of Australian wine by volume, 1986-2011.⁵

⁵ Data source: ABS *Wine and Grape Industry Reports*, 1994-2011.

developed into an entirely new niche within the global wine market – the ‘popular premium’ market segment, a distinctive category of wines which were reliably palatable in taste, attractively branded, yet sufficiently economical in price to be accessible as an everyday beverage for mainstream consumers (WFA 2000). Exports of Australian table wine, especially to the UK and USA, boomed as this emerging market segment expanded rapidly – growing in volume by 465%, and in value by 363%, between 1996 and 2006 alone (Wine Australia 2007). By 2004 Australia had become the world’s fourth-largest wine exporter by volume and commanded the third-largest share of global wine exports by value (Anderson 2004), and by 2005 it was the largest exporter of wine by volume to both the UK (PIRSA 2010) and the USA (Colman 2008).

The additional demand for winegrapes generated by this rapid expansion of table wine exports – along with Federal government tax policies incentivising the establishment of

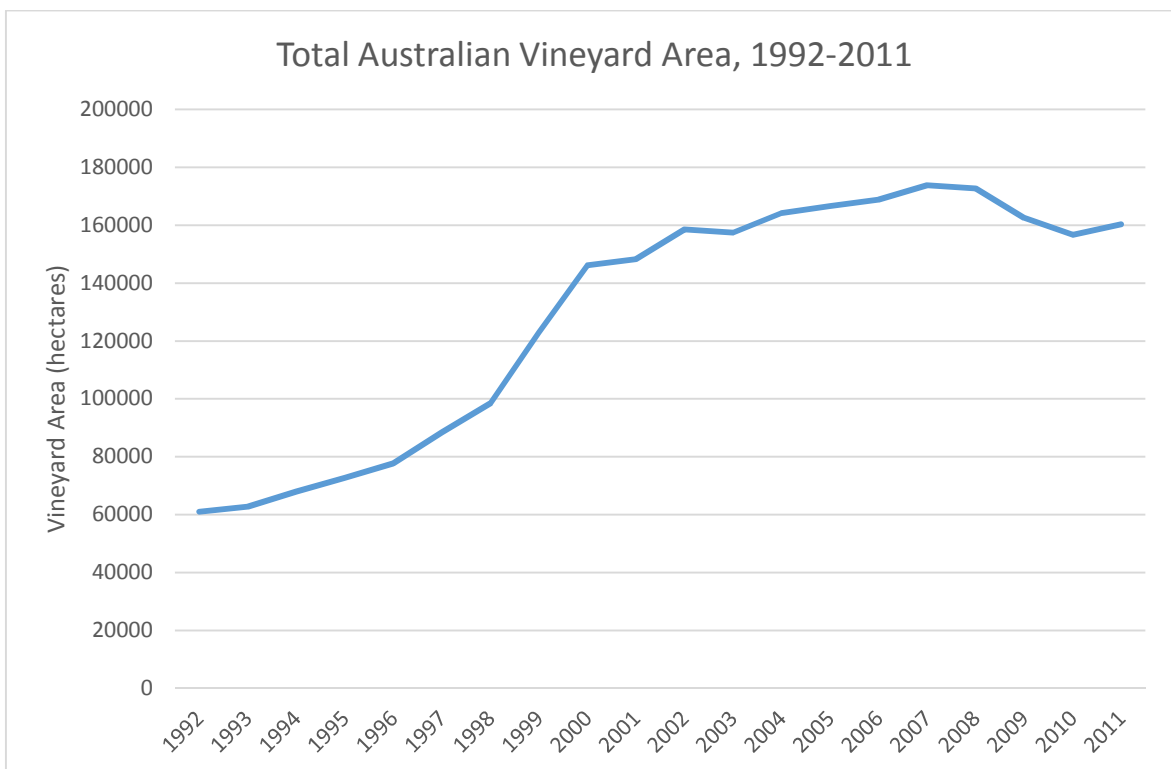


Figure 4: Total Australian vineyard area, 1992-2011.⁶

⁶ Data source: Data source: ABS *Wine and Grape Industry Reports*, 1994-2011.

new vineyards – provoked widespread planting of new vineyards during the 1990s and the early 2000s (Anderson 2004; Bryant & Garnham 2013; Sheales et al. 2006), and Australia's national vineyard area more than doubled between 1996 and 2006 (Wine Australia 2007).

Keen to emulate this commercial success, wine producers both in other 'New World' countries such as Argentina, Chile, and South Africa and in Europe sought to imitate the 'quality production practices' pioneered by producers of Australian table wine brands during the 1990s and 2000s (Banks & Overton 2010; Garcia-Parpet 2008; Maclaine Pont 2011). By the mid-2000s, such overseas competitors had become highly adept at producing and marketing wines which duplicated the fruity tastes, consistent quality, and affordable prices of the 'popular premium' table wine brands which now made up the majority of Australian wine exports (Anderson 2004; Wine Australia 2007). Their appropriation of the qualities which had formerly distinguished Australian wines coincided with a marked strengthening of the Australian dollar (A\$) on foreign exchange markets which diminished Australian wine producers' capacity to compete on price against their overseas counterparts in key export markets (Hackworth 2011; WFA et al. 2009). During the later 2000s, therefore, many Australian wine producers (much like the grape growers described by Don) became aware that their customers were able to source products similar to theirs from rival producers at prices similar to – or sometimes lower than – their own (Creed 2012; WFA 2013).

In consequence Australian wine exports fell in volume by 8.2%, but in A\$ value by 38.3%, between 2007 and 2012 (WFA 2013). The declining profitability of Australian wine exports exacted a heavy financial toll on the numerous wine companies which now depended on overseas markets for the majority of their sales, many of which responded by attempting to reduce the volume of wine that they produced (ABS 2008; Moore 2006). Demand for winegrapes therefore fell rapidly during the later 2000s, as many Australian wine companies used the expiration of existing grape supply contracts as an opportunity to terminate their

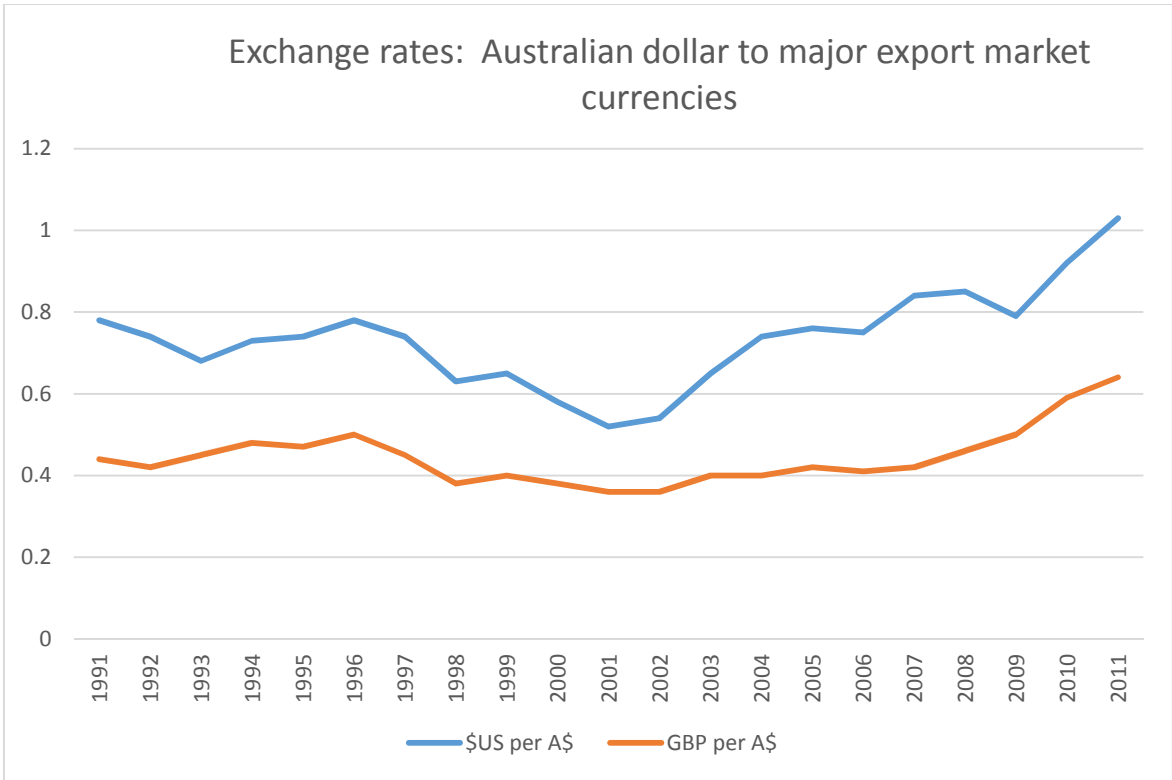


Figure 5: Exchange rates – units of major export currencies per Australian dollar, 1991-2011.⁷

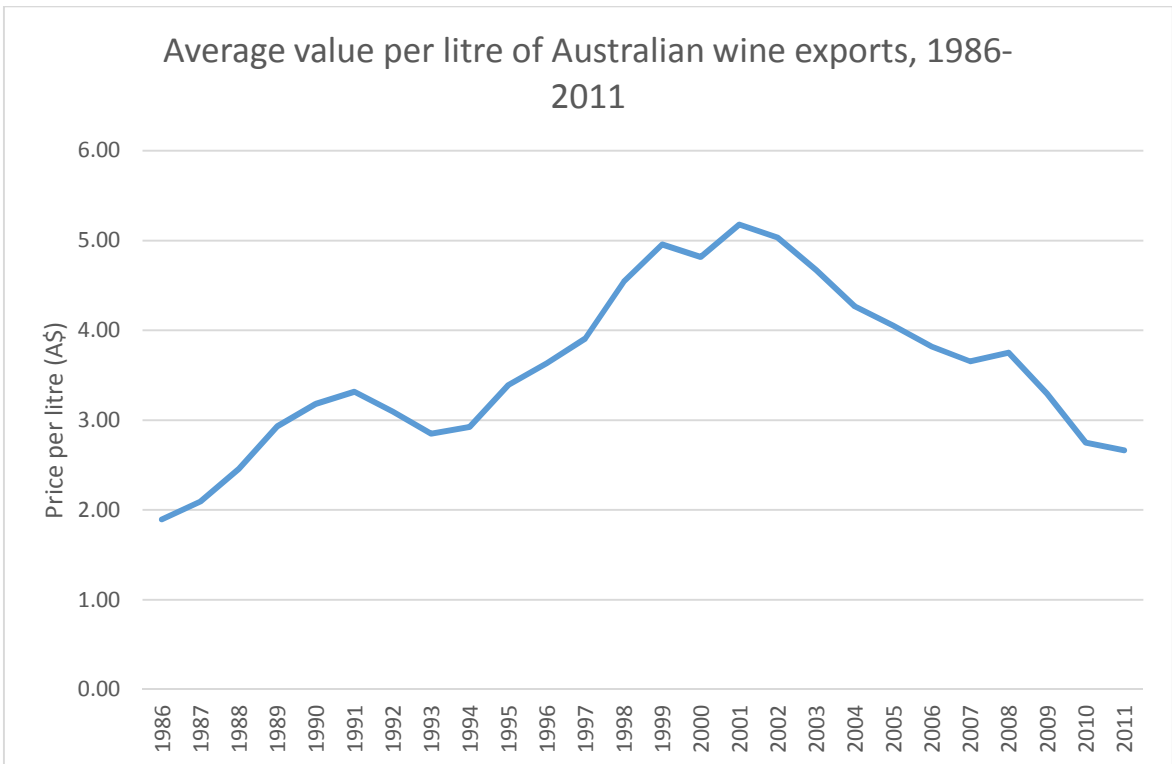


Figure 6: Average value per litre of Australian wine exports, 1986-2011.⁷

⁷ Data source: Kansil & Roberts (2013: 10).

relationships with external growers (Bryant & Garnham 2013; SAWIC 2006). This in turn sparked both intensified competition among grape growers and a sharp fall in grape prices across Australia between 2004 and 2011 (Hackworth 2011; Gunning-Trant & Shafron 2012). So severe was the ensuing devaluation both of winegrapes and of vineyards that in 2009 a consortium of national wine industry bodies estimated that at least 20% of Australia's vineyard area was economically unviable and would need to be removed to alleviate a 'structural surplus,' or 'oversupply,' of winegrapes (Foley 2009; WFA et al. 2009).

Amid a flood of such dire statistics, the image and discursive positioning of the large-volume table wine brands which predominated within Australian wine exports (see table 1) appears to have shifted. Media commentators began to complain that

"Australia is now synonymous with low-priced, usually deep-discounted, commodity wine. [...] Australia could be well on the way to acquiring the image of a supplier of everyday, undifferentiated, bulk-produced slosh for the undiscerning" (Walton 2006: unpaginated).

Meanwhile, wine industry organisations' own reports observed more guardedly that:

"Popular premium wines are increasingly a fast moving consumer good purchased by consumers in supermarkets. These wines are amenable to global sourcing from the lowest cost producers" (Moore 2006: 86).

A mixture of flavours, and a set of production and marketing techniques which had, just a few years earlier, been synonymous with 'quality winemaking' (Browett 1989; Pritchard 1999) were thus repositioned as the characteristics which confined most Australian wine to an undistinguished, intensely competitive, and (even worse) unprofitable segment of international wine markets (Aylward 2008; Hackworth 2011). Perhaps significantly, this erstwhile 'popular premium' market niche was increasingly widely referred to by the less aspirational soubriquet 'the commercial segment,' or even denigrated as the 'commodity wine market' (Aylward 2007; Banks et al. 2007; Croser 2010; Jefford 2010a; 2010b).

Table 1: The five wine market segments currently recognised by the WFA, as defined through price per unit of product.

Source: Table adapted from WFA (2013); WOWA (2014).

Market Segment	Grape Price (A\$/tonne)	Domestic retail price (A\$/bottle)	FOB price [Export price at point of shipping] (A\$/litre)	Value of wine exports by segment (A\$ million)		Volume of wine exports by segment (million L)		Change (%)
				2007	2012	2007	2012	
Ultra-premium & icon	>2,000	>30	>10	365.0	360.0	21.8	23.9	9.6
Super-premium	1,501-1,999	15-30	7.50-9.99	271.0	155.0	31.4	22.3	-29.0
Semi-premium & premium	601-1,500	10-15	5.00-7.49	854.0	286.0	143.6	59.6	-58.5
Commercial/Popular premium	301-600	7-10	2.50-4.99	1323.0	854.0	434.0	377.5	-13.0
Basic/Entry/Bulk	<300	<7	<2.50	191.0	198.0	155.4	238.1	53.2

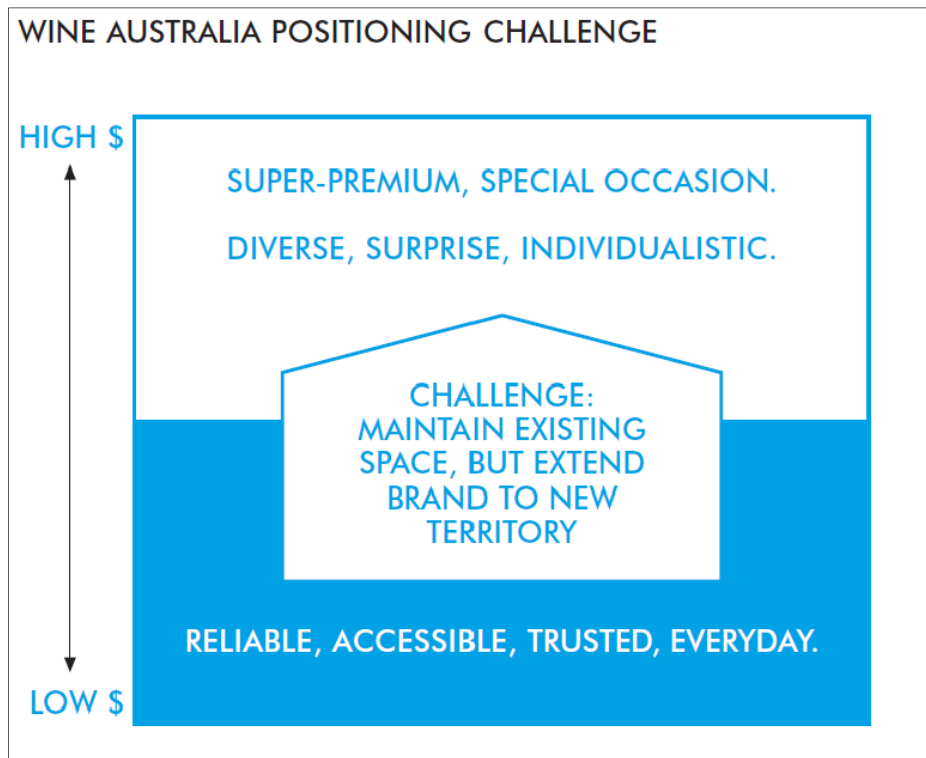


Figure 7: The 'Brand Australia positioning challenge', as depicted by Wine Australia in *Directions to 2025*.⁸

Against this backdrop of increasingly unprofitable popular premium wine exports and collapsing grape prices, several Australian wine industry organisations began to argue that producers urgently needed to gain access to more lucrative wine market segments and niches – and that this endeavour would necessarily entail distancing themselves from Australian table wine’s established virtues of reliability and accessibility (WOWA 2014). In 2007, Wine Australia adopted a new strategic framework which was:

“Founded on the firm conviction that Australia must become a more significant participant in the regionally distinct and fine wine market” (Wine Australia 2007: 2) in order to “encourage a “trading up” from one price point to another” (ibid.: 13) among consumers of Australian wines.

Meanwhile, the WFA now advocates that wine producers and grape growers possessed of sufficient capital pursue a strategy of ‘premiumisation’ – that is, of investing in the development of higher-quality and more aspirationally-marketed products (Pike 2011) – in order to “convince consumers to pay more for your wine” (WFA 2013: 85; Kansil &

⁸ Source: Wine Australia (2007: 5).

Roberts 2013). Wine and grape producers have responded to these exhortations to elevate their products into more prestigious market segments in varied ways. Some have, for instance, sought to use the environmental sustainability of their production practices (Ratcliff et al. 2009), or the family history of their companies (Lofts 2010), to distinguish their wines as quality products. Meanwhile, initiatives aimed at promoting the unique qualities of wines produced within particular viticultural regions have proliferated in Australia since the late 2000s – often supported by organisations such as Wine Australia (2007) and Wines of Western Australia (2014). While Wine Australia’s ‘Regional Heroes’ marketing programme was perhaps the most widely-publicised such intervention (Easingwood et al. 2011), numerous local schemes using geological mapping and tasting panels to identify and promote distinct sub-regions within existing viticultural regions – such as the Barossa Grounds project (Allen 2010; BGWA n.d.), the ‘Clare Valley Rocks’ scheme (Mercer 2014), and the McLaren Vale ‘Seven Terranes’ initiative (MVGWTA 2014) – have also recently emerged. While diverse in their aims and approaches, these emerging quality wine production initiatives perhaps share the premise that it is no longer sufficient for Australian wines to be technically-faultless, pleasant and consistent in taste, and also economically-priced. If Australian wine producers are to maintain their position in the export markets on which they depend, it seems, they will now need to compete in the market for ‘top end’ wines – and this will require the adoption of increasingly diverse and complex measures and practices of quality.

Studying the Pursuit of Quality: Theoretical orientations and opening questions

The intense concern over, and discussion of, quality among Australian grape and wine producers which characterised the later 2000s thus emerged at a moment when the quality winemaking techniques of the 1980s and 1990s were rapidly becoming hallmarks of an

ostensibly undifferentiated 'commercial' or 'commodity' market segment (Aylward 2007; Croser 2010; Jefford 2010a; 2010b). In this context – and within documents such as *Directions to 2025* (WFA 2013; Wine Australia 2007; WOWA 2014) – the pursuit of quality became a means of escaping an increasingly unprofitable commercial environment marked by intense price competition among similar products. It therefore seems that quality matters so much within the contemporary Australian wine industry because its successful delivery promises to enable producers to gain access to more prestigious (and lucrative) market niches and, in so doing, to reverse recent declines in the prices of their grapes and wines. This observation suggests that in order to understand the stakes and consequences of Australian grape and wine producers' pursuit of quality – to explain how quality makes a difference within the Australian wine industry – this thesis will need to engage with another question. Namely, just *how* might hitherto undistinguished grapes and wines be transformed into 'high-quality' products worthy of a premium price? What needs to happen – or to be done – in order to endow these materials with the qualities that will make them more valuable?

Peculiarly, these are questions about which wine industry organisations and practitioners often appear to have remarkably little to say. For instance, for all of Don's and Wine Australia's shared conviction of quality's central importance to the economic well-being of growers and wine producers alike in the quotes with which this chapter opened, neither specified just how one might go about delivering quality, or even what this notoriously slippery term might mean. However, geographers studying the 'quality turn' within agro-food production (Goodman 2003; Whatmore et al. 2003) have often engaged with such questions about the relationship between the qualities of foodstuffs, their value, and the livelihoods of rural producers in ways which offer some promising initial theoretical and methodological orientations to my own engagement with these issues (Ilbery & Kneafsey 2000; Murdoch et al. 2000; Morgan et al. 2006; Parrott et al. 2002; Tregear et al. 2007; Warner 2007). For such scholars' interest in whether pursuing quality food production might enable producers who are disadvantaged within or marginal to mass food markets to capture sufficient value to

secure viable livelihoods within highly competitive global markets resonates with Australian wine industry organisations' arguments that pursuing quality provides a means of securing premium prices (WFA 2013; Wine Australia 2007; WOWA 2014). In pursuing these interests, agro-food geographers have explored quality food production's potential to support alternative models of rural development through examining agro-food producers' attempts to differentiate their produce against competitor goods through using characteristics as organic or artisanal production practices and local sourcing (Climent-López et al. 2014; Heath & Meneley 2007; Hébert 2010; Marsden 2004; Murdoch & Miele 1999). This empirical focus on interventions designed to transform the quality of goods – and thus to alter both their value and their producers' economic position – has led agro-food geographers to argue that quality is something which needs to be striven for (Arce & Marsden 1993; Cidell & Alberts 2006; Hébert 2014; Wilkinson 1997), and which:

“is actually constructed through the interrelationship among consumers, producers, traders, retailers, and so on [...] quality is embedded in concrete social relations that occur as foods are produced, transported, sold, and consumed” (Mansfield 2003b: 4).

This position frequently places agro-food geographers at odds with mainstream economic theory's treatment of the qualities of goods as intrinsic attributes, about which economic actors may possess incomplete or asymmetrical information but which remain potentially amenable to objective, unambiguous, and uncontested evaluation (Akerlof 1970; Allaire 2004; Callon 2005; Karpik 2010; Wilkinson 1997). Many such scholars (for instance Hébert 2010; 2014; MacDonald 2013; Midgley 2014; Murdoch et al. 2000; Stassart & Whatmore 2003) have therefore instead adopted approaches to issues of quality inspired by pragmatist sociologies of economic markets, which:

“Instead of beginning with goods to be exchanged for which prices exist and whose qualities are considered to be a natural property [...] asks first how the qualities of goods are constructed” (Beckert & Musselin 2013: 22).

Such approaches position quality as a product of discursive and material practices which need to be actively carried out (Hébert 2010; MacDonald 2013; Mansfield 2003a),

shifting the focus of analysis from *quality* (as a property which goods may or may not possess) to varied ways of performing *qualification* (Beckert & Musselin 2013; Heuts & Mol 2013). The term qualification describes the process of establishing an economic good's qualities – and thus its identity and position within a market – through defining, testing, and measuring the characteristics which distinguish it from (or make it comparable to) other goods (Aspers & Beckert 2011; Gade 2004; Hébert 2014). The concept of qualification thus emphasises that qualities are not preconstituted attributes awaiting discovery or appreciation (Karpik 2010; Musselin & Paradeise 2005; Vatin 2013), but are instead brought into being and imparted to goods during practices of testing, assessment, and evaluation (Callon et al. 2002; Callon & Muniesa 2005).

In suggesting that quality is brought into being through social relations and practices, this argument implies that the processes through which goods, including foodstuffs, become endowed with distinctive characteristics might be studied empirically using the methods of social research (Callon et al. 2002; Callon 2005; Stark 2009). Moreover, the broadly pragmatist sociologies of markets within which the concept of qualification originates – including conventions theory (Boltanski & Thévenot 2006; Thévenot 2002; Wilkinson 1997) and social studies of marketisation (Berndt & Boeckler 2009; Boeckler & Berndt 2012; Çalışkan & Callon 2010) – suggest that studying such activities might also yield important insights into the processes through which goods such as wines and grapes become valorised or devalued. Specifically, these approaches argue that it is through defining the attributes and capabilities of goods within qualification practices that economic actors become enabled to appraise, compare, and perceive distinctions between different products – and thus to order them into hierarchies of inferiority and superiority (Callon & Muniesa 2005; Kjellberg & Helgesson 2006; Lamont 2012). Qualification therefore facilitates discrimination between that which is to be prized and that which is worthless, making it possible to compare and calculate the value of different persons, things, or actions (Aspers & Beckert 2011; Hinchliffe et al. 2007). In so doing, the activity of qualification contributes to bringing particular modes

of economic valuation – and thus particular ways of pricing, buying, and selling goods – into being (Aspers 2009; Beckert & Musselin 2013; Vatin 2013).

This reasoning suggests that social researchers may gain considerable insight into the processes through which goods such as grapes and wines become valuable, or become devalued, by studying the qualification practices deployed by those who produce, transact, and consume them. This thesis will therefore explore the question of how Australian wine producers' pursuit of quality might (or might not) make a difference to their economic circumstances through examining the practices through grapes and wines are qualified and valued within the Australian wine industry. This thesis therefore draws heavily upon theoretical and methodological resources pioneered within social studies of markets and, more specifically, within agro-food geographers' accounts of the quality turn (as discussed in chapter two). However, this thesis will also argue that Australian wine and grape producers' efforts to pursue quality challenge existing accounts of qualification and valuation within the agro-food sector in several respects. As a result, this thesis will also pose three theoretical questions in attempt to refine and expand the intellectual resources briefly introduced above.

First, studying Australian wine and grape producers will enable me to ask: what accounts and enactments of value might emerge from qualification and valuation practices focused upon the sensory characteristics of materials? For the flavours, scents, textures, and visual appearance of materials are subjected to unusually intense scrutiny within the Australian wine industry. Wine has, as is often observed, long been the object of uniquely elaborate traditions of connoisseurship (Banks et al. 2007; Charters 2006; Phillips 2001; Ulin 1996), and over time winemakers, wine critics, wine merchants, and consumers have developed an extraordinarily intricate and variegated array of specialist practices for tasting, describing, judging, classifying, and critiquing wines (Shapin 2012; Teil 2010; Vannini et al. 2010). Indeed, the complex tasting protocols now applied to a growing range of other foodstuffs – including cheese (Paxson 2013), chocolate (Terrio 1996), and coffee (Barth

2009) – are often modelled on wine tasting techniques due to the latter’s unusual technical refinement and cultural prestige. Moreover, Australian wine producers are sometimes argued to possess a distinctive industrial culture which prizes the preservation and intensification of the fruity flavours and scents of a wine’s component grapes above all other measures of quality, and therefore to display an especially acute attention to the flavours and smells of wines (WFA 2000; Dalitz 2009; Robinson 2008).

While these tangible dimensions of wine quality may be exhaustively scrutinised within the Australian wine industry, agro-food geographers have rarely subjected the practices through which they are assessed and enacted to sustained examination. Agro-food scholars have, with a few notable exceptions (including Hébert 2010; 2014; Mansfield 2003b; Méadel & Rabeharisoa 2001; Paxson 2013), typically been more concerned with modes of qualification which bypass the visceral materialities of *foodstuffs* themselves (Allaire 2004; Mansfield 2003a). In particular, they have often focused upon cases in which food producers articulate a product’s claim to distinction in quality through demonstrating that their goods were produced in a manner which accords with particular political or ethical positions (McEwan & Bek 2009a; 2009b; Miele & Lever 2013; Reynolds 2002; Whatmore & Thorne 1997). Such approaches have often generated insightful accounts of how ethical and political principles inform the attribution of food quality, as well as penetrating analyses of the challenges of maintaining trust in food safety and quality when these characteristics cannot be verified through first-hand inspection of foodstuffs (Deaton et al. 2010; Freidberg 2004; 2007; Murdoch & Miele 1999; Stassart & Whatmore 2003). However, they frequently also engender a tendency to treat the foodstuffs undergoing qualification as being of interest primarily due to their capacity to embody or ‘stand for’ more fundamental social, moral, and political ‘values’ (for instance Barham 2002; 2003; Bryant & Goodman 2004; Moberg 2014; Pratt 2007; Sonnino 2007), meaning that although such studies frequently acknowledge that:

“food quality includes a set of physical characteristics that can be measured and standardized, and which then have a material effect within systems of production [...]

these are basically treated as a blank slate upon which social actors, through social relations, etch their meanings. The question remains as to how material characteristics, biophysical processes, and environmental factors play an analytically significant role in these socially produced definitions of quality” (Mansfield 2003a: 11).

In this thesis I will respond to Mansfield’s question by inverting the approach to qualification and valuation adopted by studies which argue that this process invests foodstuffs with social, moral, or political values (Barham 2002; 2003; Bryant & Goodman 2004; Guthman 2002; 2007; MacDonald 2013; Pratt 2007). Instead, I will study how the tastes and textures of comestible materials are made to matter to their quality – and thus to their value – within the unusually elaborate set of sensory assessment practices to which Australian producers subject their grapes and wines. In so doing I will build upon agro-food geographers’ existing engagements with quality by investigating what modes of valuation could be brought into being, and how value might be distributed, through these practices of attention to the qualities *of* materials. How, I will ask, are the tastes, scents, and textures of wines and grapes made to matter economically? And how do the enactments and distributions of value which emerge from this process affect those implicated in the economic life of the Australian wine industry?

This attention to the processes and practices through which the qualities of materials come to make a difference within economic registers also resonates with a turn both within and beyond geography towards the study of ‘more-than-human’ dimensions of social processes, which is discussed further in chapter two (Bennett 2010; Braun & Whatmore 2010; Latour 1993; 2005; Panelli 2009; Whatmore 2002; 2006). This body of work has occasioned growing interest both in how nonhuman materials, energies, organisms, and collectives contribute to and constitute human social, economic, and political life and in dimensions of nonhuman entities’ own identities and behaviour which might themselves be termed ‘social.’ This latter line of enquiry builds upon the observation that:

“the properties of materials depend upon their changing relations with other material and immaterial entities. Understood in this way, the complex and shifting

interrelations between material actors can have emergent effects, demanding what might be called an inter-object or inter-material analysis” (Barry 2013a: 13).

Combining this contention that the qualities of materials are contingent upon their shifting associations and encounters with more-than-human entities, flows, and formations with the argument (introduced above) that qualification processes enable and inform operations of valuation provokes this thesis to ask a second question. In what manner, and by what participants, might quality be pursued – and value brought about, assessed, and distributed – in a more-than-human world? The question is germane because if the activities of nonhuman organisms, energies, and assemblages are capable of (re)constituting the qualities of commercially-significant materials such as grapes and wines then this suggests that they participate actively in the qualification of goods. This in turn suggests that nonhumans may assert an influence within and upon operations of economic valuation (Beckert & Musselin 2013; Callon & Muniesa 2005; Stark 2009; Vatin 2013). To suggest that nonhumans might partake in valuation processes holds significant implications, for capacities to generate and assess value are often identified as hallmarks of economic agency – as in Çalışkan & Callon’s (2010: 11) contention that:

“to be included in the market participating entities cannot escape the requirement of involving themselves in processes of valuation”

This suspicion that economic agency might not be an exclusively human capacity builds upon – but also subtly subverts – marketisation studies scholars’ arguments that economic agency emerges through the hybridisation which occurs as humans are augmented with ‘devices’ which generate novel ‘economising’ modes of thought and action (Berndt & Boeckler 2012; Callon 1998b; Callon & Muniesa 2005; MacKenzie 2009; Muniesa et al. 2007). As I follow grape and wine producers’ engagements with quality during the subsequent chapters, my participants will sometimes have to negotiate unintended environmental entanglements, such as fungal infections which damage and devalue grapes. The more-than-human economic agencies which this thesis encounters during such situations often exercise potencies which are seemingly indifferent to human desires and the prescriptions of

economic theories, and which certainly do not seem to extend human capacities for action. Thus, through attending to the sometimes-wayward constituents of agricultural – and more specifically viticultural – environments, this thesis investigates forms of more-than-human economic agency rather unrulier than those which have hitherto tended to populate social studies of markets. In so doing, this thesis will ask: what revisions to geographers’ and economic sociologists’ accounts of qualification and valuation might these encounters with such more-than-human economic agencies demand? How might extant theorisations of economic agency need to be revised in order to accommodate their activities?

However, the thesis will also need to attend to qualification and valuation practices quite different from those which concern the tastes, smells, and textures of materials. As noted in the previous section, a number of the strategies and initiatives launched by Australian wine industry organisations in recent years have explored and promoted modes of qualification centred upon the differentiation and marketing of wine based upon its place of origin (BGWA n.d.; Mercer 2014; MVGWTA 2014; Wine Australia 2007). These initiatives appear to mobilise a quite different principle of qualification, in which a wine’s quality depends upon its provenance and its distinctiveness is attributed to the influence of *the place where it was produced* (Allen 2010; Easingwood et al. 2011). But what might be the consequences, for those economically implicated in the Australian wine industry, of this recent shift towards pursuing quality through modes of qualification centred upon provenance?

In posing this third question, this thesis enters into conversation with a burgeoning anthropological and geographical literature examining the systems of protected Geographical Indications of origin (GIs) which formalise and regulate attributions of quality to foodstuffs – and most especially to wines – based on their place of origin. This body of work – and particularly studies of GI systems for wine (for instance Daynes 2013; Fourcade 2012; Gade 2004; Høyrup & Munk 2005; Teil 2010; 2012; Trubek 2008; Ulin 1996; 2007) – has, with

some exceptions (for instance Besky 2013; Hayward & Lewis 2008; Murray & Overton 2011; Overton 2010; Overton & Heitger 2008; Paxson 2013; Rangnekar 2011), hitherto tended to concentrate upon European nations in which GI systems, and the notions of *terroir* which underpin them (see chapter three), are long-established, widely-accepted, and closely identified with “the local, the traditional, and the authentic” (Demossier 2011: 691). Australia is, by contrast, a country hitherto closely identified with winemaking approaches in which consistency and palatability in taste is pursued through blending wines across regional boundaries (Allen 2010; Aylward 2008; Banks et al. 2007). Here, the use of wine quality classifications based upon geographical origin is a relatively recent innovation that was (as discussed in chapter three) initially imported at the behest of foreign governments (Banks & Sharpe 2006; Beeston 2001). As a result, Australian wine producers’ efforts to make the provenance of their wines matter to their quality and their value confront studies of the relationship between provenance and wine quality with a number of unfamiliar issues, and thus impels this thesis to raise several novel questions. Just what might be the consequences of introducing modes of wine and grape quality assessment based upon place of origin into a wine industry whose ‘traditional’ approaches to winemaking are more concerned with the flavours of materials than their provenance? How might these two contrasting ways of pursuing wine quality – which are often depicted as being locked in antithetical opposition (Aylward 2008; Garcia-Parpet 2008; Karpik 2010; Lagendijk 2004) – relate, interact, clash, or hybridise? And how might changes in the relationship between wine quality and geographical origin affect the geographies of Australian viticulture and wine production?

Where, How, and Why: Introducing South Australia

How is this thesis to go about addressing the questions outlined above? In what locations and organisations, and by whom, might the practices of wine and grape qualification and valuation upon which the interests of this thesis centre be carried out? And how might a researcher go about studying them? In this section I will respond to these

questions by briefly describing how I went about exploring qualification and valuation in practice, and by explaining my decision to make South Australia the empirical focus of my field research.

The pragmatist sociologies of markets from which the concept of qualification emerged provided this thesis with its initial methodological inspiration, for their emphasis upon examining how qualification and valuation are enacted in practices that are both discursive and corporeal is especially compatible with ethnographic research (Heuts & Mol 2013; Stark 2009; see also chapter three). Indeed, geographers, anthropologists, and sociologists have produced numerous rich ethnographies of qualification and valuation in practice (for instance Entwistle 2006; Entwistle & Rocamora 2006; Guyer 2004; Mears 2011; Muniesa & Trébuchet-Breitwiller 2010) – including several relating to comestible goods (Faier 2011; Freidberg 2004; Hébert 2010; 2014; Méadel & Rabearisoa 2001; Paxson 2013; Tsing 2013). As an ethnographic study of the qualification and valuation of grapes and wines, this thesis both draws heavily upon and contributes to these literatures. However, in order to follow my interest in how grape and wine producers go about *pursuing* quality I have had to adopt an empirical focus slightly different from that of many previous studies of qualification and valuation. Specifically, I have moved away from the extant literature's concentration upon the preparation of market spaces and the conduct of economic exchange within them, which reflects these approaches' origins within schools of economic sociology heavily invested in the study of economic markets as social formations (Beckert & Musselin 2013; Çalışkan & Callon 2010; Vatin 2013).

This is because the arguments of social studies of markets themselves imply that the moment of transaction within markets is a somewhat problematic location in which to study how products become endowed with qualities (Aspers & Beckert 2011). As explained above, this perspective argues that qualification is a prerequisite for the valuation of goods – and thus for their pricing and sale within markets (Beckert & Musselin 2013; Kjellberg &

Helgesson 2006), suggesting that the qualities of goods must be settled and agreed upon before market exchange may occur (Çalışkan & Callon 2010; Callon & Muniesa 2005; Garcia-Parpet 2007). It therefore suggests that researchers who confine their empirical attentions to operations of exchange will arrive on the scene only after the work of qualification is already complete. Several commentators have therefore recently suggested that researchers will have to investigate settings other than markets, and activities other than valuation and exchange, in order to apprehend *how* the qualities of goods take shape (Vatin 2013). Such activities might include transforming and refining materials and services into forms amenable to classification within quality grades and standards, sorting and re-assorting the entities which emerge from such operations into categories, and processing, assembling, or packaging them into combinations that can be recognised and traded within markets as economic goods (Helgesson & Muniesa 2014; Heuts & Mol 2013). Such interactions with a material or service might justifiably be qualified as ‘production practices,’ and their practitioners might be classed as ‘producers’ (Callon et al. 2002: 197; Ingold 2000; 2011), for they consist of:

“a sequence of actions, a series of operations that transform it [...] a series of metamorphoses that end up putting it into a form judged useful by an economic agent who pays for it. During these transformations its characteristics change.”

As such, these arguments imply that qualification and valuation processes often overflow deeply-ingrained intellectual divisions between the study of production and that of exchange (Helgesson & Muniesa 2014). My interest in investigating how Australian grape and wine producers *pursue* quality – that is, how they go about attempting to impart particular qualities, and economic value, to their materials – therefore led me to broaden my empirical focus beyond “the mercantile realm” (Vatin 2013: 40). As such, this thesis presents what might be termed a study of quality (and value) in-the-making by applying ethnographic approaches to qualification and valuation within a study of wine and grape production.

It was this aim of examining quality- and value in-the-making which led me to undertake nine months of ethnographic research among grape and wine producers in South Australia (as discussed at length in chapter three). South Australia has been Australia's leading grape-growing and wine-producing state for over a century, and in 2011 it held 46.7% of Australia's vineyard area, accounted for 43% of Australia's national grape crush, and hosted 689 wineries – more than any other state (ABS 2012). South Australian wine producers are also prominent among Australian wine exporters. Over half of the Australian wine exported in 2010-2011 – 56.9% by volume and 60.6% by value – was produced in South Australia (ABS 2012), and in 2009 South Australian wine companies exported 75% of the wine that they produced (PIRSA 2010). South Australia therefore provided an appropriate geographical focus for this research for two reasons. First, it hosted a far denser concentration of wine and grape producers – and thus of potential participants for this research – than did other Australian states. Second, it was home to many of the producers most directly affected by recent shifts in competitive dynamics and quality conventions (as outlined above) within key export markets for Australian wine.

South Australia's current pre-eminence within the Australian wine industry is arguably a legacy of several key historical events during the late nineteenth and early twentieth centuries. South Australia had rapidly embraced viticulture after the proclamation of a British colony at Adelaide in 1834 (Beeston 2001), perhaps due to its status as the only Australian colony to be settled entirely by free colonists. Faith (2003: 30-31) suggests that the colony's political freedoms and religious tolerance attracted migrants from Central Europe with prior knowledge of viticulture, while: "The high cost of land for free settlers in South Australia meant that their produce had to be of high value." However, it was the inadvertent introduction of *Phylloxera vitifoliae* – a North American aphid which kills European grape vines by draining the sap from their roots – into Victoria in 1877 which created the conditions that would enable South Australian producers to dominate Australian grape and wine markets (Osmond & Anderson 1998). *Phylloxera* subsequently spread

rapidly through most of Victoria's main viticultural regions, and in the 1890s a separate phylloxera infestation in New South Wales combined with a financial crisis to force many wine producers in the eastern colonies out of business (McIntyre 2012). Although phylloxera had been largely contained in Australia by the end of the First World War, viticulture was abandoned in many of the worst-affected areas – dramatically reducing wine production in Victoria and, to a lesser extent, New South Wales.

The abolition of tariffs on inter-colonial trade following the formation of the Commonwealth of Australia in 1901 presented wine producers in South Australia, which remained phylloxera-free, with an extraordinary commercial opportunity (Haughton & Browett 1995). Shipments of South Australian wine to other states expanded by over 2,000% between 1901 and 1914, and by the end of the First World War South Australia was producing around three quarters of all Australian wine (Faith 2003). During this period a small group of well-financed South Australian wine companies rapidly established or acquired both production and marketing operations in other Australian states – enabling them to absorb or marginalise most of their beleaguered inter-state competitors and thus to assume a position of nationwide dominance which their present-day successors in many respects still maintain (Osmond & Anderson 1998). Three of Australia's current 'big four' largest wine producers developed from leading nineteenth century South Australian wine companies, and as a result many of Australia's largest wine companies remain headquartered close to Adelaide (Beeston 2001).

Conducting fieldwork in South Australia therefore opened up opportunities for me to study the large-volume, export-focused, and often shareholder-owned wine companies which account for the majority of Australian wine production by both volume and value (Swinburn 2013). Conducting fieldwork elsewhere would have made it far more difficult for me to gain access to such organisations. This is an important consideration, because in ethnographically examining such companies this thesis explores empirical settings which have hitherto been

overlooked by anthropological and geographical studies of wine producers' engagements with international commercial networks and cultural formations in which considerations of quality are assuming growing economic significance (Climent-López et al. 2014; Gwynne 2008; Jung 2014; Maclaine Pont 2011; Overton 2010; Sánchez-Hernández et al. 2010; Sternsdorff Cisterna 2013; Walker & Manning 2013). For although this literature has produced several ethnographies of wine production, previous studies have focused either on privately-owned 'boutique' wineries (Daynes 2013; Demossier 2011; Saleh 2013) or on cooperative wineries owned collectively by grape growers (Ulin 1996). As such, the practices and quality conventions – and the modes of valuation – employed by large wine companies focused on producing mass-market branded products remain a 'grey area' within this literature (Barbera & Audifredi 2012). In the absence of empirical scrutiny, social researchers have tended to portray such firms as a mirror image of 'traditional,' 'artisanal,' or 'upscale' wine producers (for instance Aylward 2007; 2008; Garcia-Parpet 2008; Murray & Overton 2011; Rössel & Beckert 2013) – depicting them as deploying:

“‘industrial’ modes of production, eschewing the subtleties of place and terroir and generations of expertise and empathy in favour of artificial chemicals and new techniques [...] a homogenisation of product that divorces it from its geography and history and which is driven by competition over price points” (Banks & Overton 2010: 60).

In this respect, social scientists' studies of wine production reproduce a broader tendency among agro-food scholars to consider questions of quality in terms of a binary opposition between 'conventional' and 'alternative' models of food production, distribution, and consumption (for instance Moragues-Faus & Sonnino 2012; Morgan et al. 2006; Murdoch et al. 2000; Murdoch & Miele 1999; Parrott et al. 2002). However, this binary framing's analytical clarity comes at the cost of suggesting that food quality is synonymous with the ecological and cultural concerns (or 'social values') associated with 'alternative' food networks, and thus implying that 'industrial,' 'conventional,' or 'standardised' forms of agro-food production are indifferent or even antithetical to quality (Cidell & Alberts 2006; Harvey et al. 2004). Reliance upon such binary classifications – whether implicit or explicit –

therefore risks encouraging researchers both to make unwarranted *a priori* assumptions about the political and economic stakes of attempts to make and market ‘quality foods’ in advance of empirical enquiry (Winter 2003) and to overlook ‘conventional’ agro-food producers’ engagements with quality in their empirical work (Mansfield 2003b).

In an attempt to guard against such analytical prejudices, this thesis presents a ‘symmetrical’ ethnography of quality in-the-making, which engages in depth with two contrasting ethnographic cases – each of which is used to stimulate questions about the other (Marcus & Fischer 1986). These cases are ‘The Company’ (a shareholder-owned wine company with production facilities across Australia, which is based in the Barossa Valley and processes well over 100,000 tonnes of grapes per year) and ‘Bartoli Wines’ (a family-run winery operating entirely within the Clare Valley with an annual grape crush of roughly 300 tonnes). Through alternating between a series of interwoven ethnographic engagements with these two very different firms (which are described further in chapter three), I seek to avoid positioning them in an idealised contrast against each other as representatives of rival ‘industrial’ and ‘artisanal,’ or ‘conventional’ and ‘alternative,’ models of wine production.

However, this thesis’ comparative ethnographic exploration of two highly dissimilar wine companies is not designed solely to trouble these cumbersome analytical binaries. Examining two firms which are situated inside contrasting commercial networks, employ distinct modes of marketing and distribution, and serve different customers will also enable me to juxtapose two dissimilar modes of engagement with materials and markets, which are likely to generate divergent qualification practices (Mansfield 2003a). The pragmatist accounts of qualification and valuation introduced above suggest that such differences between practices may well precipitate contrasting conceptions and enactments of quality and – because qualification enables and informs valuation – of value (Boltanski & Thévenot 2006; Heuts & Mol 2013; Kjellberg et al. 2013; Kjellberg & Helgesson 2010). Thus, through examining the practices of these two firms side by side, I aim to investigate what

distributions of the precious and the worthless, of desire and disgust, and of importance and irrelevance might emerge from their respective ways of pursuing quality. That is, to grasp which materials, producers, places, and actions, might be valued – in the sense of being coveted, cared for, emulated, or otherwise made to count (Dewey 1939; Graeber 2001; Muniesa 2011; Vatin 2013) – and which might be devalued through each company’s practices. Juxtaposing these two ethnographic cases will (as explained in chapter three) assist me in foregrounding differences and similarities between the ‘organisations of the valuable’ (Stark 2009) that emerge from these companies’ respective engagements with quality which might otherwise pass unnoticed (Law & Mol 2008; Mol 2002b). In drawing out such contrasts and resemblances in the manner in which my various participants’ activities enact quality and value – and distribute them among things, persons, locations, characteristics, and relationships – I seek to gain insight into how the effects of varying ways of assessing and enacting quality might differ from one another. Undertaking a comparative ethnography of quality- and value in-the-making will thus help me to appreciate what might be at stake for grape and wine producers in pursuing quality in one way rather than another. In so doing, it will provide purchase upon the overarching question of this thesis: that of what difference Australian wine producers’ efforts to pursue quality might make.

Summary and Outline of Chapters

At the outset of this introductory chapter I asked how Australian wine producers might go about pursuing the quality to which they and their industrial representatives attach such great importance, what might be at stake for them in succeeding or failing to deliver it, and what might be the consequences of their engagements with quality. Subsequent sections have argued that these questions can best be addressed through studying the qualification of Australian wines, and of their precursor materials, in practice – and that this task would require that I broaden my empirical enquiries beyond the moments of market exchange upon

which previous studies of qualification have typically concentrated to embrace grape and wine production.

In the process of developing this ethnographic approach to quality in-the-making, I identified three areas in which the activities and concerns of Australian wine producers intersect with, and also problematise, the interests of agro-food geographies and of social studies of markets. These areas of intersection stimulated three questions which will help to orientate this thesis' enquiries. First, I will ask how the sensory qualities – the tastes and textures – of materials are made to matter economically within the Australian wine industry and investigate what organisations of the valuable might be enacted through these modes of qualification. In so doing, I seek to enrich an agro-food studies literature that has often been preoccupied with the imbuing of foodstuffs with preconstituted social or political values by attending to practices in which value itself takes shape through engagement with, and attention to, the distinguishing qualities of comestible materials. Second, I investigate how, and by what participants, wine quality might be pursued – and wines and their precursor materials valued – in a more-than-human world. In so doing, I contribute to social studies of markets by exploring how the active and unsolicited intervention of unruly nonhuman entities and forces into economic processes might challenge extant theorisations of qualification and valuation, as well as existing characterisations of economic agency. Third, I ask what might be the consequences of, and what might be at stake for those economically implicated in the Australian wine industry in, Australian wine producers' recent attempts to entangle the quality of grapes and wines with their provenance. I thus seek to both contribute to and challenge a growing geographical and anthropological literature on entanglements between food quality and the provenance of foodstuffs by examining the introduction of modes of qualification configured around geographical origin into a wine sector hitherto closely associated with other measures and practices of wine quality. In this final section, I will briefly outline how the subsequent chapters of this thesis will develop and address these opening questions.

Chapter two reviews a variety of literatures compiled by geographers and other social scientists studying the intersection of agro-food production and market arrangements in order to locate theoretical resources which might help to orientate and guide my empirical enquiries into Australian wine producers' efforts to pursue quality. In the process it introduces readers to accounts of scientific and economic practices as performative interventions, upon which I draw in chapter three to develop a methodological approach within which comparative ethnographic research becomes an experimental intervention designed to expand theoretical repertoires through juxtaposing novel combinations of sites and practices.

Chapter four begins to examine what implications the intervention of more-than-human entities and forces into economic life might hold for theoretical accounts of qualification, valuation, and economic agency by examining the radical devaluation of winegrapes during a grey rot epidemic in 2011. Following The Company's preparations for the annual grape harvest, it argues that in order to cultivate the qualities which will make grapes valuable Company employees must become sensitive to more-than-human entities and processes. However, I suggest that even as this sensitivity imparts the ability to generate value, it also creates vulnerabilities which may lead to the devaluation of materials. Chapter five digs deeper into the question of what role practices of attention to the qualities of materials might play in enabling and informing valuation and exchange by exploring how grape growers and wine producers went about assessing the worth of, and agreeing prices for, rapidly-decomposing grapes infected with grey rot. In the process, it shows that different wine companies' varying approaches to qualifying infected grapes precipitated contrasting ways of valuing these highly unstable materials, and thus of constructing and conducting market transactions with grape suppliers. I therefore suggest that wine producers' differing ways of qualifying materials may make visible contrasting prioritisations of what matters within market transactions and exchange relationships, and thus provide insight into what I term divergent economies of relations.

Chapter six examines how these distinctive economies of relations take shape, and explores their relationship with practices of sensory attention to the qualities of materials, through examining the specialised tasting practices which help Company winemakers to classify and blend wines into reliable, consistent-tasting multi-regional branded products. It traces out how these practices, which aim to inspire ‘brand loyalty’ in customers, also alienate the sensory qualities and the identities of The Company’s ferments and wines from their grower and place of origin – and, in the process, render different grape suppliers interchangeable. Chapter seven, by contrast, examines the quite different ways in which the provenance of materials is made to matter to their quality and worth by Bartoli Wines and The Company, and in which these practices distinguish growers, viticultural regions, and vineyard sites. More specifically, it argues that *how* the qualities of materials become entangled with their geographical origins can make a difference, and that producers’ engagements with provenance may reshape both economies of relations and economic geographies in contradictory ways.

Chapter eight concludes this thesis by revisiting the three questions posed in this introductory chapter and considering the implications of my ethnographic engagements with the production, qualification, and valuation of grapes and wines for geographers’ understanding of economic agency, material dimensions of qualification, and agro-food producers’ engagements with provenance. I also reflect upon the strengths and limitations of the research presented in this thesis, and discuss what its theoretical insights imply about what is at stake in the Australian wine industry’s pursuit of quality. Specifically, I argue that it is not only such initiatives’ success (or failure) in enabling producers to capture a price premium that matters, because qualification practices influence far more than prices. *How* quality is pursued also makes a difference.

Chapter 2

Literature Review: Terms and modes of engaging

“if ANT is a theory, then a “theory” is something that helps scholars to attune to the world, to see and hear and feel and taste it. Indeed, to appreciate it. If ANT is a theory, then a theory is a repository of terms and modes of engaging with the world, a set of contrary methodological reflexes. These help in getting a sense of what is going on, what deserves concern or care, anger or love, or simply attention.” (Mol 2010: 262)

This chapter will examine a number of theories, including actor-network-theory (or ANT), in an attempt to search out ‘terms and modes of engaging’ which might help to attune a researcher to the processes through which quality is pursued – and comes to affect the enactment, assessment, and distribution of value – within the Australian wine industry. In the following sections I will seek to locate concepts and intellectual orientations which might assist me in developing the interests in qualification, valuation, and materiality outlined in chapter one. What theoretical devices and sensitivities, I will ask, might help to tease out those aspects of contemporary Australian wine producers’ pursuit of quality which deserve attention, care, or concern?

More specifically, the following sections examine how several different theoretical engagements with quality, value, and materiality have informed previous research within agro-food geographies. I begin by examining the contention that value is inextricably interwoven with social relations – a proposition foregrounded within agro-food scholars’ long-running engagement with political economy, but which is also evident within cultural economy perspectives whose analyses of economic life accord a new prominence to the concept of quality. Attending to entanglements between food quality and the materiality of foodstuffs, I review agro-food geographers’ exchanges with ANT before exploring analyses of economic markets – here termed ‘marketisation studies’ – inspired by ANT. I conclude by

examining new variations upon 'relational materialist' thought which are emerging from critiques of these literatures and identifying several 'methodological reflexes' which might help to orientate the research approach outlined in chapter three.

Political Economy: Agriculture's recalcitrant nature

The concerns with quality, value, and materiality which propel this thesis emerge from a number of sources, but their clearest thematic influences are to be found in geographical studies of agro-food production. Indeed, an interest in value production and valuation was a crucial driver of the emergence of agro-food research itself out of:

“an expansion of rural sociological interest [...] beyond the farm gate to consider the place of farming in wider systems of food production, processing and supply” (Lockie & Kitto 2000: 3).

This broadening of rural sociology's purview to embrace processes of commodity production and circulation reflected the growing influence of Marxian political economy upon geographical and sociological studies of agriculture during the 1970s and 1980s (Morgan et al. 2006). Influenced by Marx's (1979) argument that the social relations of production form the locus of both the production and the appropriation of surplus value under capitalism, early agro-food studies scholars scrutinised the agricultural labour process (Boyd et al. 2001; Goodman et al. 1987), conceived as:

“the organization of work activities and occupations and the relationships among social categories that are a result of those arrangements. Thus the capitalist labor process is characterized by the distinction between wage labor and owners/managers in the organization of work and the production of value by labor and the appropriation of that value, in the form of unremunerated labor, by the capitalist.” (Friedland et al. 1981: 4)

Political economy scholars argued that because the production of surplus value under capitalism relies upon waged (and thus commodified) labour's generation of use values in excess of its exchange value:

“The value theory comes to reflect and embody the essential social relations that lie at the heart of the capitalist mode of production. Value is conceived of, in short, as a social relation” (Harvey 1984: 15).

This intimate entanglement with class relations qualified the production and distribution of economic value as a thoroughly social process worthy of rural geographers' attention. However, this characterisation also created a theoretical conundrum for agrarian political economists (Green & Fairweather 1984; Mann 1990). How and why, they asked, did family farm enterprises utilising unwaged labour – a labour process model quite different from capitalist modes of surplus value production, appropriation, and accumulation – survive and persist within industrial capitalist economies? This question both qualified agriculture as an 'anomalous' economic sector with a unique resistance to restructuring according to the supposedly universal economic imperatives of industrial capitalism (Buttel 2001; Henderson 1999; Page 1996), and provoked concerted efforts to explain why "Capitalist development appears to stop [...] at the farm gate" (Mann & Dickinson 1978: 467).

Paradoxically, this preoccupation with the social relations of agricultural production occasioned growing scholarly attention to materials and to nonhuman organisms as agricultural production's 'natural' characteristics were invoked to account for its resistance to capitalist industrialisation. The arguments of agrarian political economists such as Mann & Dickinson (1978; see also Mann 1990; Goodman et al. 1987; Henderson 1999), depicted agriculture's 'anomalous' labour processes – and its consequent sectoral socio-economic distinctiveness – as arising and persisting because food producers: "*confront nature directly* in the process of commodity production" (Boyd et al. 2001: 556; Page 1996). Individual agricultural sectors were thus argued to develop distinctive forms of socio-economic organisation in response to the specific material characteristics both of the environments within which they undertook production and of the foodstuffs that they produced (Bakker & Bridge 2006; Friedland 2001; Morgan et al. 2006). Agrarian political economy has therefore tended to depict 'nature' as an important and to some degree uncontrollable influence which constrains the restructuring of both agro-food production and labour relations along industrial lines (Goodman 1999; Henderson 1999), and to assume that:

“unflagging effort to reduce the importance of nature in production is the driving force behind agricultural industrialization” (Page 1996: 381).

Capital is thus presented as continually seeking to control, subordinate, and marginalise inconvenient ‘natural’ characteristics of organisms, materials, and production processes – and, if possible, to replace them within artificial substitutes through scientific and technical innovation – in a process described as the ‘outflanking’ of nature (Morgan et al. 2006; Murdoch et al. 2000). This argument sometimes presents capital as gradually and unevenly, yet ineluctably, remaking the material world in the image of its own social relations of production – manipulating and transforming environments, crop plants, and domestic animals to create ever-more-perfect instruments of accumulation (Boyd et al. 2001; Kloppenburg 2004). Rural political economists’ accounts therefore tend to figure ‘nature’ as an ultimately transient influence upon the social and economic organisation of agriculture which will eventually be overwhelmed by and subsumed into the logic of capital (Goodman et al. 1987; Murdoch & Miele 1999; 2004).

Several claims and assumptions thus tend to run together in a rather problematic fashion within political-economic theorisations of agriculture. These accounts typically presuppose that economic activity is ordered by a single social logic of capital accumulation, based around the appropriation of surplus value through the labour process, whose drive towards unfettered expression reconfigures nature in the image of capitalist society through the technological ‘outflanking’ of natural constraints on agricultural production. Thus, the appropriation of agricultural processes as a vehicle for capital accumulation easily becomes conflated both with ‘modernisation’ – in the sense of a progressive refashioning of, and expansion of human control over, nonhuman ‘nature’ (Carolan 2013; Goodman 1999; 2001; Latour 1993; Mitchell 2002) – and with the application of novel technologies (Boyd et al. 2001). Moreover, because such innovations are seen as removing barriers to foodstuffs’ incorporation within global markets as tradeable commodities – such as perishability and seasonality – modernisation and capitalisation also become all but synonymous with the

process of globalisation (Goodman et al. 1987; Murdoch et al. 2000). The result is often a rather linear narrative, in which – because encounters with agricultural natures cannot alter the logic of capital but merely temporarily impede its full realisation – the material and social specificities of particular agricultural sectors and products are predestined to be eliminated as food production undergoes rationalisation and restructuring to better facilitate capital accumulation (Braun 2008; Morgan et al. 2006; Murdoch & Miele 1999).

Such totalising and historically linear theorisations of agro-food systems were confronted by at least two major challenges during the 1990s. First, many scholars took events such as the appearance of novel pathogens within industrial agricultural systems during this period's numerous 'food scares' as evidence that the capitalist appropriation of agro-food systems could not be equated with the 'domestication' of nonhuman organisms, materials, and environments to human (and especially capitalist) demands (Goodman 1999; Latour 2004b; Murdoch et al. 2000; Whatmore 2002). Critics argued that in treating 'nature' as a mere constraint upon industrial activity, agrarian political economy had overlooked both the dynamism of nonhuman participants in agricultural production and their capacities to intervene in agro-food systems in surprising ways (Boyd et al. 2001; Braun 2008). These criticisms broadened into a sustained questioning of political economy's central presumption that:

“ontological priority resides with social relations of production [...] that govern the interaction between humans and objects within a capitalist political economy” (Perkins 2007: 1153).

Detractors suggested that political economy's argument that – at least under the capitalist mode of production – the value of all things arises from, and is measured through, the deployment of human labour alone (Brennan 1997; Harvey 1984; Marx 1979) positioned humans as the repository of all agency. For if human labour alone makes a difference by generating value, inducing change and transformation, and precipitating political events then the nonhuman materiality so elaborately theorised by agro-food geographers can hold

analytical significance only insofar as it is transformed *through* labour into an expression and an instrument of human logics of socio-political action and economic accumulation (Braun 2008; Murdoch et al. 2000; Stassart & Whatmore 2003). The nonhuman is thus subsumed into an effectively inert and rather homogeneous nature opposed against the social sphere delineated by generative human labour (Bakker & Bridge 2006; Busch & Juska 1997; Goodman 2001). This, critics suggest, prevents agrarian political economy from accounting for the resurgence of nonhuman agency in novel, variegated, and often troubling forms amidst and through many projects of modernisation (Morgan et al. 2006; Roe 2006).

Second, political-economic approaches were argued to be inadequate to the task of understanding transformations in food production and consumption induced by these crises of confidence in the safety, provenance, and quality of food produced within conventional, intensive agro-food systems (Goodman 1999; 2001; Morgan et al. 2006; Murdoch & Miele 1999; Parrott et al. 2002). Many agro-food scholars suggested that the purchasing behaviour of some food consumers was increasingly becoming informed by a profusion of seemingly non-economic concerns such as environmental sustainability, sympathy for local farmers, and a preference for fair terms of trade. In the process, the worth of foodstuffs appeared to be becoming bound up – albeit selectively and unevenly – with a variety of political and ethical values which overflowed any single logic of economic valuation (Barham 2002; Guthman 2007; Marsden & Arce 1995; Miele & Lever 2013; Stassart & Whatmore 2003; Whatmore & Thorne 1997; Winter 2003). The growing salience of ‘food quality’ to such consumers was often argued to be economically reorientating certain sectors of agro-food production by disrupting economic logics centred upon competition to achieve the lowest possible price per unit of foodstuff (Bowen & Zapata 2009; Deaton et al. 2010; Morgan et al. 2006; Moragues-Faus & Sonnino 2012; Paxson 2013; Rangnekar 2011). Through this ‘quality turn’ (Goodman 2003; Hébert 2014; Mansfield 2003b; Miele & Lever 2013; Whatmore et al. 2003), it was argued, the circulation and capture of value was instead becoming mediated:

“by an elaboration and intensification in the way market goods are distinguished, or ‘qualified’, by an ever-growing array of fine-grained selling points” (Hébert 2010: 556).

For critics, political economy perspectives’ analytical commitment to a single, invariant logic of capital accumulation positioned capitalist economic imperatives as the sole determinant of the value, meaning, and ‘social life’ of food, leaving:

“little theoretical space to discern much deviation from the precepts of capitalist ordering (either on the part of producers or consumers)” (Morgan et al. 2006: 17).

Political economy approaches thus arguably rendered themselves incapable of engaging with the multiple and varied intentions and values present among the parties convened through the production and consumption of quality food (Arce & Marsden 1993; Cidell & Alberts 2006; Murdoch & Miele 2004). In “reading off interests from an objective structure of power” (Marsden 2000: 27), it was contended, political economy perspectives dismissed growing consumer preoccupations with the sensory qualities, ‘naturalness,’ or provenance of foodstuffs as an ephemeral ‘sugar-coating’ upon more fundamental structures of agro-food production (Lockie & Kitto 2000; Parrott et al. 2002). For many agro-food scholars, then, political-economic approaches failed to acknowledge and to conceptualise adequately the growing importance of food quality and food ethics in mediating cultural and economic differentiation both within and between agro-food sectors (Busch & Juska 1997; Marsden & Arce 1995; Murdoch et al. 2000; Rosin & Campbell 2009).

Agro-food researchers responded to these critiques of agrarian political economy by experimenting with several alternative theoretical resources. The following sections examine two of these intellectual encounters. First, I explore exchanges by agro-food geographers concerned with the ‘quality turn’ with a variety of cultural economy approaches – most prominently conventions theory – concerned with the deployment of multiple modalities of valuation in social and economic life. I then turn to agro-food geographers’ engagements with relational-materialist (Anderson & Harrison 2010; Law 1999; Thrift 1999) approaches –

most notably actor-network-theory – distinguished by their attention to more-than-human dimensions of sociality and agency.

Cultural Economy: Beyond Value and values

Compelling parallels exist between the accounts of the reordering of agro-food sectors and markets through “aspects of human rationality that move beyond the economic” (Barham 2002: 357) advanced by agro-food scholars caught up in the ‘quality turn’ (Goodman 2003; Hébert 2014) and the arguments of the internally-diverse cluster of emerging theoretical orientations known as ‘cultural economy’ (Amin & Thrift 2004; du Gay & Pryke 2002). This latter body of work also aims to elucidate the discursive and practical interpenetration of ‘the economy’ by – and its co-constitution with – ‘the social’ or ‘the cultural’ instead of addressing these categories as separate, and even antithetical, domains (Amin 2009; Bridge & Smith 2003; Castree 2004; Tsing 2009b). It thus refuses an ingrained categorical separation between the analysis of economic value (singular) – conceived as a distinctive logic of self-interested utilitarian rationality reserved to the expertise of economics – and that of the conceptions of the good or the desirable, termed social values (plural), and the relations through which they take shape (Abolafia 1998; Çalışkan & Callon 2009; Stark 2009). Cultural economy approaches therefore tend to reject depictions of capitalism as a coherent system organised around a single essential law or logic of value production (Amin & Thrift 2007; Mitchell 2008; Tsing 2013), proposing instead that:

“the apparently rational calculus of the market is inescapably embedded in a range of cultural processes” (Jackson 2002: 5).

Such references to the ‘embedding’ of economic processes within social and cultural norms, relationships, and institutions highlight a sustained engagement by agro-food scholars concerned with quality with the ‘new economic sociology’ which arose from Granovetter’s (1985) theorisation of the embeddedness of economic action and rationality in social relationships. Granovetter creatively reinterpreted Polanyi’s (2001) argument that a

particular configuration of social institutions in Western industrial societies had both enabled an economic sphere dominated by self-regulating markets to emerge (Graeber 2001; Karpik 2010) and provoked the emergence of social movements whose actions constrained the jurisdiction of economic rationality (Guthman 2007; Krippner 2001) – effectively transforming the economy and society into distinct domains. Granovetter instead suggested that the orderly economic transactions observed in market settings are possible only because the transacting parties are inevitably ‘embedded’ to varying degrees within networks of interpersonal social relations (Krippner & Alvarez 2007; Winter 2003). These relations generate the trust, reputational resources, and sanctions which economic actors require in order to assess the quality and value of goods accurately, evaluate the reliability of potential transaction partners, and deter malfeasance (Berndt & Boeckler 2009; Callon 1998b). This argument implies that the distinctive sphere of economic action posited by neoclassical economics – populated by autonomous, self-interested, atomistic actors – cannot exist since no actor capable of engaging in rationally-calculated exchange can conceivably be free of pre-existing attachments to others (Çalışkan 2010). As a result, no distinction can be made between economy and society, or between economic value and social values (Amin & Thrift 2007; Çalışkan & Callon 2009) because:

“Rational economic action is supported and restrained by ties of friendship, shared experiences, professional associations” (Mitchell 2008: 1117).

Mobilising these insights, numerous agro-food geographers explored unconventional configurations of the social relations of food production, transaction, and consumption, ranging from organic agriculture (Barham 2002; Campbell & Liepins 2001; Rosin & Campbell 2009; Morgan & Murdoch 2000) to short food supply chains (Marsden 2004; Renting et al. 2003; Winter 2003), and fairtrade (Bryant & Goodman 2004; Reynolds 2002; 2014; Renard 2003). Borrowing from the new economic sociology’s argument that the intentions, rationalities, and behaviour of economic agents are conditioned by their position within social networks (Callon 1998b), these studies aimed to identify and describe more-than-

economic alignments of association and exchange through which “social constraints are placed on the market to re-embed it in non-market concerns” (Barham 2003: 130). This process of ‘re-embedding’ was often presented as involving a ‘localisation’ of agro-food production and consumption within particular national or regional territories (Moragues-Faus & Sonnino 2012; Murdoch et al. 2000; Rangnekar 2011). It was therefore often addressed not only as a means of investing political and ethical values into the production and transaction of comestible commodities but also as a rural development strategy capable of capturing and retaining value within marginalised agricultural regions (Bowen 2011; Guthman 2007; Parrott et al. 2002; Tregear et al. 2007)

However, critics of the new economic sociology suggest that this approach still figures social relations primarily as restraining or modifying a pre-existing universal economic rationality (Braun 2008; Mitchell 2008). Thus, agro-food geographers’ engagements with the concept of embeddedness tend – perhaps due to a rather contradictory conflation of Granovetter’s formulation of embeddedness with its Polanyian predecessor (Guthman 2007) – to treat the non-monetary concerns mobilised by quality food initiatives as expressions of efforts by social and political movements to defend social goods or values against the ravages of self-regulating markets (Barham 2002; Barham 2003; Bowen & Zapata 2009; Murdoch & Miele 2004; Rangnekar 2011). They therefore implicitly continue to treat the ‘hard core’ of calculative commodity exchange among alienated market participants as constituting a discrete domain of effectively asocial – or even anti-social – economic rationality (Çalışkan & Callon 2009; Krippner 2001). As such, the new economic sociology’s apparent subsumption of the economic into the social arguably enables a separate economic domain with its own purely instrumental or utilitarian logic of value to re-emerge within the social (Winter 2003). Critics therefore suggest that this tradition has failed either to conceptualise market exchange analytically or to investigate it empirically, preferring instead simply to erase it as a distinctive object of social science enquiry by either desocialising it or

dissolving it into broader categories of social relations (Berndt & Boeckler 2009; Slater 2002).

Moreover, studies centred upon the concept of embeddedness have been accused of invoking trust as “an undifferentiated explanation of coordination” (Çalışkan & Callon 2010: 21) within economic life. As Freidberg (2003) argues, this move risks engendering an analytical insensitivity both to the specific content of the relationships and networks within which appeals to trust may be made – which may well be characterised by domination or desperation – and to how material conditions may facilitate or impede trust’s emergence. It has therefore been argued that somewhat indiscriminate applications of the concept of embeddedness have often obscured radical differences between the aims and values at stake in, the actors convened by, and the effects generated by:

“different and contrasting strands of quality consumerism with many contradictions and tensions between them” (Winter 2003: 25; Guthman 2007; Mansfield 2003b).

A number of agro-food researchers searching for a theoretical vocabulary more sensitive to such contradictions and tensions engaged closely with conventions theory, an analytical tradition informed by an encounter between micro-economics and the sociology of labour markets (Musselin & Paradeise 2005; Karpik 2010). Conventions theory – like the new economic sociology (Granovetter 1985) – takes as its central problem the evaluation and coordination of economic action under conditions of uncertainty (Biggart & Beamish 2003; Stark 2009). However, conventions theory is distinguished by its focus upon the multiple logics and operations through which “ordinary people (‘the actors’) go about justifying their acts” (Heuts & Mol 2013: 129) – as well as their assessments of the worth, or ‘goodness,’ of persons or things – under such circumstances. Its proponents contend that negotiating any form of agreement between actors requires agreement among the parties involved upon how the desirability of different possibilities and choices is to be evaluated (Berndt & Boeckler 2011; Vatin 2013). Such ‘conventions,’ it is argued, consist both in commonly-held conceptions of what is good or desirable and in commonly-accepted tests according to which

the relative value of different persons and things may be assessed, or 'qualified,' in order to resolve uncertainty over their characteristics and worth (Lamont 2012; Wilkinson 1997). In a pragmatic move, conventions theory therefore regards the identities and worth of both persons and things as being entirely contingent upon a never-ending process of critical reassessment (Freidberg 2003; Thévenot 2002).

Due to this emphasis upon the qualification and justification of choices, actions, and value judgments, conventions theory's adherents argue that economic value (in the form of a monetary price) can only be established through recourse to the assessment of other qualities, and thus to conceptions of worth usually considered to be non-economic (Barbera & Audifredi 2012; Karpik 2010; Ponte & Gibbon 2005; Vatin 2013). The sole exceptions are goods and persons which have already undergone a thorough process of testing and about whose qualities no uncertainty remains (Ponte 2009). Conventions theory's modes of evaluation, or 'orders of worth', are deployed 'symmetrically' in evaluating both persons and objects (Murdoch et al. 2000; Musselin & Paradeise 2005), and each is therefore seen as being involved in judgments of both moral worthiness and economic value (Boltanski & Thévenot 2006; Wilkinson 1997). As such, conventions theorists recognise no intrinsic opposition between economic value and social, political, and ethical values, only contrasting modes of valuation (Stark 2009; Thévenot 2002).

Adherents of conventions theory identify multiple orders of worth operating simultaneously within modern economies, each of which also operates within institutions and domains of action typically classified as non-economic (Ponte & Gibbon 2005; Wilkinson 1997). Boltanski & Thévenot's (2006) influential inventory, for instance, identifies six equally legitimate, yet mutually incommensurable, logics of evaluation – each of whose assessments of worth are guided by and justified through recourse to a different general principle of the common good drawn from political philosophy. Different modes of justification may also be

opportunistically employed or even combined by the same persons and organisations (Berndt & Boeckler 2011; Lamont 2012).

Conventions theory offered agro-food studies scholars a theoretical vocabulary which did not presume that any single general explanation or logic underlay economic activity. It thus assisted agro-food geographers in attending to the heterogeneous socio-political values at play in contemporary orderings of agro-food production by shifting the impetus of enquiry away from:

“the search for a single network ‘driver’, focusing instead on contestations over divergent qualifications” (Raynolds 2002: 409).

Moreover, its theoretical vocabulary of multiple orders of worth helped scholars to decompose the extremely broad and internally-heterogeneous category of ‘quality food’ (Whatmore et al. 2003), and to differentiate between the contrasting principles and logics according to which the ‘goodness’ of foodstuffs might be evaluated (Cidell & Alberts 2006; Climent-López et al. 2014; Murdoch et al. 2000). It also provided a sophisticated account of complex interactions and contestations among different measures of value and modes of qualification within individual institutions, organisations, or food networks (Murdoch & Miele 2004; Wilkinson 1997). Nevertheless, conventions theory’s ambition to provide a ‘general grammar of worth’ which would be as pertinent within moral as in financial registers also places certain limits upon the applicability of its analyses within agro-food studies. Significantly, its requirement that legitimate orders of worth be justified according to a conception of the common good founded upon the equal value of all human beings (Boltanski & Thévenot 2006; Latour 1998) means that:

“Conventional forms of qualification that derive from worthiness [...] [are] very demanding with respect to moral infrastructure and emotional involvement [...] we only need to attend to such a regime when the engagement is open to public critique” (Thévenot 2002: 69).

Conventions theory’s analyses of the justification of worth, Thévenot appears to be arguing, are primarily of relevance in analysing open debates over the valuation of goods

which are animated fairly directly by potentially conflicting political, philosophical, or moral ideals. Many applications of conventions theory within agro-food studies do indeed deal with such cases of politicised production and consumption practices as fair trade (Raynolds 2002; 2014; Renard 2003), or organic (and other sustainability) certifications (Barham 2002; Campbell & Liepins 2001; Rosin & Campbell 2009). Yet as certain authors were quick to point out, many forms of quality food production and consumption:

“are built around the development of notions of quality by retailers as a means of segmenting markets and increasing market share.” (Winter 2003: 25; see also Miele & Lever 2013).

Depicting quality food production and consumption as evidence of engagement with readily-identifiable political and ethical values – and especially assimilating them to the relatively limited menu of preconstituted modes of justification proffered by conventions theory – might therefore threaten to overshadow the heterogeneity of the interests, agencies, and modes of qualification convened around these activities (Mansfield 2003b; Marsden 2000). In particular, conventions theory’s focus upon primarily-discursive processes of ethico-political justification is sometimes characterised as downplaying the importance of engagements with both the physical environments within which agro-food production takes place (Morgan et al. 2006) and the qualities of *foodstuffs* as materials (Heuts & Mol 2013) within the judgment of food’s quality and worth. Moreover, its focus upon operations of assessment and evaluation, and its tendency to identify these with moments of market transaction, has sometimes been accused of occasioning an empirical neglect of production processes (Vatin 2013). This relative analytical neglect of materialities – common to political economy, the new economic sociology, and conventions theory alike – would impel agro-food geographers to explore a range of closely-related relational-materialist theoretical approaches (Anderson & Harrison 2010; Law 1999; Thrift 1999), of which actor-network-theory was perhaps the most prominent.

Actor-Network-Theory: Materialising and distributing agencies

The somewhat heterogeneous repertoire of theoretical orientations popularised under the soubriquet of 'ANT' (see Latour 1999a; 2005; Mol 2010) developed alongside, and sometimes in dialogue with, conventions theory (Callon 1991; Goodman 1999; Wilkinson 1997). It shares conventions theory's interest in the contingency of entities' characteristics, identities, and positions within broader modes of ordering upon varied procedures of testing and examination (Latour 1988; 1999b; Law 2004; Mol 2002b). However, ANT's origins within science studies led its originators to concentrate on tests and trials of a rather different variety from conventions theory's typically discursive justifications of actions, namely the:

“other, material, forms of signification by which the specific capacities and properties of entities from x-rays to viruses make their presence felt” (Whatmore & Thorne 1997: 294).

Pursuing this interest in the processes through which all manner of nonhuman stuff asserts its existence and capabilities, ANT scholars began to contend that agency – stripped of its connotations of intentionality and figured simply as “sufficient coherence to make a difference, produce effects, alter the course of events” (Bennett 2010: viii) – should not be considered a solely or intrinsically human attribute. As a result, ANT does not automatically credit human individuals or groups with a different analytical status than is accorded to nonhuman things, or to more-than-human events and formations (Braun 2008; Clark 2011; Lee & Brown 1994; Lulka 2009). ANT held a particular attraction for scholars disillusioned with political economy approaches because this agnostic stance towards the standing, character, and capabilities of both the human and the nonhuman unsettles dualistic oppositions between the natural and the social, taking this binary as a problem to be interrogated instead of a metaphysical foundation for enquiry (Anderson & Harrison 2010;

Bennett 2001; Goodman 2001; Latour 1993; Latour 2004b; Lien & Law 2011). ANT's redistribution of agency beyond the human, it was often argued, thus enabled agro-food scholars to attend sensitively to the sometimes unruly 'liveliness' of nonhuman materials (Lulka 2009; Panelli 2009; Whatmore 2002) – assisting researchers in according plants, animals, microbes, weather events, irrigation channels, mechanical harvesting vehicles, and the like their due prominence in explanations of how the distinctiveness of particular agro-food sectors came about (Busch & Juska 1997; FitzSimmons & Goodman 1998; Mitchell 2002). Moreover, in encouraging researchers to trace how the emergence or intervention of nonhuman agencies displaced, seduced, or disturbed humans, ANT rendered their activities integral to the emergence and condensation of novel social formations such as protest groups, transnational corporations, international commodity chains, organic certification agencies, and 'alternative' food networks (Bingham 2006; Callon 2007a; Callon et al. 2009; Donaldson et al. 2002; Goodman 1999; Latour 2005; Law & Mol 2008; Stassart & Whatmore 2003; Whatmore & Thorne 1997).

Exploring cases in which the activities of nonhumans have rearticulated the institutions, routines, and processes of social life has often spurred ANT-inspired geographers to argue that the social formations traditionally studied by human geographers – including agro-food scholars – are, and always have been, more-than-human accomplishments (Head et al. 2012; Panelli 2009; Whatmore 2002; 2013). ANT's capacity to assist geographers in generating more-than-human mappings of collective life (Whatmore 2006; Whatmore & Hinchliffe 2010) has thus offered a vigorous corrective to the conceptual and empirical blind spots engendered by political economy's insistence that social change be 'read off' from the unfolding of an invariant social logic of capital accumulation (FitzSimmons & Goodman 1998; Freidberg 2003; Jones & Cloke 2002; Morgan et al. 2006).

However, the implications of ANT's attention to the ways in which the heterogeneous *stuff* imbricated within social life and agro-food networks comes to matter go some way

beyond according newly active capacities to preconstituted 'nonhuman things.' For ANT mobilises a pragmatist sensibility which figures an entity's characteristics, identity, and status as an actor as being perceptible, significant, and thus real enough to take into account only by virtue of its capacity to displace and affect others (Latour 1999b; 2005). As such:

"The being of an actant is contingent upon its capacity to act, and its capacity to act is dependent on its relations to other actants. The centredness of agentic responsibility is distributed into a dispersed network of interdependencies and co-responsibilities" (Lee & Stenner 1999: 93).

Agency – and the attendant capacity to engender routines or upheavals in the conduct of social life – is thus generated from the very heterogeneity of the 'associates' which are woven together into configurations – networks – which combine and redefine their powers in new ways (FitzSimmons & Goodman 1998; Latour 1999a; Mitchell 2002). Thus, just as the composition of actants into a network generates a new entity with its own powers – the network becomes a new actant – so the agency of each of its constituents is contingent upon its positioning within the network (Callon 1991; Hinchliffe 2010; Mol 2010). As a provisional and changeable effect of the relationships within which it is positioned, each actant is therefore also a network rather than an individual endowed with an essential identity (Barry 2013b; Brown & Capdevila 1999; Law 1999). As such, the qualities – and the propensities for resistance and recombination – of the startlingly active materials addressed by ANT are contingent upon the associations in which they are implicated (Bakker & Bridge 2006; Barry 2013a; Bennett 2010; Bridge & Smith 2003; Latour 2004a; Whatmore 2002).

As such, any actant's identity, qualities, and powers will remain stable only for as long as the constellation of relationships within which it is situated endures, and they will change as soon as these relations are rearranged (Mol 2010). ANT therefore indexes change and transformation to the forging or breaking of relationships, arguing that temporal and spatial distance emerges as associations are un- and re-made– and, conversely, proximity is achieved when entities may be transported without provoking rearrangements of relations which might transform them (Hutchins 1995; Latour & Callon 1997; Law 1999; Law 2002a;

Murdoch 2006; Mackenzie 2002). Similarly, because ANT treats agency as being immanent to and contingent upon an actant's associations, ANT analyses cannot – even in seemingly clear-cut cases – presume the existence or character of inequalities of power in advance of empirical enquiry (Callon & Muniesa 2005; Cochoy 2008; Whatmore & Thorne 1997). Instead, they must trace the specific relations among the parties caught up in a particular situation which generate asymmetries in their capacities to act upon each other (Latour 2005) in a process through which, it is sometimes argued, ANT accounts may also map out the means by which power inequalities might be dismantled (Goodman 2001). Engaging with ANT therefore:

“means making this issue of power and agency a question, instead of an answer known in advance” (Mitchell 2002: 53).

ANT accounts are not content to contend that time and space, nature and society, and even power itself are not fundamental and invariant metaphysical categories but instead unfold as local effects of particular arrangements of bodies (Brown & Capdevila 1999; Latour 1997b; Law 2002a). For by their logic the identities, attributes, and powers of the human itself (and, indeed, of particular humans) are also constituted by the associations within which they are situated – and these entanglements need not be restricted to intersubjective relations among humans alone (Anderson & Harrison 2010; Bennett 2010). For humans, as fleshy bodies inhabiting a ‘world of materials’ (Ingold 2011), are argued to be no more endowed with intrinsic capacities for cognition, reasoning, or action than is any other category of actant (Hutchins 1995; Thrift 2008). Rather, it is contended that the attributes and abilities of human individuals – including autonomous individuality itself – take shape in and through relation(s) to innumerable other humans and nonhuman bodies (Callon 2007b; Callon & Rabeharisoa 2004; Moser & Law 1999).

That which modernist ontology takes to be most intrinsically and universally human – and to set humans apart from mere things – is therefore historically constituted through alliance with endless technical, environmental, and interpersonal ‘prostheses’ or

‘supplements’ (Braun & Whatmore 2010; Mackenzie 2002; MacKenzie 2009). As such, ANT scholars argue that there can be no powers or properties belonging to ‘the human alone’ (Ingold 2004; Latour 1999b; 2005; Tsing 2012b), because in order to be(come) human: “Humans need a more-than-human world” (Clark 2011: 47). While this de-essentialisation of the human has a ‘posthuman’ aspect which promises the acquisition of new senses, rationalities, identities, and capabilities through alliance with innovative socio-technical supplements (Latour 2004a; Moser & Law 1999; Mackenzie 2002), it also implies deeply unsettling vulnerabilities. For if the human, in both its individual and its collective guises, is composed through relation with the nonhuman then an ever-present danger of being displaced and recomposed – or even of being *decomposed* or expunged entirely – by indifferent or oblivious nonhumans becomes a condition of human existence itself (Bennett 2001; 2007; 2010; Clark 2011).

Marketisation Studies: Enacting the economic

Many aspects of the previous section’s characterisation of ANT – particularly those concerning the relational constitution and more-than-human character of agency – could also have described other strains of thought within “the set of partially connected theories” (Anderson et al. 2012: 172) sometimes loosely termed ‘relational materialisms’ (Anderson & Harrison 2010; Thrift 1999). I do not mean to suggest by this that such approaches as more-than-human geographies (Whatmore 2002; 2006), vital materialism (Bennett 2010), or non-representational theory (Thrift 2008) may be conflated with ANT; each of these theories exhibits its own distinctive origins, arguments, and preoccupations. Yet Anderson et al.’s diagnosis of ‘partial connection’ is perhaps an apt one, for numerous discussions and cross-fertilisations among these closely-related bodies of work have created:

“connections between the participants – but they remain partial insofar as they create no single entity between them. [...] ‘Partial’ captures the nature of the interlocution well, for not only is there no totality, each part also defines a partisan position” (Strathern 2004: 39).

Such considerations are germane to this thesis because ANT is not alone among these approaches in having informed research within agro-food geographies; for instance, Roe (2010) draws upon non-representational theory, while Richardson-Ngwenya (2012) engages with vital materialism and Head et al. (2012) work in conversation with more-than-human geographies. Moreover, my own research is influenced by more than one of these theoretical orientations – although as Strathern (2004: 35) observes of her own engagements with anthropological and feminist thought:

“neither is a complete context, and when they are thought of as contexts for my actions, I am equal to neither.”

Subsequent chapters will mobilise other dimensions of these relational-materialist theoretical (af)filations; chapters 3 and 4, for instance, address the cartographies of affecting and affected bodies which have for some time animated scholars identified with both ANT-derived approaches and non-representational theory (Anderson & Harrison 2010; Despret 2004; 2013b; Latour 2004a; Lorimer 2008; Mol 2010; Thrift 2008). I have chosen to foreground agro-food geographers’ encounters with ANT within the present discussion for two reasons. First, because ANT has for some time been a prominent influence upon the agenda of agro-food research – and particularly upon agro-food scholars’ growing interest in the active intervention of nonhuman materials into social and economic life (FitzSimmons & Goodman 1998; Goodman 1999; 2001; Whatmore 2002; Whatmore & Thorne 1997). And second, because ANT’s treatment of human individuality and subjectivity as more-than-human accomplishments has also inspired a novel intervention by science studies scholars into long-running debates over the study of valuation and pricing in economic markets (Berndt & Boeckler 2009; Callon 1998b; Kjellberg & Helgesson 2006; MacKenzie 2009). The central problem addressed by this body of work arises from the characterisation of economic markets within neoclassical economics (Knorr Cetina 2006) as:

“a co-ordination device in which a) the agents pursue their own interests and to this end perform economic calculations which can be seen as an operation of [...] maximization; b) the agents generally have divergent interests, which leads them to

engage in c) transactions which resolve the conflict by defining a price” (Callon 1999: 183).

From this definition arises the question – also posed by the new economic sociology (Granovetter 1985) – of how market participants supposedly pursuing their own divergent and likely incommensurable individual interests might come to agree on the worth of goods, and to engage in orderly and even coordinated transactions (Berndt & Boeckler 2009; 2012). The solution proposed by science studies scholars is to refrain from invariably attributing the capacity to engage in the calculative modes of valuation and action associated with markets either to an innate individual rationality (as do neoclassical economists) or (like the new economic sociology) to the individual’s social entanglements (Beunza & Garud 2007; Callon 1998b; Çalışkan & Callon 2009; 2010; Cochoy 2007). Instead, proponents of this approach address questions of economic agency and rationality through ANT’s arguments that the capacities of humans are as contingent upon relations with more-than-human collectives as are those of nonhumans (Callon 2007b; Latour 2013; MacKenzie 2009; Muniesa et al. 2007). Specifically, they argue that the modes of economic rationality familiar to economists are contingently acquired through alliance with various socio-technical environments and *agencements* (Berndt & Boeckler 2011; Çalışkan 2010; Cochoy 2008; Hébert 2014; Stark 2009).

This latter term – typically translated into English as ‘device’ – simultaneously connotes arrangement or assembling, articles of equipment, and agency. It is typically deployed to stress that capacities for ‘economically rational’ – which is to say calculative and self-interested – action arise only when an actor (whether human or otherwise) is appropriately equipped with ‘economising’ devices (Berndt & Boeckler 2009; 2012; Latour 2013; MacKenzie 2009). This contention has spawned a rich and varied body of work examining the new calculative and cognitive capacities generated through the invention and adoption of multifarious technical aids to market exchange (Berndt & Boeckler 2011; Çalışkan 2007; 2010; Cochoy 2007; 2008; Cronon 1991; Garcia-Parpet 2007; Hébert 2014;

Knorr Cetina 2004; Knorr Cetina & Preda 2007; MacKenzie 2003; 2004; Muniesa 2007; Stark 2009). These socio-material arrangements are typically classified as ‘market devices’ because they are designed to enable:

“the conception, production and circulation of goods, their valuation, [...] exchange mechanisms and systems of prices” (Muniesa et al. 2007: 4).

This approach – to which I refer, following Çalişkan & Callon (2010) and Boeckler & Berndt (2012), as ‘marketisation studies’ – disputes the new economic sociology’s conclusion that “the perfect market does not exist and that economic action is socially embedded” (Berndt & Boeckler 2009: 538). It instead contends that market exchange – and the atomistic *homo economicus* required to undertake it – can exist only if socio-material habitats within which such creatures might emerge and thrive are actively constructed or performed through processes of ‘economisation’ or, more specifically, ‘marketisation’ (Çalişkan 2010; Callon 2007a; 2007b; Kjellberg & Helgesson 2006). Moreover, they persist only for as long as such performances are maintained and cannot be presumed to be universally present (Çalişkan & Callon 2010; Callon 1998b; Callon & Muniesa 2005; Mitchell 2008). Adherents of marketisation studies have therefore tended to focus on “the question of how exactly markets as socio-technical agencements are realized” (Berndt & Boeckler 2009: 543; Garcia-Parpet 2007). They aim by extension to describe how markets’ constituents become ‘formatted’ in an economic manner – that is, how they come to both conform to and instantiate “the always ongoing and effective performance of economic categories” (Latour & Callon 1997: 3).

For marketisation studies scholars, the formatting of humans into *homo economicus* is not in itself sufficient to enable a market to come into being. As conventions theorists had previously argued, in order to engage in the valuation and pricing of goods market participants must become familiar with the characteristics and capabilities of the things being transacted (Gade 2004; Karpik 2010; Ponte 2009; Wilkinson 1997), and such familiarity requires that many trials be conducted “through which qualities are attributed,

stabilized, objectified and arranged” (Callon et al. 2002: 199). Through these tests, buyer and seller establish what the items in question can do for them – enabling them to understand each good’s potential uses and value, compare them, order them into hierarchies of worth, and choose among them in the manner required to engage in the calculative modes of (e)valuation typically identified with economic rationality (Beckert & Musselin 2013; Callon 1998b; Musselin & Paradeise 2005; Vatin 2013). Tests of quality thus serve both to differentiate, or ‘singularise,’ goods against one another (Deaton et al. 2010; Hébert 2010) and to:

“make nature and people more uniform, measurable, and controllable; and [...] by reducing the heterogeneity of the behavior of both people and things [...] make both capitalist markets and neoclassical economics possible” (Busch & Tanaka 1996: 5).

Marketisation studies borrows conventions theory’s term ‘qualification’ to describe this process of reducing uncertainties over goods’ attributes and abilities through elaborate processes of testing (Beckert & Musselin 2013; Karpik 2010; Stark 2009; Vatin 2013). However, Çalışkan & Callon’s (2010: 1236) insistence that this process be understood as “objectification work (quite literally the work of making objects)” illustrates that its account of qualification is also indebted to the more-than-discursive ‘trials of strength’ (Latour 1988; 1999b) chronicled in ANT’s earlier studies of scientific practices. For marketisation studies practitioners, qualification resembles scientific laboratory tests and experiments (as described in Law 2004; Latour 2004a; 2013; Pickering 1995, see also chapter 3) in that it endows prospective goods with characteristics which make them both sufficiently real and sufficiently stable to count as objects (Callon & Muniesa 2005; Hutter & Stark n.d.). Marketisation studies thus insists more clearly than does conventions theory that qualification processes produce and modify not only the discursive and symbolic positioning of entities transacted as goods but also their physical makeup (Hébert 2010; 2014), and therefore that: “all these qualities have the same ontological status” (Callon et al. 2002: 200). This process of endowing goods with objective, invariant qualities often involves extricating them from relations with agencies which might alter their characteristics and behaviour, and

thus destabilise market actors' assessments of their worth (Berndt & Boeckler 2009; 2012).

This process, which Callon (1998b: 15) terms 'framing,' consists in:

“the tracing of a boundary between relationships and events which are internalized and included in a decision or, by contrast externalized and excluded from it.”

Through framing – a process which is always incomplete and necessarily generates 'overflows' that are ignored by valuation processes (Callon 1998a; Callon 2007a; Latour & Callon 1997) – market actors ensure that the prices they agree, and the exchanges in which they engage, refer to goods alienated from their producers and environments, the transaction of which will not implicate them in messy and durable associations (Berndt & Boeckler 2009; Çalışkan & Callon 2010; Latour 2013; Slater 2002). Marketisation studies thus argues that the economising agencies which carry out valuation, the alienated goods undergoing valuation, and the clearly-demarcated market spaces within which valuation takes place are all performed into being through the composition of heterogeneous humans and nonhumans into market devices (Callon 2007b; Kjellberg & Helgesson 2006; Sjögren & Helgesson 2007; Muniesa et al. 2007). Whether and how economic valuation is performed therefore depends upon which agencies are enrolled into the performance of markets and how these constituents are arranged (Callon 1998b; Hinchliffe et al. 2007; Vatin 2013). When combined with the pragmatist proposition that value does not precede the activity of valuation but is brought into being through its performance (Dewey 1939; Hutter & Stark n.d.; Muniesa 2011), this argument implies that social values and economic rationalities do not enjoy an independent existence. Instead, they emerge through the performance of valuation and rationalisation within specific more-than-human assemblages (Kjellberg et al. 2013; Lamont 2012; Stark 2009).

This account of valuation differs drastically from that presupposed by accounts of the 'embedding' of social values into economic arrangements, or of the restraint of economic rationality through social ties. It presents economic arrangements and processes not as instantiating innate calculative capacities or preconstituted social values, but as bringing

values and calculative capacities into being through the very activity of ordering more-than-human economic arrangements (Beunza & Garud 2007; Callon & Muniesa 2005; Hinchliffe et al. 2007; Hutter & Stark n.d.). Indeed, marketisation studies comes close to inverting the new economic sociology's position that the economy is embedded within the social (Granovetter 1985; Çalışkan & Callon 2009; Krippner 2001) by arguing that economising arrangements (and especially markets) contribute to what Callon (2007a) calls the 'proliferation' of the more-than-human sociality described by ANT and related theoretical movements through inventing new agencies, objects, and collective devices (Berndt & Boeckler 2009; Callon 1998b; Callon et al. 2009). Marketisation studies would, then, seem to be a body of thought which attends carefully to how the qualities, textures, and capabilities of the nonhumans caught up in market devices come to matter, for it positions them as crucial participants not only in the valuation of goods but also in the fabrication of values and even of the social itself.

After ANT: Performativity and multiplicity

Marketisation studies' appropriation of the insights of science studies has, however, had certain troubling consequences. For the commitment of its proponents to studying the performance of markets which conform to the ideals of neoclassical economic theory (Berndt & Boeckler 2009; Garcia-Parpet 2007; MacKenzie 2009) has often led them to conclude that:

"the "scientists" whom science studies should be "following around" are the certified economists [...] Professions that do openly profess to construct economic life [...] would appear not to be suitable targets for this activity, thus they are treated as secondary" (Mirowski & Nik-Khah 2007: 200).

However, following the activities of professional economists often predisposes marketisation studies to produce narratives in which market devices are designed according to the tenets of a particular economic theory, and subsequently serve to instantiate the modes of qualification and valuation predicted within this theory within the world at large (Hébert 2014). In such cases, which Kjellberg & Helgesson (2006: 845) term 'Austinian performativity':

“the very use of a certain theory so profoundly affects the workings of the market that the theory becomes inseparable from the subject matter it once was devised to describe.”

Within such accounts, market devices certainly still “articulate actions; they act or they make others act” (Muniesa et al. 2007: 2). However, their interventions and performances appear to be animated by – and sometimes even to become a mere “static crystallization” (Appadurai 2011: 536) of – more fundamental theories or ideals. Such an approach therefore arguably carries two risks. First, that of basing assertions about economic life in general upon highly unusual situations in which economic theories assume an extreme degree of potency (Kjellberg & Helgesson 2006; Slater 2002). And second, that of producing accounts in which the practices and material arrangements which compose markets, and make up their constituents, become mere expressions of some other moving power. Such market assemblages might be animated by competing economic theories instead of social or political ‘values,’ but the materials enrolled within such devices would nevertheless seemingly cease to make much difference on their own account to the way that the action unfolds (Hébert 2014). Indeed, in simply transporting or instantiating the powers of economic theories without transformation, they would cease – by the reckoning of ANT – to qualify as agencies at all (Latour 2005; Mol 2010).

Neutralising the agencies of nonhuman materials in this fashion would seemingly be incompatible with ANT’s, and its cognate approaches,’ distinctively materialist orientation (Latour 1999b; 2005; Whatmore 2002). Yet in other respects these concerns over marketisation studies closely resemble the criticisms levelled at early, or ‘classical,’ works of ANT which – it has sometimes been alleged – simply describe, and thus perform anew, the reorganisation of reality to secure conformity with a single dominant logic or rationality (Barry 2013b; Brown & Capdevila 1999; Faier 2011; Murdoch 2006). Critics have argued that the overly-smooth enrolment and subsumption of persons, things, and processes as network components or market devices which lies at the end-point of such accounts leaves little room for alternative modes of ordering (Anderson & Harrison 2010; Morgan et al. 2006). This

squeezing-out of contrasting logics and their networks appears, for instance, in Çalışkan & Callon's (2010: 13) argument that within markets:

"Inequalities derive from the unequal power of calculating agencies that loop back to reinforce themselves. Due to these asymmetries, the most powerful agencies are able to impose their valuations on others and consequently to impact strongly on the distribution of value [...] Some agencies lack such equipment and rapidly sink into exclusion or cease to exist."

When such outcomes are taken as the ideal-type of network-building, ANT's efforts to follow and make visible the processes of association through which the powerful acquire their agentic potency often become narratives of "steely accumulation" (Thrift 2008: 110). In such accounts, ANT's networks begin to assume a totalising, or even colonising, character (Barry 2013b; Lee & Brown 1994) – indefinitely extending a single organisational logic until it potentially embraces and reconstitutes all that is (Brown & Capdevila 1999; Hetherington & Lee 2000; Murdoch 2006). In this vein, Clark (2011) suggests that ANT's proposition that nonhumans are integral constituents of the social can, if carelessly deployed, imply that all of reality is amenable to enrolment into, and re-formatting by, network-building logics which – even if operationalised in a thoroughly more-than-human fashion – originate from human needs and desires. In this way, such accounts arguably dissolve the disruptive potency of the nonhuman which ANT was originally developed to capture, tilting the analysis towards a celebratory privileging of a (more-than, yet in important respects still fundamentally) human agency's capacities to remake all of reality.

Perhaps, then, examining the 'post-ANT' forms of thought which have emerged out of such conversations (see Law 2002b; Thrift 2008) might suggest alternative ways of understanding processes of marketisation. One promising approach develops from the proposition that:

"things [...] never lend themselves fully to a relation, a network or to an association. [...] an element in relation will be the subject of and subject to many other relations" (Hinchliffe 2010: 317).

Entities may therefore be embroiled in variegated relations with numerous other agencies which situate them within more than one network, practice, or assemblage (Kjellberg & Helgesson 2006). They may thus simultaneously participate in *multiple* coexisting, and partially interpenetrating, orderings (Law 2004; Murdoch 2006). The choice of the term ‘multiple’ is significant, for while this approach is distinguished by its determination to put more than one network or ordering into play, it does not treat these relational formations – or the realities that they secrete – as necessarily separate or mutually exclusive (Mol & Law 2002; Mol 1999). Instead, different relational collectives may be co-present, and even interpenetrate, by virtue of including and perhaps depending upon some of the same constituents. This does not, however, necessarily make them compatible. Indeed, many modes of relation among them involving varying degrees of conflict or complementarity are possible, and the form that their interaction will take at any given moment is an empirical question (Mol 2002b; 2010). Interdependence and harmonious compatibility are possible, but so are mutual indifference, tension, antagonism, and even outright antipathy (Hadders 2009; Sjögren & Helgesson 2007).

Such questions of multiplicity have been discussed within marketisation studies for some time. Kjellberg & Helgesson (2006: 849), for instance, propose that there are:

“three strong reasons to entertain the assumption that market practice is characterized by multiplicity. First, individual market actors do not necessarily act in accordance with a single market perspective, but may instead engage in diverging market practices [...] Second, market practice brings together many such actors [...] Third, many market actors engage in more or less overt market-making activities, all of which affect the market to some extent.”

In short, different participants in processes of marketisation bring with them their own ways of conceptualising and enacting the preparation of economising agencies, the organisation and arrangement of exchange, and the qualification and valuation of goods. Moreover – in an insight indebted to conventions theory (Kjellberg & Helgesson 2010; Heuts & Mol 2013) – if agencies, qualities, values, and markets emerge through practices of *agencement*, qualification, valuation, and marketisation, then different ways of performing

these activities will precipitate contrasting market arrangements whose constituents are endowed with differing capacities, qualities, and values (Hinchliffe et al. 2007; Stark 2009). An attention to multiplicity thus suggests that differences among varying ways of performing marketisation may hold far-reaching implications for those participating in the markets in question, and for those impacted by their operation. Contrasting practices may define, classify, value, and price goods differently, alter the capabilities of market actors, or render particular modes of transaction and exchange possible or impossible (Sjögren & Helgesson 2007). For instance, Stark (2009) observes that Wall Street arbitrageurs working at the different ‘desks’ within a trading room produce strikingly divergent valuations of securitised assets depending on which ‘principles of equivalence’ and financial instruments they use in qualifying them – whether, for instance, a security is qualified as a merger target or an opportunity to convert stocks into bonds.

As such, different ways of performing marketisation may make a difference. They may affect what goods, or market agencies, or exchange relationships are – and what they can do. And while this process may enable some new entities and associations to come into existence, it may also make it impossible for others to emerge or persist (Callon 1991; 2007a; Hinchliffe et al. 2007). This line of thought might be expected to imbue the materials imbricated within market devices – which are now caught up in the enactment not just of goods, markets, and calculative agencies but of values, entities, and relationships – with quite prodigious powers. For it depicts them as participants in the making and unmaking of social collectives, and by extension even of the realities inhabited by market actors (Clark 2011; Latour 2004a; Mol 1999; 2002b; Whatmore 2013). Yet within marketisation studies the focus has remained squarely on “the issue of performativity in the presence of multiple theories” (Kjellberg & Helgesson 2006: 840), implying once again that material arrangements merely serve to instantiate the differences between contrasting economic theories which are ultimately responsible for generating divergent (more-than) economic realities (see also Kjellberg & Helgesson 2010; Sjögren & Helgesson 2007; Stark 2009).

The apparent quiescence of the materials implicated in market devices becomes especially puzzling in the context of marketisation studies' emerging engagement with questions of multiplicity. For as Hinchliffe (2010: 317) notes, if network constituents are subject to the demands of more than one relational formation then it is probable that sooner or later agencies enrolled within one or more *other* networks will perturb their identities and behaviour in important ways:

“making it inevitable that they will go awry, or do things that are not quite expected of them. [...] The multiple is already indeterminate by virtue of its being made up of things that are making other things”.

Moreover, this going awry is likely to alter the character and function of the wider arrangement in which they participate, thus disturbing and reordering the agencies and realities which they help to enact. This implies that materials may, by virtue of their imbrication within multiple constellations of (more-than) economic relations, become capable of making unexpected and unintended differences to the arrangements and logics of market exchange. Such is seemingly the substance of Hébert's (2014: 22-23) recent observation that:

“Insofar as market models are devices with material form, they too carry with them a variety of sensuous entailments, including those that speak to the contexts of their creation. [...] This explains how the very market devices that facilitate and shape economic transformation simultaneously introduce elements of uncertainty and avenues for failure. As market devices move across varied terrain, the properties that are brought together in their creation do not always mesh felicitously with the arrangements they encounter.”

This intuition that the stuff of market devices might acquire a disruptive potency by virtue of its origins within, and continuing imbrication among, relations with agencies and networks external (and perhaps indifferent or hostile) to economic orderings and rationalities appears, thus far, to have attracted little attention within marketisation studies. It is, however, taken up enthusiastically by a growing anthropological literature which examines how materials and labour originating within variegated more-than-human (and more-than-economic) collectives across the globe become assimilated into spaces of

capitalist calculation, circulation, and exchange as valued assets, or ‘inventory’ (Faier 2011). This approach suggests that foregrounding such activities casts the development and functioning of capitalist markets as depending on their capacity to incorporate materials and labour generated by and enmeshed in all manner of over-socialised, non-capitalist entanglements (Mitchell 2002; Tsing 2012b). These scholars argue specifically that contemporary capitalist enterprises can only operate profitably within highly competitive global supply chains and markets through articulating themselves with non-capitalist orderings of practice and value, and with the often-strange realities which these precipitate (Freidberg 2013; Tsing 2005; 2009a; 2012a). Thus, for Tsing (2013: 38):

“Capitalism requires economic heterogeneity [...] Through incorporating non-capitalist social relations, capitalism achieves its creative strength as a system. Such incorporation, however, is not something finished and under control [...] rather, it is an everyday problem.”

This literature therefore rejects orthodox political economy’s assumption that capitalism is unified by a single systemic logic of value generation and instead studies processes in which surplus value is obtained through translations between heterogeneous modes and logics of valuation (Tsing 2009b). Interestingly, the (more-than) economic agencies which populate such accounts tend to deal in, and with, comestible goods whose constituent materials grow within complex biophysical assemblages and ecologies (Hébert 2010; 2014; Richardson-Ngwenya 2012; Tsing 2011). They thus trade in artefacts whose qualities are affected and transformed by encounters among nonhuman entities and more-than-human assemblages which frequently have little to do with capitalist economic imperatives or market transactions, and which may even be entirely indifferent to human designs (Tsing 2013). This can lend such materials a propensity to overflow market formatting and behave in unexpected ways (Çalışkan & Callon 2010; Callon 2007a), so that:

“nonhumans introduce uncertainties into human plans for [...] exchange, enabling the inclusion of some people and places while excluding others” (Faier 2011: 1080).

This body of work therefore foregrounds situations in which the qualities and performances of the nonhuman agencies and materials mobilised within economic arrangements may make a difference to the outcome of production, qualification, valuation, and exchange processes. This emphasis upon material unruliness and unpredictability is reminiscent of agro-food geographies' long-standing concerns with the obstinate tendency of foodstuffs and agricultural environments to resist and overflow capitalist economic ordering (Bakker & Bridge 2006; Goodman et al. 1987; Mann & Dickinson 1978; Page 1996). However, this approach differs from conventional political-economic analysis in two crucial respects. First, it refrains from approaching nonhuman entities' resistance to enrolment into, and sometimes disruptive conduct within, economic arrangements through a binary opposition between 'nature' and 'capitalism.' Second, its empirical cases have hitherto tended to focus upon extractive forms of agro-food provisioning such as fishing (Hébert 2014) and mushroom gathering (Faier 2011; Tsing 2009a). Within these very particular activities, materials undergo qualification and valuation – and thus enter into economic visibility and relevance – whilst also being disentangled from the more-than-human environments in and from which they grew and becoming incorporated into more straightforwardly economic spaces and logics (Tsing 2013). As such, despite this literature's sensitivity to encounters within which the more-than-human activities and performances embodied in the qualities of agro-food stuffs may animate, articulate with, and affect processes of valuation and exchange, it is perhaps less attentive to production practices which precede the moment of extraction and exchange.

Conclusion: Methodological reflexes

What sensitivities and 'methodological reflexes' (Mol 2010) might a study of how Australian grape and wine producers pursue quality, and of what may be at stake in their efforts to do so, borrow from the theoretical debates reviewed above? It is perhaps possible to isolate several insights which might help to orientate this thesis' empirical explorations of

these issues – and to situate the next chapter’s methodological reflections. The performative accounts of ontology and of economic processes advanced within ANT and marketisation studies highlight that in order to understand why quality and value appear in particular forms and distributions it will be necessary to engage with the techniques and practices through which they are assessed and enacted. They thus reaffirm that it will – as argued in chapter one – be crucial to attend empirically to qualification and valuation practices. Meanwhile, cultural economy approaches – most notably conventions theory – suggest that if researchers are to understand a term as complex, fluid, and polysemous as ‘quality’ then they must avoid reducing operations of qualification and valuation to expressions of a single overcoding economic logic. Instead, they should explore the varied actors, concerns, interests, and logics of (e)valuation involved both in defining what counts as evidence of quality or worth and in assessing whether goods or actions possess it – and should especially investigate differences, disputes, and negotiations between modes of qualification. Emerging studies of ‘supply chain capitalism’ take this point further by arguing that the making and assessment of economic value forges articulations between capitalist economic logics and non-capitalist social and ecological relations. They thus suggest that researchers interested in the organisations of the valuable which emerge from the circulation of goods would do well to focus their attention on sites and practices in which materials and labour hitherto enmeshed in enormously heterogeneous ecologies and cultures become incorporated into capitalist markets. Foregrounding the contextual particularity of these processes, Tsing (2009a: 349) argues that:

“supply chain capitalism calls out for ethnography. Its principles of niche heterogeneity require attention to economic and ecological specificity and the cultural practices that produce this specificity.”

I am, as chapter three indicates, sympathetic to Tsing’s argument that ethnographic research can help researchers to attend to the specificity and heterogeneity of (more-than) capitalist economic processes. However, I would also suggest that it is important for ethnographers interested in how quality comes about, and in exploring the (more-than)

economic formations which condense around it, not to discard political economy's insight that the processes through which economic value is constituted are not confined to a discrete space or moment of exchange. Agrarian political economists' meticulous accounts of agro-food production's interweaving of the making and appropriation of value with the ordering of social life suggest that it may still be worth attending ethnographically to the sites and practices within which materials are assembled transformed, refined, blended, and packaged into marketable goods. But how might a researcher go about studying what I termed quality-in-the-making in chapter one, while also mobilising the performative accounts of qualification and valuation – and the concern with multiplicity – introduced by conventions theory, marketisation studies, and their successor approaches? I outline my response to this problem in the following chapter.

Chapter 3

Methodology: Ethnography and experiment

Introduction: Do you want to talk to me about your hypothesis?

January 25th, 2011.

Madeleine: "Do you want to just talk to me about your broad hypothesis that you're writing about in your thesis?"

JB: "There's, to be honest it's not so much a hypothesis-led project. I'm actually an ethnographer, so I work by going out, basically working alongside the people I'm studying. Seeing exactly what they do in practice, hopefully being surprised by that. And with any luck, going back with, actually, a different set of questions and a different set of findings than I would have originally set out with. Which for me seems, to me seems like quite a sensible way to work, seeing as I don't have a wine industry background myself."

Madeleine: "Sorry, I'm just Googling ethnography... scientific research strategy, used in the field of social science it says there."

JB: "Um, that's correct."

Madeleine: "Through participant observation, interviews and questionnaires?"

JB: "Yeah – I mean, I'm going to be doing sort of a certain amount of observation work. Obviously supplementing that with interviews, like this one. And as I say, hopefully find out a bit more about what people actually *do* on the ground. Working to, sort of, integrate that into the theoretical thinking I'd be doing beforehand. And hopefully come up with something different, rather than testing a hypothesis saying, 'Is it this way, or is it... not?' And actually expecting to find something different from the start, and hopefully being a bit surprised by that. And finding something interesting."

Madeleine: "Look, I guess I'm just trying to find something concrete that I can help you with at the moment."

JB: "Sure, well if I-"

Madeleine: "Do you have specific questions to ask me?"

As explanations of research methodologies go, the above exchange was distinctly unsuccessful. It does not seem to have convinced Madeleine, a marketing manager employed by one of The Company's direct competitors, that the project to which she is being asked to contribute has a clear goal. Or indeed that the project's aims – whatever these might be – are being pursued through techniques and practices appropriate to the task of assembling and analysing the materials that are required. Worse, this botched introduction appears to have set the tone for the remainder of the interview. Although Madeleine was polite enough over the following hour or so, we seemed to spend most of the ensuing discussion talking past one another and I eventually left with the distinct impression that my ham-fisted explanation of my research aims and methods had cost me what might otherwise have been an important research contact. Perhaps such encounters might have been easier and more productive if I found another way of accounting for myself, or even presented a hypothesis and explained how I intended to test its predictions in the manner that Madeleine seems to have expected. Nevertheless, in this chapter I intend to stick to the methodological account that I haltingly outlined to Madeleine, and to argue that the research presented in this thesis does not make its contribution through answering preconceived questions or testing the accuracy of hypothetical statements. Instead, the productivity of the exercise lies in its generation of surprising encounters and events which provoke questions that could not previously have been articulated.

I intend to persevere in this because the methodological approach which I tentatively outlined to Madeleine emerges directly from the performative accounts of the enactment of objects, agencies, social arrangements, and even realities in practice (Hadders 2009; Hinchliffe 2010; Law 2011; Mol 1999) – and more specifically in market practices (Çalışkan & Callon 2010; Callon 1998b; 2007b; Kjellberg & Helgesson 2006; 2010; Mitchell 2008) – introduced in chapter two. For accepting the proposition that realities are not simply given in a natural order but have to be enacted implies that the realities which appear in the texts produced during social science research do not precede the doing of that research

(Greenhough 2010; Latour 1999b; Mol 2002b). Just like any other practices, research methods – including those of the social sciences – do not just discover pre-existing realities. Instead, they perform realities which are partially *new* (Carolan 2013; Law 2004; 2009; Law & Urry 2004).

This line of thought poses knotty epistemological problems for methodological approaches which prescribe the testing of hypotheses. In such approaches the research process centres on putting to the test a statement's ability to explain and predict the behaviour of a reality which is both anterior to and largely independent of the things that humans say about (and do to or with) it (Gad 2013; Law 2004). This epistemology makes reality's autonomy from the researcher's discourse and practices the final measure and guarantee of the veracity of their claims about it. By this logic, if researchers intervene in, or help to perform, the realities under investigation by influencing or affecting that which they study then their findings will cease to refer faithfully to reality. If reality is to speak, the researcher must remain silent and passive (Despret 2004; Haraway 1997; Latour 1997a; 1999b; 2004b; Stengers 1997). So I cannot talk to Madeleine (or to readers) about my hypothesis, because if realities have to be enacted then the metaphysical foundations which undergird hypothetico-deductive methodologies disintegrate (Stengers 2010).

Inventive Methodologies

If taking realities to be performed in practice is incompatible with ambitions to uncover knowledge that is true by virtue of its representational fidelity to an autonomous reality that is both prior to and unaffected by enquiry, then just what *can* empirical research do? How might it make a difference? More specifically, how might a researcher go about developing an appreciation of the difference that the pursuit of quality makes within today's Australian wine industry, or of how the qualities of materials and the activities of nonhumans might come to matter within processes of qualification and valuation? And what might such an exercise accomplish? These are the questions which this chapter seeks to address. This

will, however, only become possible once I have explained how I learned to be affected by the agencies and materials involved in assessing and enacting the quality and value of wine, and to translate their performances into text.

My explanation begins from science studies scholars' descriptions of laboratory experiments as practices which assemble "diverse bodies, tools, texts, spaces, and nonhuman materials" (Kullman 2013: 882) – and, one might add, human bodily skills and knowledges – into novel combinations (Despret 2013b; Hustak & Myers 2012; Myers 2008; Pickering 1995). Such accounts argue that because the identities and characteristics of entities are defined by their capacities to affect and be affected, and therefore constituted through their relations to one another, the novel assemblages convened through experimental practices do not produce representations of a pre-existing reality (Law 2004). Instead, they confer upon their participants new capacities to make a difference to one another (Despret 2004), and thus enable the experimental apparatus' constituents to *make one another different(ly)* (Stengers 1997; Whatmore 2003). Experiments thus emerge as engines for generating beings and realities which did not previously exist in any perceptible form (Latour 1988; 1999b; Mann et al. 2011), and whose appearance provokes experimenters to formulate previously-unthinkable questions (Stengers 2010). Rheinberger (1998: 288) therefore declares that:

"I consider an experimental system to be a unit of research, designed to give answers to questions we are not yet able to ask clearly. [...] It is a device that not only generates answers; at the same time, and as a prerequisite, it shapes the questions to be answered. An experimental system is a device to materialize questions."

One might qualify the methodology that I described to Madeleine as being experimental in this very specific sense because it aimed to open up unforeseen avenues of enquiry by generating questions that I would have been incapable of asking before engaging in field research (Fischer 2007; Fortun 2012). But more than just the precipitation of surprise and originality is at stake in this experimental approach. The main attraction of an experimental orientation is that such research may (if successful) beget questions, propositions, and modes of study which are not just new but better articulated to the

characteristics, abilities, behaviour, and concerns of the entities, agencies, and processes addressed through the research process. Articulation denotes a capacity to register, appreciate, respond thoughtfully to, and translate (perhaps through verbalisation) another's interests, qualities, and behaviour (Latour 1999b; 2004a; Law & Mol 2008). An articulate proposition or researcher is, then, sufficiently sensitive to the rich and variegated differentiations which texture the world to be impressed, moved, and affected by the enactments and overtures to relation which those who they study offer when they are excited in the course of an experimental encounter (Despret 2004; Hendriks 2012). An articulate researcher is a researcher who allows others to act upon them, and can thus be moved to act – and to think, speak, write, and gesture – differently by others (Hustak & Myers 2012; Mason & Hope 2014). An articulate account, meanwhile, translates into text the nuances and variety of its subjects' worlds, identities, activities, and concerns instead of performing reductive generalisations which erase distinctions that matter to those researched (Barry 2001; Latour 2004b; 2005).

Experimental research thus assembles unusual combinations of entities in the hope that they will transform one another in ways which stimulate questions and propositions capable of making space for – and affording analytical purchase upon – entities, problems, and processes which had little or no place in the theories, questions, and practices hitherto available (Fortun 2012; Latour 1999b; Latour 2004b). Experimental practices are therefore those capable of:

“empowering ‘the situation’ to ‘force thought’ in those affected by it and, thereby, [...] open up the possibility of reasoning differently” (Whatmore 2013: 40-41).

Thus, in order for research to ‘perform’ productively some means must be contrived to amplify the capacity of those being studied to grab the researcher's attention, disrupt and disorientate ingrained patterns of thought, and direct enquiry and argument towards that which is distinctive about – and which matters to – them (Despret 2004).

For Stengers (1997: 17), therefore, researchers must avoid “the ever-present risk of “silencing” the very thing one is interrogating” if they are to produce well-fabricated knowledge. ‘Good-quality’ research practices must therefore allow their objects of interest to defy, overflow, and redefine the roles and questions proposed to them (Despret 2004; Greenhough 2010; Latour 1997a; Law 2004; Whatmore 2003). This body of thought poses one overriding methodological question to researchers: how might they develop a mode of research which remains “open-ended enough to generate and register new associations and differences in the world” (Kullman 2013: 882)? Through what contrivances might researchers become articulated with – and be rendered articulate by – those whom they study in ways which enable better-fabricated research questions to emerge? In the next section I will begin to respond to these questions of method.

Ethnography as Experimental System

Abstaining from reducing those interrogated to ‘silence’ requires some work within a piece of research whose interests include exploring how the activities and characteristics of nonhuman materials come to make a difference within qualification and valuation practices. After all, wines, winegrapes, and the many intermediate materials which lie between them do not speak. As such, in order to address the concerns of this research – and to understand and articulate the social and economic relationships forged among grape and wine industry professionals through the production and transaction of these materials – I would have to attend to the practices through which grape growers, winemakers, and wine trade professionals categorised, qualified, and valued grapes and wines. Existing studies of wine producers (Daynes 2013; Demossier 2010; Høyrup & Munk 2005; Saleh 2013; Teil 2010; 2012) suggested that these practices were as likely to operate through tasting, smelling, and touching – modes of sensory engagement which are notoriously resistant to textualisation (Crang 2003; Lorimer 2008; Mann et al. 2011; Stoller 1997; Vannini et al. 2010) – as through linguistically articulable or quantifiable registers and procedures. Eliciting new questions out

of such forms of engagement would surely require ways of researching which were not restricted to addressing those aspects of social life already formatted into speech and text but actively engaged in the creative task of translating “something into words that [...] [previously] did not exist in language” (Hirschauer 2006: 414; Paterson 2009).

Ethnographic approaches offered one such means of registering and translating nonverbal dimensions of winemaking, qualification, and valuation practices (Hendriks 2012; Paterson 2009). Ethnography is “a practice of verbal description” (Ingold 2011: 242) which consists in learning:

“to describe the lives of people other than ourselves, with an accuracy and sensitivity honed by detailed observation and prolonged first-hand experience” (ibid: 229).

Ethnographers have traditionally developed these descriptive competencies through immersing themselves for a period of months or years in the quotidian routines, practices, and relationships of the particular group of people under study (Bernard 2006; Falzon 2009; Nader 2011; Whatmore 2003). In living, insofar as possible, as their participants do, it is argued, ethnographers are offering ‘the field,’ and those encountered there, opportunities to affect, displace, and modify the researcher intellectually, emotionally, and corporeally (Hirschauer 2006). This process thus ‘forces thought’ in ways which gradually enable researchers to adopt (to some extent) and rearticulate ‘indigenous’ ways of knowing, acting, and understanding – perhaps enabling new knowledge and unexpected analytical possibilities to emerge (Amit 2000; Crang & Cook 2007; Herbert 2000). Ethnographic practices can, then, be apprehended as the craft of constructing experimental systems shaped by, and sensitive to, the particular modes of living practised by participants (Barry 2001; Fischer 2007; Fortun 2012) – and, one might add, attuned to the realities which they both inhabit and collectively perform. They thus invite those encountered and enrolled in the research process to become co-fabricators of their research accounts by affecting and articulating the ethnographer (Clifford 2010; Fortun 2010).

Participant observation is usually considered the ethnographer's 'signature method' of effecting this translation from world to text (Amit 2000; Crang & Cook 2007; Herbert 2000). Researchers engaged in participant observation endeavour to accompany research participants through their usual routine of activities – attending closely to their utterances, gestures, and actions and (where possible) partaking of the activities in which those around them are engaged (Bernard 2006; Falzon 2009). Since the practices of those engaged through ethnographic study frequently involve far more than words and images, participant observation is often a thoroughly corporeal business (Ingold 2000; 2011; Mears 2013) in which researchers attempt to adopt their participants' unfamiliar bodily postures, temporal routines, appetites, and modes of sensory perception (Hendriks 2012; Wacquant 2004; 2011).

The rationale is that by taking on (to some degree) their participants' routines, habits, relations, and location within the world, an ethnographer may become capable of apprehending persons, things, and processes as they do – or at least of achieving some approximation of such a mode of apprehension (Ingold 2000; 2011). In so doing, they may begin to comprehend the sensations, concerns, emotions, and knowledges of those whom they seek to understand, and to gain insight into more-than-linguistic dimensions of social life (Mears 2013; Wikan 1993). Ethnographers thus attempt to learn to be affected and articulated by events and encounters in a manner which bears at least some resemblance to the capacities of their participants, in a process which transforms a researcher's body into a research instrument (Herbert 2000; Longhurst et al. 2008; Muniesa & Trébuchet-Breitwiller 2010; Wacquant 2011). In the process participant observers may become attuned to, and interested in, those entities (both human and nonhuman), processes, qualities, and performances to which the people being studied are sensitive (Hendriks 2012) – enabling their modes of questioning and enquiry to become better articulated to the actors to whom they are addressed (Latour 2004a).

However, because participant observation's character and content is necessarily contingent upon the practices of those being studied, it is difficult to offer general precepts for ethnographic research or to explain in abstract terms precisely what an ethnographer must *do* in order to adopt their participants' ways of life (Barry 2001; Bernard 2006; Ingold 2011; Nader 2011). The coming section therefore briefly recounts my activities and movements during nine months of residence in South Australia as a means of partially re-tracing the processes through which I sought to immerse myself in, and to learn to be affected by, the worlds of my participants.

Fieldwork: Places and practices

I began investigating the world of the wine trade in the UK during August and September 2010 by interviewing professional wine educators and wine buyers working for British retailers. These interviews opened up many fascinating lines of enquiry relating to the operation of the wine market and these commercial experts' relationships with both their suppliers and wine consumers. However, concerns over commercial confidentiality made observing the practices through which they assessed the quality and value of wines a dauntingly remote possibility. I therefore sought to position myself in a location where wine producers and trade professionals were actively engaged in assessing and pricing materials, and relocated to Adelaide – the state capital of South Australia – in October 2010. Building on existing contacts among wine producers in Coonawarra, I secured a position as a steward at the Limestone Coast regional wine show in late October 2010. This event brought me into contact with a number of local wine producers, several wine writers, and a vineyard manager employed by the wine producer referred to in this thesis as 'The Company.' This contact proved willing not only to be interviewed but also to allow me to observe operations in his vineyard and to introduce me to viticultural and winemaking staff based at his employer's headquarters in the Barossa Valley.

I soon succeeded in securing interviews with a Company winemaker and a grower relations manager – both of whom appeared willing to allow me to work shadow them, and their colleagues, during the grape harvest in early 2011. Meanwhile, an academic colleague at the University of South Australia introduced me to several members of the Clare Valley winemaking community. Realising that my connections to wine producers in the Clare Valley, along with this region's relative proximity to The Company's Barossa Valley headquarters, were likely to make it a highly productive 'field site', I moved to the Clare Valley in December 2010 and embarked on a programme of interviews with local grape growers and winery proprietors. I also began attending local grape growers' association and vine improvement society meetings, along with social events organised by the Clare Valley Winemakers' Association. At a mildew control workshop held in the Clare Valley in February 2011, I encountered several prominent members of wine industry organisations in the neighbouring Riverland region. I was subsequently invited to attend several days of events designed to showcase to wine industry professionals the Riverland's efforts to secure a new reputation for quality wine production through the cultivation of 'alternative' grape vine varieties, during which I was introduced to a number of local viticulturists and grape growers. Although the onset of the grape harvest prevented me from returning to the Riverland for several months, I would visit for a further several days in May 2011 to conduct further interviews with local grape growers and with employees of several Riverland wineries.

Meanwhile, two small wine companies based in the Clare Valley – pseudonymised here as Bartoli Wines and Cridland Estates – had agreed to allow me to assist them, when possible, with the labour-intensive process of processing grapes and fermenting them into wine during the impending grape harvest. I was to be given a role similar to that of the numerous seasonal workers (most of them young and many of them foreign nationals), or 'vintage casuals,' hired by local wineries during the grape harvest, although my remuneration would come in the form of the opportunity to observe their operations and practices rather than money. Due to the late onset of the 2011 vintage, I was unable to begin undertaking this

mode of engagement in earnest until March 2011. However, during March, April, and early May 2011, most of my days were spent helping to perform the mundane work that makes a winery run – for instance cleaning fermenters, moving equipment, and washing down floors – and taking notes whenever possible. This participation in the rhythms and routines of winery work embroiled me in both the messy material transformations through which grapes become wine and the circulation of conversation among employees. I took part in discussions about the current vintage of wines and recent events in the industry, exchanges of jokes and gossip, reflections on the past, and speculation about the future. I was also sometimes invited to social events such as meals at my participants'/colleagues' houses or local pubs following the end of the working day and barbecues at the winery.

Participating in the life of these wineries also opened up opportunities to immerse myself in other activities and sites. The winemakers with whom I worked, mindful of my research interests, often invited me to accompany them on excursions outside the winery – for instance to assess the ripeness and quality of grapes in the vineyard or to test juice samples in the laboratory – during which I was sometimes introduced to new contacts. For instance, I struck up an acquaintance with some of their grape suppliers which led to an opportunity to join a picking gang for several days, and – during the final days before my departure from Australia in June 2011 – to participate in winter vine pruning. I also encountered the manager of the local bottling plant in this manner, and as a result I was invited to observe the plant's operations for three days in May 2011.

I also conducted further interviews with Company employees during early 2011, and I returned to The Company's vineyards in the Limestone Coast during January and February 2011 to observe their preparations for the grape harvest (as detailed in chapter four). When the grape harvest began in earnest during March 2011, I was also invited to observe winemakers assessing the ripeness and quality of grapes (see chapters four and five), and to make repeated visits to The Company's main winery in the Barossa Valley to observe the

processing of grapes into wine. My relationship with The Company was, however, somewhat different from those with Bartoli Wines and Cridland Estates. My visits to their winery, offices, and vineyards had to be formally requested and scheduled in advance, while due to health and safety regulations I was restricted to work-shadowing employees instead of participating directly in the work myself. My interactions with Company employees also took place exclusively during work hours, in contrast to the more informal relationships that I established with the Bartoli Wines and Cridland Estates teams. My depth and breadth of access to The Company's operations was therefore in many respects more limited than that which I achieved at other companies – especially in terms of the duration of my time on site – although my relationship with The Company nevertheless became far closer than I would initially have anticipated.

As such, I adopted a mode of ethnographic research which involved alternating between different tasks and participants, regularly accessing different organisations, and sometimes travelling between different wine regions. The research on which this thesis is based therefore embraces numerous different organisations and 'field sites,' and as a result the preceding paragraphs' attempts to summarise my movements and activities may be somewhat confusing. The following sections therefore experiment with other ways of ordering the constituents of my research, in order to disentangle some places, moments, and entities and aggregate others into more coherent cases or sites. This move, although necessarily artificial, will help me to identify and delimit locations and encounters which took on significance and interest within my field research – and thus to elucidate and elaborate to readers both the properties which make each case or place significant and the theoretical and methodological rationale for their selection (Candea 2009; Englund & Yarrow 2013; Strathern 2004).

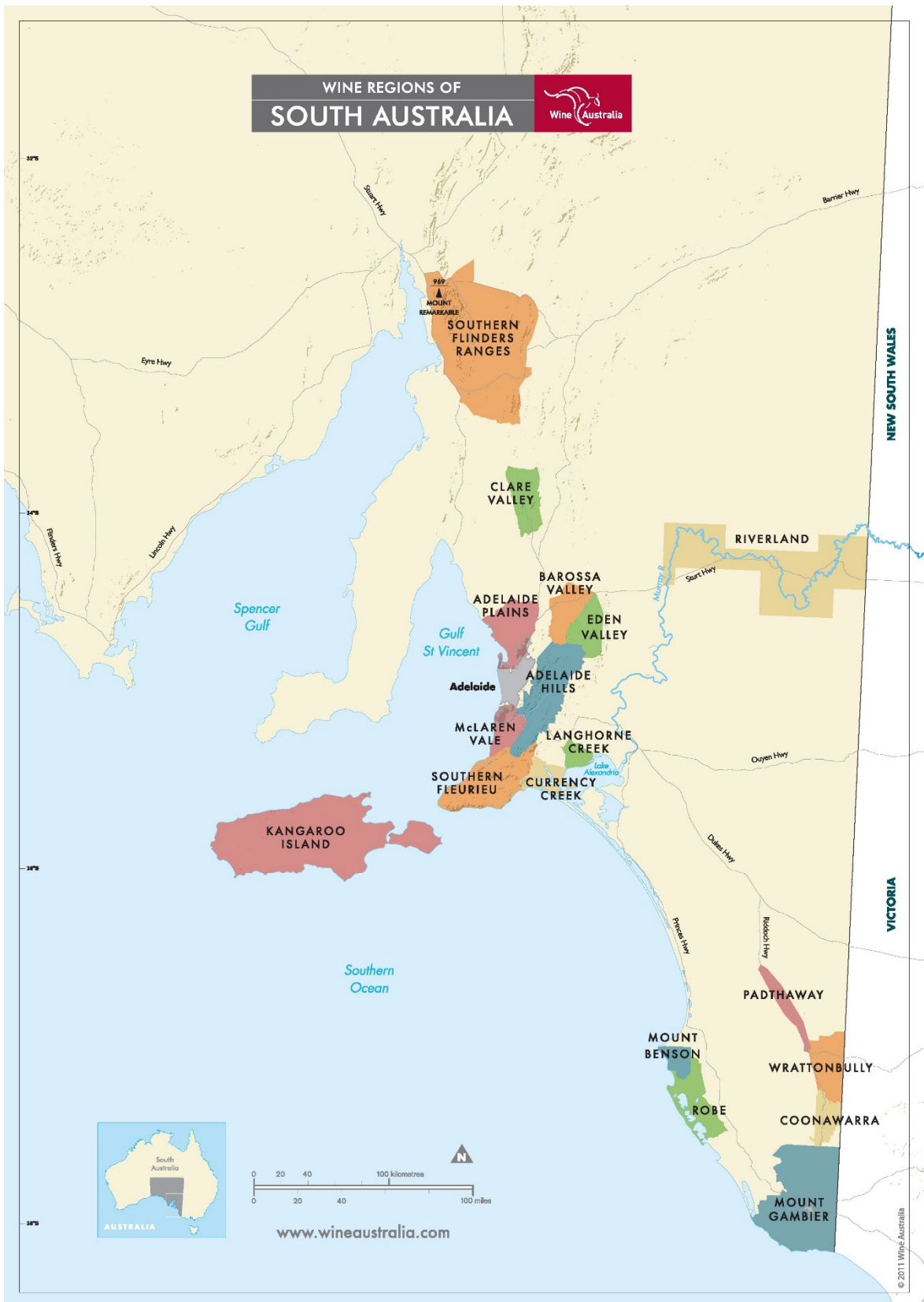


Figure 8: Map of the wine regions of South Australia.⁹

⁹ Source: <http://wgcsa.com.au/wp-content/uploads/Wine-Regions-of-SA.pdf> [Accessed 05/09/14].

Sites and Cases

One possible mode of ordering springs easily – perhaps *too* easily – to hand, for the previous section mentions several different viticultural regions whose names are registered, under the Australian federal government’s Label Integrity Program (LIP) laws, as protected Geographical Indications of origin (GIs) for wine. These regulations specify that if a wine is to be marketed under the name of a registered region of origin then 85% of the material contained in a wine must originate from the vintage, the grape variety (or varieties), and the viticultural region named on its label (Banks & Sharpe 2006; Beeston 2001). The Australian GI system thus differs from many European nations’ *Appellation d’Origine* laws in regulating only the sourcing of grapes, rather than intervening in wine production practices or enshrining hierarchical quality classifications within recognised areas (Moran 1993). However, the Australian government introduced the LIP in legislation 1993 in response to threats by the European Community (EC), during the 1980s and early 1990s, to ban Australian wine from EC wine markets in retaliation for Australian wine producers’ appropriation of designations of geographical origin – such as Burgundy, Claret, and Port – protected under European law (Phillips 2001). The circumstances of the Australian GI system’s creation thus position it within a far older – and some would say thoroughly un-Australian (McIntyre 2011; 2012) – lineage of territorial quality classifications that are often argued to operationalise and instantiate the French concept of *terroir*.

In contemporary usage, the term *terroir* denotes the contention that the qualities which define and distinguish a wine, cuisine, or foodstuff derive from, and should be expressive of, a physical environment and a set of production practices which are unique to and characteristic of its place of origin (Barham 2003; Besky 2013; Demossier 2011; O’Neill & Whatmore 2000; Paxson 2013; Teil 2012; Trubek 2008; Ulin 2013). These entanglements between wine quality and geographical origin were first legally formalised by the French state in response to the widespread marketing of imported or adulterated wines under

names associated with prestigious estates and regions after the near-annihilation of many French (and later Spanish, Portuguese, and Italian) viticultural regions by phylloxera during the late nineteenth and early twentieth centuries (Charters 2006; Gade 2004; Moran 1993; Paul 1996; Tregear et al. 2007). Several iterations of *Appellation d'Origine Contrôlée* (AOC) legislation were enacted between 1905 and 1935 (Fourcade 2012; Garcia-Parpet 2008; Ulin 2007). The AOC laws attempted to address widespread concern over the provenance and quality of wines by transforming the names of protected *appellations* into quality certifications which could only be applied legally to wines which were produced within an *appellation's* boundaries, conformed to its traditional production practices (as officially defined), and were deemed expressive of its distinctive local character (Barham 2003; Demossier 2011; Ulin 2013). The AOC regulations thus codified the proposition that the quality of wine was contingent upon the distinctive characteristics of its place of origin into a regulatory system in which the authentication of a wine's provenance could serve to guarantee its quality – and therefore its worth (Demossier 2010; Teil 2010; Unwin 1991).

Due to the AOC system's influence upon Australian GI legislation, the demarcation of Australian GIs is informed by a logic of *terroir* which suggests that wines bear distinctive and recognisable qualities because the regions and sites where they were produced evince unique and identifiable geological, cultural, and meso- and microclimatic characteristics (Banks & Overton 2010; Easingwood et al. 2011; Teil 2010), and perhaps even distinctive microbial ecologies (Bokulich et al. 2013; Gilbert et al. 2014; Paxson 2008). The boundaries of Australian wine GIs are therefore supposed – although this supposition's validity is often disputed (Banks & Sharpe 2006; Moran 1993) – to enclose a volume of land whose climatic, geological, and therefore perhaps economic and cultural characteristics are both measurably homogeneous and clearly distinguished from those of adjoining regions (Banks et al. 2007; Halliday 2009). Wine regions therefore surely exemplify traditional descriptions of a 'field site' as a spatially-bounded:

“container of a particular set of social relations, which could be studied and possibly compared with the contents of other containers” (Falzon 2009: 1).

Locating and contrasting distinctive socio-spatial formations in this manner might potentially enable a fertile comparative research strategy (Cook et al. 2009), and so it seems worthwhile to examine the regions in which this research took place. Perhaps, then, it is time to find out a little more about these regional ‘field sites’; to learn what distinguishes each one, how they differ, and how they might relate to one another.

Region	Total Vineyard Area in Ha (2011)	Number of Grape Growers (2011)	Average Area Under vines per Grower (Ha)	Share of SA state vineyard area (%)
Barossa Valley	10,994	599	18.4	14
Clare Valley	5,527	286	19.3	7
Coonawarra	5,713	130	43.9	7
Riverland	20,860	1100	19.0	27
Padthaway	4,050	32	126.6	5
Wrattonbully	2,662	55	48.4	3
Adelaide Hills	3,992	314	12.7	5
Eden Valley	2,231	143	15.6	3
Langhorne Creek	6,073	102	59.5	8
McLaren Vale	7,327	528	13.9	10

The Clare Valley

I resided for six months, and conducted the majority of my participant observation, in the Clare Valley – a rural area where, as of the early 2000s, 25% of the local workforce were employed in agriculture, of whom 32% were involved in grape growing (Gordon 2004). Although viticulture has been practised in the Clare Valley since the 1850s, this relatively isolated region was slow to develop winemaking facilities of any significant scale and the Clare Valley remained somewhat marginal to mainstream developments in the Australian wine industry until after the Second World War. As late as the 1960s, just three wineries – two of them privately-owned and one run by a local grape growers’ cooperative – processed most of the region’s grape crush (Halliday 1985). All three facilities passed out of local ownership during the 1970s, and had been either closed entirely or retired from production

by the mid-2000s as their parent companies centralised their winemaking operations around larger wineries in the nearby Barossa Valley (Beeston 2001).

However, the Clare Valley's relatively cool climate – a consequence of the region's high altitude (Hayman & Thomas 2013; Wine Australia 2008b) – makes it well-suited to high-quality varietal table wine production, with Riesling considered to be the region's signature grape variety (Beeston 2001; Faith 2003; Wine Australia 2008b). As a result numerous new 'boutique' wine producers (see chapter one) were attracted to the area during the 1970s and 1980s (Halliday 1985), some of which have expanded their operations over time. The Clare Valley wine industry has thus developed into a collection of a multitude of small- to medium-sized privately-owned wine companies which typically produce relatively small volumes of higher-priced, premium-quality wines. By 2010 the Clare Valley could claim 282 grape growers and a regional crush of 21,675 tonnes of grapes (Carmalt et al. 2010), while approximately 48 wine producers currently operate in the region (Halliday 2012). As in other regions, many local grape growers struggled to sell their produce at profitable prices during the later 2000s, and a 2011 survey of winegrape purchases compiled by two local wine industry associations suggested that the average price per tonne of Clare Valley grapes had declined by between 25% and 35% (depending on variety) between 2008 and 2010 (CRWGA & CVWI 2011).

The Barossa Valley

By contrast, several wine companies based in the neighbouring Barossa Valley capitalised on their proximity to Adelaide – and thus to ports via which wine could be exported across the British Empire – to rapidly expand their production, and had grown into large-scale commercial concerns by the late nineteenth century (Faith 2003). Barossa Valley-based companies such as Seppelt's, Penfolds, and Yalumba subsequently spearheaded South Australian producers' aggressive expansion into other Australian states following federation in 1901 (see chapter one), during which they rapidly absorbed many of their smaller

competitors both within and beyond South Australia. As a result, the Barossa Valley has become home to one of Australia's most sizable clusters of large-volume winemaking facilities – hosting the corporate headquarters of (and major winemaking facilities belonging to) several of Australia's largest wine companies, as well as numerous small- and medium-scale wineries (Halliday 2009). This concentration of winemaking capacity became even more pronounced after the advent of long-distance refrigerated grape transport, as many large producers sought to reduce costs by centralising winemaking operations in their main Barossa Valley wineries (Beeston 2001), and the Barossa Valley currently hosts around 120 wine producers (Halliday 2012). By 2010, the Barossa Valley had 604 grape growers and a regional grape crush of over 60,000 tonnes, of which an estimated 35,000 tonnes was composed of Shiraz – the grape variety with which the region has been principally associated since its producers began to focus on table wine production during the 1960s (Carmalt et al. 2010; Wine Australia 2008a).

The Limestone Coast

This centralisation process has profoundly affected the Limestone Coast GI zone – a large area of south-eastern South Australia which contains scattered pockets of limestone-based subsoil whose drainage properties are well-suited to viticulture, and which have become the Coonawarra, Padthaway, and Wrattontully wine regions. Viticulture did not reach the remote Limestone Coast until 1890, and wine production remained confined to a handful of small-scale wineries in Coonawarra until the mid-twentieth century (Faith 2003). However, the Limestone Coast's climate – which is substantially cooler and wetter than that of the rest of the state – was considered exceptionally well suited to producing Cabernet Sauvignon and Merlot grapes for the Bordeaux-style table wines which became popular during the 1960s. As a result, large Australian wine companies rapidly acquired much of Coonawarra's viticultural land, and also established large vineyard developments in the areas that would later become Padthaway and Wrattontully, during the late 1960s and 1970s (Beeston 2001). However, the planting of vineyards in these latter regions was rarely



Figure 9: Map of the Limestone Coast GI Zone.¹⁰

¹⁰ Source: http://www.phylloxera.com.au/media/limestone_coast_2011.pdf [Accessed 05/11/2010].

accompanied by the establishment of wineries, and most large producers also mothballed or closed their Coonawarra wineries as they consolidated their winemaking operations in the Barossa Valley and the Riverland during the 1990s and 2000s (Halliday 2009). The Limestone Coast Zone, which as of 2010 had a total grape crush of 116,799 tonnes and 300 grape growers (Carmalt et al. 2010), nevertheless retains a reputation for producing high-quality Cabernet Sauvignon grapes and wines. Approximately 31 predominantly small-scale wine producers continue to operate in Coonawarra, along with four in Padthaway and three in Wrattenbully (Halliday 2012).

The Riverland

My fourth 'site,' The Riverland, is quite economically and climatically different from the three previous regions. It is a hot, semi-arid area in which viticulture only became possible after the establishment of artificial irrigation channels at Renmark in 1888, which enabled cultivators to supply their crops with water abstracted from the nearby River Murray (Faith 2003). Access to abundant irrigation water allowed growers to produce large yields of cheap grapes which, due to the intense heat characteristic of Riverland summers, often achieved extremely high sugar concentrations (resulting in wines with high alcohol concentrations) (Halliday 2009). As a result, many of Australia's emerging multi-state wine companies established vineyards, wineries, and distilleries in the Riverland during the early twentieth century and the area quickly became a major centre of fortified wine production and grape spirit distillation (RWIDC 2005). Several grape growers' cooperatives also emerged during this period in response to the volatility of prices for grapes suitable for spirit production (Haughton & Browett 1995). These organisations launched two distillery and winery facilities which survived until the early 1990s, and the Riverland continues to host Australia's last surviving grape growers' cooperative (Allen 2012; Beeston 2001).

As demand for fortified wines declined after the Second World War, Riverland growers and wine producers found the process of adopting the new grape varieties and

Region	GST (Growing Season Temperature in °C) 1957-2013	MJT (Mean January Temperature in °C) 1957-2013	Mean Annual Rainfall (mm) 1900-2013	Mean Summer Rainfall (mm) 1900-2013
Barossa	18.3	21.5	510	68
Clare Valley	18.5	21.9	633	83
Coonawarra	16.8	19.5	621	80
Riverland (Renmark)	21.2	24.7	255	53
Padthaway	17.6	20.4	522	68
Wrattonbully	17.4	20.2	575	76
Langhorne Creek	18.3	20.8	494	70
McLaren Vale	18.7	21.1	532	62

winemaking techniques which table wine production required especially difficult and costly – and as a result many left the wine industry (Beeston 2001). However, those who successfully made the transition to ‘quality’ grape varieties and wine production practices often reaped significant financial rewards because Riverland growers were able to provide large quantities of cheap grapes which were suitable for use in producing both bulk wines and the mass-market table wine brands which dominated Australian wine exports from the 1980s onwards (Browett 1989; Faith 2003). Vineyard plantings in the Riverland expanded rapidly throughout the 1990s, and by the early twenty-first century the Riverland had over 1300 grape growers (Sheales et al. 2006), produced the largest grape crop by volume of any Australian viticultural region (RWIDC 2005), and boasted five of Australia’s twenty largest wineries (PIRSA 2005).

Grape prices entered another prolonged depression from 2004 onwards as surplus higher-quality material produced in regions with cooler climates often displaced Riverland grapes from wine producers’ supply bases (Hackworth 2011; Moore 2006; SAWIC 2006). This situation was exacerbated by increases in the price of irrigation water – and therefore in Riverland growers’ cost of production (Halliday 2009) – driven by a nine year meteorological drought lasting from 2001 until 2010 (National Climate Centre 2010). Bryant & Garnham (2013) argue that the Australian grape sector’s economic difficulties have disproportionately

affected growers in warm climate regions such as the Riverland, with many resorting to financing their vineyard operations through loans, seeking additional employment in order to subsidise the costs of maintaining their vineyards, and reducing their use of hired labour. Due to its traditional specialisation in growing large yields of grapes which primarily supply low-quality and low-priced wines produced by Australia-wide wine producers, the Riverland wine industry is dominated by a small number of extremely large-volume wineries. Although the region hosted 1145 predominantly small-scale grape growers – and boasted a grape crush of 333,600 tonnes – as of 2010, there are currently only around seven wineries in the Riverland (Halliday 2012).

Regions or companies?

As the previous section's profiles of four varied viticultural regions illustrate, the geography of South Australian wine production is extremely uneven. This observation carries methodological implications, for it suggests that the encounters, experiences, and processes to which I was exposed during fieldwork would differ depending on where I carried it out – and thus that researching in different regions would likely yield different insights.

Nevertheless, this observation may not provide sufficient reason to accept that wine regions are the *most* salient units of similarity and difference around which to organise this thesis, or even my present methodological discussion. Most of my fieldwork took place not in the offices of regional wine industry associations but in vineyards and wineries owned by various wine companies, or by their grape suppliers. Indeed, I accessed two of my regional 'sites' – the Barossa Valley and the Limestone Coast – primarily through the mediation and the facilities of a single wine producer: The Company, an organisation which, as of 2011, sourced grapes from all four of the regions introduced above. It was therefore far from clear that the social relations, material circulations, and economic processes which were of the greatest interest and concern during these encounters *were* in fact contained within the

boundaries of individual GIs, or that comparing the characteristics of and activities performed within different regions would necessarily provide much purchase upon them.

Moreover, the empirical material presented within this thesis is largely derived from time spent at facilities and among personnel associated with two wine companies: Bartoli's and The Company (for reasons of brevity, I have omitted the material relating to my time at Cridland Estates). In many respects, therefore, it might be more accurate to say that this thesis' arguments develop through a comparative ethnography of two wine companies. Perhaps, then, it might be more fruitful to take wine companies as my main units of analysis – as the empirical cases, or field sites, to be compared and contrasted. The following sections therefore introduce the two companies which I take as cases in order to outline what might be at stake in a comparison between them.

The Company

The Company's origins can be traced back to nineteenth century South Australia, but during the decades since the 1970s it has passed through the ownership of several international capital groups during a protracted sequence of mergers and acquisitions. As a result, while The Company crushes well over 100,000 tonnes of grapes per year in its own right – and has become one of Australia's five largest wine producers by volume – it is currently merely one division within a shareholder-owned international beverage conglomerate with a multi-billion dollar annual turnover. While The Company operates vineyards and wineries across all of Australia's major grape-growing states, as of 2011 approximately 85% of its grape supply was sourced under contract from a network of several hundred external grape growers – many of whom also sell grapes to other wine companies. Grapes vinified by The Company are blended into nearly 100 distinct wine products – ranging from inexpensive four-litre cask products to prestigious fine, or 'icon,' wines – which are bottled and marketed under more than a dozen different brands. However, much of this material supplies one of Australia's best known wine brands, which is sold in volumes of

millions of litres and is listed by most British supermarkets. Because most of its wines are produced and sold in extremely large volumes, The Company's customers are predominantly composed of supermarket chains and wholesale wine distributors supplying convenience stores, bars, and restaurants worldwide.

Bartoli Wines

Founded in the Clare Valley during the early 1990s, Bartoli Wines is a family business owned and managed by Sam Bartoli – the original proprietor's son. Despite having slowly expanded its production volume over the intervening years, as of 2011 Bartoli's remained a small-scale wine producer with a crush of just 300 tonnes of grapes per year – all of which are sourced from ten vineyards within the Clare Valley. Bartoli's maintains a permanent winery staff of two (Ken, the winemaker, and Callum, the cellar hand), along with a part time administrator and several part time cellar door servers, while Sam Bartoli largely manages its vineyards himself. Due to its small production volumes, Bartoli's faces too high a production cost per litre to operate profitably within the basic and commercial market segments (see table 1), and their dozen or so wine products are all marketed within the super-premium and ultra-premium segments (at prices of roughly \$20 per bottle or above). The small production volumes and sometimes erratic availability of Bartoli products also makes it difficult for them to access mass-market distribution of the sort enjoyed by The Company, and Bartoli's wines are largely marketed through the winery's cellar door outlet or through local pubs and restaurants.

Organising my account around the wine companies with which I worked would suggest that this thesis deals with two very different 'field sites' which are imbricated within contrasting constellations of material connections and economic exchanges. Indeed, The Company and Bartoli's could easily be cast as representatives of Croser's (2010) two Australian wine industries. Yet while these two cases can be made to contrast dramatically against one another, they may be less disconnected from – and less clearly opposed to – one

another than Croser's binary classification suggests. For instance, in addition to being the proprietor and manager of Bartoli Wines, Sam Bartoli has a commercial interest in a bulk wine brokering business which sources large volumes of wine (largely produced by other wineries) for clients on slim profit margins. During my time at Bartoli's, Sam even purchased a large quantity of Riesling from The Company itself on behalf of a bulk wine client. Indeed, in some very specific respects these two companies even resemble each other. Both, for instance, purchase the majority of their grape supplies from external grape growers and source a relatively small proportion from their own vineyards – unlike Cridland Estates, whose grapes are sourced predominantly from a large vineyard part-owned by the company's proprietor. The terms of comparison might thus look very different if refracted through a slightly different case (Mol 2002a; 2002b).

My concern is not only that the divisions and distinctions between these different organisations may be less clear-cut than they initially appear. Scrutinising the ways in which qualities and relations are enacted in various locations and practices within these companies often suggests that each organisation is itself less singular, coherent, and internally homogeneous than my earlier references to them as contrasting sites or cases might imply. For instance, 'ripe grapes' become quite different things in a Company field laboratory, a Company vineyard manager's office, and in the vineyard as a Company winemaker inspects the crop (see chapter four). Each of the organisations examined within this thesis thus struggles to hold together different bodies of practice, which are often enacting multiple objects and realities within it (Law 2004), meaning that it may sometimes be more relevant, interesting, or productive to make comparisons among different locations and practices *within* a single organisation than to make comparisons *between* organisations (Strathern 2004).

One consequence of this attunement to differences within, as well as between, sites and cases is that although my fieldwork often engaged with relations and processes which

overflowed the boundaries of particular regions and companies, this thesis is not a ‘multi-sited ethnography’ in the conventional sense (Crang & Cook 2007; Hannerz 2003; Marcus 1995). I do not seek to trace out previously hidden or disguised connections among a seemingly-disparate collection of places and organisations in order to reconstruct a wider system or structure (Candea 2009; Falzon 2009; Freidberg 2001). Nor do I strategically shift between the partial viewpoints afforded by various ‘sites’ in an attempt to map out the contours and workings of such a holistic system by ‘triangulating’ the different facets of it which become visible from these multiple vantage points (Cook 2004; Cook et al. 2006). For if even such seemingly coherent cases as companies and regions threaten to dissolve into myriad practices inhabiting and enacting different worlds when subjected to empirical scrutiny, then it seems somewhat unreasonable to expect *different* cases to fit together neatly into a larger system which might lend consistency to a fieldwork strategy (Cook et al. 2009). But if both the comparison of coherent territorial or organisational units and the mapping of trans-local social and economic systems are off the agenda then what can alternating between different locations, cases, and practices accomplish? I will return to this question during the final section of this chapter.

An Apprenticeship

Now that I have described in a little more detail how, and in what settings, I went about engaging with my participants’ practices, it may be possible to explain more clearly how I cultivated capacities to be affected akin to those of my participants. Both as an unpaid ‘vintage casual’ at Bartoli’s and as an observing researcher at The Company, I endeavoured – through adopting my participants’ tasks, working hours, and social habits over a period of months – to engage in the forms of bodily enskilment that Ingold (2000) terms an education of attention. Often this education proceeded through unexpected means. Notably, because my research strategy hinged on observing and participating in wine producers’ and grape growers’ professional practices, occurrences and obstacles which frustrated my participants’

attempts to accomplish their work frequently also impeded my own efforts to 'collect data.' When, for instance, a series of unusual weather events delayed the 2011 grape harvest – and a fungal disease outbreak later precipitated a frenetic rush to complete the picking – I found myself experiencing anxieties which paralleled those of the people around me in peculiar ways. While cellar hands and seasonal labourers nervously counted the work shifts – and thus the pay – that they were losing as crushers and harvesters sat idle, I grew increasingly anxious at the dwindling quantity of precious fieldwork time into which my work as a 'vintage casual' would have to be compressed. As grape growers and winemakers fretted over the possibility that the grape crop might fail to ripen or be spoiled by disease, I worried that a failed harvest would leave me unable to assemble enough 'good quality material' to produce a doctoral thesis. Through such episodes my own setbacks, frustrations, pleasures, and successes often came to mirror those of my participants, in a process which gradually oriented my research interests towards many of their problems, concerns, aspirations, passions, fears, motives, doubts, and obsessions (Wacquant 2004; 2011). As I shared the obstructions, constraints, and annoyances that Mears (2013: 21) terms "life contingencies" with my participants – situations in which things could not be done, people could not be found, grapes simply refused to ripen – the humans and nonhumans whose actions interested, affected, and concerned them often made their presence felt with painful clarity (Freidberg 2001; Latour 2005).

I was, meanwhile, also being taught less arduous ways of attending to numerous subtle sensory clues to the quality and worth of materials during tasting sessions, grape quality assessments, lab tests, and through endless incidental observations made during more mundane tasks. Participants directed me to search for the sharp tang on the tongue which signals the presence of artificial tartaric acid or the tell-tale cracking sound made when dry grape seeds are crushed in the mouth, which signals that a grape is ripe. I gradually began learning to see, taste, smell, and engage in tactile registers with fluids in ways which approximated more closely my informants' modes of perception. My changing modes of

sensory attention thus became crucial ‘research instruments,’ which might be employed to render perceptible, amplify, and rearticulate the forces, sensations, and materials to which my participants were attuned (Herbert 2000; Latour 2004a; Muniesa & Trébuchet-Breitwiler 2010). My work could therefore be positioned within a tradition of ethnographies of, and as, processes of apprenticeship in which the ethnographer studies a form of expertise or specialist practice through undergoing the training processes used to inculcate its skills and beliefs in novice practitioners (Stoller 1997; 2005; Wacquant 2004). In such studies:

“Apprenticeship is [...] the means of acquiring a practical mastery, a visceral knowledge of the universe under scrutiny, a way of elucidating the praxeology of the agents under examination” (Wacquant 2011: 88).

My research practices certainly embraced several aspects of this approach. My dual identities as a student and, later, a vintage casual appeared to encourage some of my participants – who were mainly, like me, Caucasian, Anglophone males – who had once occupied one or both of these positions to interpret my interests and experiences as variations upon those of their own younger selves. I was therefore often treated as an eager apprentice in viticulture, winemaking, or the wine trade, undergoing the mixture of practical and academic training described by Guthey (2008). I was thus considered inexperienced and as yet uninitiated into the wine sector’s industrial culture, but keen to learn and in need of assistance and instruction from older and more knowledgeable industry ‘insiders’ (Mears 2013). Indeed my ability to assume this unthreatening, unimportant, and relatively familiar identity was likely extremely important in facilitating my entry into the working environments of wineries and vineyards – and especially in enabling an entirely unexpected degree of ‘access’ to Company facilities and of engagement with middle-ranking Company managers (Freidberg 2004).

Yet my adoption of, and confinement to, such comparatively junior roles in relation to my participants also shaped my interactions with them – and thus the research process – in consequential ways. First and foremost, it ensured that my apprenticeship in vineyard and

winery life remained distinctly partial. Even at the end of my fieldwork, there were locations that I was not permitted to visit, tastings which I could not attend, people with whom I was not allowed to speak, and tasks that I was unable to perform. For all of my training, I did not undergo all the degrees of professional initiation required to ‘master’ my participants’ professions – an endeavour which would have required years of effort rather than a paltry nine months of fieldwork (Stoller 1989; Wacquant 2004). Engaging in participant observation did not, therefore, enable me to replicate perfectly or to occupy unproblematically the positions, concerns, emotions, or sensoria of those among whom I worked (Hendriks 2012; Paterson 2009). I did not *become* a winemaker, a grape grower, or indeed any other form of wine industry professional.

I do not, therefore, claim to have assumed an unproblematic ‘insider’ position from which I might reproduce my participants’ affective capacities and experiences in an unmediated fashion, or gain an authentic capacity to speak ‘as’ or ‘for’ them. Indeed, achieving such an unproblematic identification arguably remains a somewhat chimerical goal even for researchers who have served the most demanding of apprenticeships (Stoller 2005). This thesis’ contribution does not, therefore, lie in simply representing wine production in Australia in my participants’ own terms. In apprehending and interpreting the realities and narratives encountered ‘in the field,’ and especially in translating them into academic prose, I have necessarily rearticulated them through bodily affordances, concerns, and relationships to some degree alien or irrelevant to my participants. As Law (2004) and Mol (2010) note, translations necessarily transform or betray their referents to some extent. Moreover, borrowing an argument from Strathern (1988; 2004), I would suggest that the productivity of my engagement in participant observation lies precisely in these subtle alterations and displacements, which promise to enable an unusual (and perhaps novel) encounter between the knowledges, preoccupations, and ontologies enacted through grape and wine production and those characteristic of social theory. As I learned to be affected by things, persons, processes, and practices encountered in ‘the field,’ these interlocutors were empowered to

distort and rearticulate the concerns, questions, and knowledges which had initially informed my project. My research, and this thesis, have thus become attempts to compose an experimental system (Fischer 2007; Fortun 2012; Rheinberger 1998) which might draw these different ways of knowing, inhabiting, and enacting realities into a novel relationship through which they might reconfigure one another (Whatmore & Landström 2011). Ethnographic research became a way: “to allow a *concern* and a *case* to mutually shape and reiteratively fine-tune each other” (Mol 2014: 110).

Studying Up

Staging such an experimental encounter may be a more modest goal than fully or authentically representing the experiences and realities of my participants, for it requires only the tentative construction of partial connections rather than a frictionless fusion of sensoria, interests, and perspectives (Haraway 1988; Strathern 2004). Yet this is no guarantee of the endeavour’s success. Indeed, my particular way of researching arguably created some distinct impediments to such an outcome. For my status as both a wine industry novice and a student whose command of social scientific expertise might be open to question, in combination with my being significantly younger than most of my participants, often positioned me as being less knowledgeable than those whom I studied. This research was therefore an exercise in ‘studying up’ (Gusterson 1997; Nader 1972; 2011), in that I was endeavouring to understand and analyse the beliefs and practices of actors possessed of further-reaching powers to act and more credible claims to specialist knowledge of the object of study than I could muster (Latour 2005; Ortner 2010).

Studying up carries great promise as a technique of experimental ethnographic research, for it offers several powerful prophylactics against silencing those to whom the enquiry is addressed (Latour 2005; Latour 1997a; 2000; Thrift 2003). As Cormode & Hughes (1999: 299) note:

“When studying elites, the scholar is a supplicant [...] dependent on the co-operation of a relatively small number of people with specialized knowledge, and not usually a potential emancipator or oppressor.”

Such participants enjoy numerous means of objecting to a researcher’s enquiries, ranging from denial of access to field sites and sources (Edwards 2007), to open disputation (Ortner 2010) and perhaps public denunciation (Gusterson 1997) of their arguments and professional credibility, and even recourse to non-disclosure agreements and legal sanctions (Boyer 2008). The viability of research projects premised on studying up can easily become entirely contingent on the approval of a handful of participants whose capacity to assist or impede the researcher may considerably exceed that of the researcher to help or harm them (Mears 2013). Under such circumstances, researchers typically have little opportunity to coerce those being studied into participating against their will, or into accepting misrepresentation or misinterpretation, for participants have many means of halting insensitive, unwelcome, intrusive, or burdensome research (Abolafia 1998; Crang 2003; Latour 2004c).

Studying up therefore offers participants many opportunities to propose revisions to the researcher’s thought and redirect enquiry towards the things which matter to them – making it more likely that the research will register and translate their interests, sensitivities, performances, and voices (Latour 2005). Yet presenting participants with such means of resisting and subverting one’s research necessarily places the researcher’s ideas and practices at heightened risk of being redefined or demolished (Despret 2004; Greenhough 2010). This condition of being at risk is often celebrated (Kullman 2013; Whatmore 2003; Whatmore & Landström 2011), most notably in Stengers’ (1997) contention that only:

“propositions where the world and the scientists are both at risk [...] are well constructed, that is, reality constructing, reality making” (Latour 1997a: xiv).

Ethnographers engaged in studying up are certainly at risk in this salutary sense. Yet it is precisely the ethnographer’s precarious position in relation to participants during this form of research which introduces a danger very different from the risk of silencing those

subject to the research with which Stengers is concerned. The fear in this case is that ethnographers whose participants' authoritative expertise empowers them to either facilitate and validate or impede and discredit the research will become:

“overly cautious in the interview situation, and timid in what one writes, wanting to please and impress informants” (Ortner 2010: 226).

There is, in short, a danger that studying up will produce research which unquestioningly reproduces participants' self-representations as researchers become 'seduced' by (Osburg 2013; Robben 1996), or 'complicit' in perpetuating (Edwards 2007), powerful participants' own interpretations of their circumstances and actions (Abolafia 1998).

Research which becomes complicit in simply repeating the accounts of those who are already best equipped to realise their performances (Edwards 2007; Ortner 2010) thus runs the rather less welcome risk of relinquishing the reality-proliferating productivity of experimental practices (Kullman 2013; Latour 1988; 1999b; Law 2004; Mann et al. 2011; Stengers 1997; 2010). The risk of studying up is, then, that of producing accounts which do not make it possible to think previously unthinkable thoughts or articulate formerly imperceptible and indescribable realities but instead reiterate established inventories of reality's contents (Gibson-Graham 2008). This outcome is unattractive for two reasons. First, such an exercise would be unproductive; it would tell nobody anything which was not already known, and thus would generate no new possibilities for thought, action, or relation (Abolafia 1998; Latour 2005). Second, if power relations *among research participants* are unequal then reiterating the accounts of authoritative or privileged participants risks reproducing, and re-performing, these inequalities (Edwards 2007; Marcus & Fischer 1986; Nader 1972).

How, then, might one mitigate against the twin risks of silencing one's participants (Despret 2004; Greenhough 2010; Latour 1997a; Law 2004; Stengers 1997) and becoming complicit in their reiteration of taken-for-granted accounts and orderings (Edwards 2007;

Ortner 2010)? How might a researcher engaged in studying up articulate an account which modestly shifts the terms of discussion and thus produces new knowledges which might generate novel possibilities for thought and action? Invoking 'critical distance' to establish a privileged standpoint from which a researcher might see truths to which their participants are blind becomes difficult when one's participants' knowledges are more expert than one's own (Boyer 2008; Latour 2004c; 2005). In the subsequent chapters I will instead shift between a number of the varied locations, organisations, and practices which I encountered through the somewhat peripatetic fieldwork techniques outlined above. This approach mobilises the insight that if realities are done in practice, and if there are different practices, then the realities enacted within them may not always agree with one another (Gibson-Graham 2008; Jensen 2012; Law 2004). They may differ or fail to articulate with each other; their inhabitants may denounce one another, or do things which appear strange when observed from another location (Gad 2013; Law & Mol 2008; Mol 2002b).

Juxtaposing contrasting cases can therefore amplify and intensify differences and similarities among them which might otherwise pass below the threshold of an analyst's or reader's perception (Law & Mol 2008; Mol 2002b). In thus bringing difference and disjunction to notice, staging an encounter between realities-in-the-making may generate tensions and frictions capable of interfering with and unsettling the realities, and the taken-for-granted assumptions, being enacted within each body of practices (Mol & Law 2002; Otto & Willerslev 2013; Stark 2009). My gamble is that this strategy of 'defamiliarisation by juxtaposition' (Marcus & Fischer 1986) might offer a lowly apprentice researcher the purchase that they require to begin questioning common-sense assumptions and orderings.

For:

"That there are tensions [...] implies that as analysts we do not have to spend a lot of effort on taking a critical distance from our materials so as to avoid getting trapped in apparent self-evidences. As different registers of valuing clash, they rob each other of any potential self-evidence. They instantiate each other's criticism" (Heuts & Mol 2013: 129).

Accordingly, the subsequent chapters use the peculiar forms of proximity which can be achieved through textualisation to juxtapose practices which usually remain spatially- and temporally-dispersed against one another, attempting to conduct a:

“reciprocal probing of [...] ethnographic cases, using each as a probe to further stimulate questions about the other” (Marcus & Fischer 1986: 160).

The aim is to draw out junctures at which one repertoire of arguments or practices might call into question another’s claims, assumptions, or ways of doing things, and thus problematise the modes of qualification and valuation which are enacted – and which may appear self-evident and even incontestable – within it (Law & Mol 2008; Morita 2014). Crucially, however, the repertoires in question do not necessarily map onto individual companies, or wine regions, or ‘sites,’ or even human participants. For while the quality and value of wine may be assessed very differently in different institutions and places, and by different people, sometimes they are also enacted in quite varied ways by different occupations and divisions – and in different facilities – within a single company (see chapter four). Or even by the same people and in the same room at different stages of the production process (see chapter six). Chapters four and six therefore visit different locations within The Company to examine contrasting practices of (respectively) reckoning both seasonal time and the ripeness of grapes, and of assessing wine quality through tasting. Chapters five and seven, meanwhile, compare how a particular task – respectively, assessing the quality and value of diseased grapes and entangling a wine’s quality with its provenance – is performed at The Company and at Bartoli’s.

This technique of juxtaposing different ‘indigenous’ accounts and practices in the hope that holding them in tension will generate novel critiques and analyses does have certain limitations. Most notably, it makes it difficult to draw out and render perceptible issues and practices which are not disputed or done differently in my various sites and cases. As a result, such topics as the impact of climate change and the role of migrant labour in grape harvesting and winter vine pruning will not feature prominently in the coming

chapters. This is not because these issues are intrinsically uninteresting. In the former case it reflects a widespread scepticism about climate change among my participants, and in the latter it is because my participants either did not engage migrant labourers to perform the tasks in question or else were reluctant to allow me to observe them. For instance, the only two growers of my acquaintance who used hand picking gangs were able to staff them using local labour – a choice made possible both by their prominence in the Clare Valley viticultural community and the small size of their vineyards.

The payoff of this approach is its capacity, despite its blind spots and elisions, to bring together agencies, arguments, and practices which would usually be dispersed across different facilities, organisations, or professional affinity groups (Law 2004; Mol 2002b) within the single space of this text (Latour 1999b; Massey 2003). In placing these cases alongside one another and comparing them, this thesis repositions them in relation to one another. It invents novel relations of resemblance and contrast, and of alliance and enmity, through which the places, persons, things, and practices thus entangled might work on, debate with, unsettle, and redefine one another in unexpected ways (Law & Mol 2008). I thus attempt to stage an artificial encounter which might both attune readers' attention to the specificities which distinguish each case (Heuts & Mol 2013) and engender new qualities, identities, capabilities in – and new relations among – those cases (Mol 2010).

Conclusions

This thesis stages an ethnographic experiment (Fischer 2007; Fortun 2012) by drawing the sites and practices which it takes as cases into highly constructed and artificial, yet potentially novel and generative, encounters through collapsing the spatial and temporal distances which usually separate them via textualisation (Law & Mol 2008). My hope is that as these cases modify one another – as their characteristics and identities shift and recombine in the process of comparison (Englund & Yarrow 2013) – the terms in which they are discussed and analysed might also be modestly altered, enabling “an extension past one's

initial conceptualization” (Morita 2014: 230). I thus seek to articulate social-theoretical arguments which bear the impression of the passions, economies, materialities, and realities assembled during grape and wine production in South Australia. Arguments which are better attuned to these realities than those with which I began, which make more space for their concerns, and which pose more interesting questions to them (Stengers 1997; Despret 2004).

This move might thus provide purchase upon what is at stake in Australian wine producers’ pursuit of quality – and more specifically in the qualification and valuation practices deployed within the two companies upon which the following empirical chapters centre. For juxtaposing practices usually dispersed across different companies, facilities, regions, or bodies of expertise can highlight contrasts between the realities which they bring into being – between the objects, qualities, values, agencies, and even geographies which are enacted through their performance. By drawing out distinctions between the values – and indeed the economies – which are enacted within these varying practices, I hope to clarify what is at stake in pursuing quality through one set of practices rather than another. I begin this process in the following chapter by examining several different ways of discerning whether grapes are sufficiently ripe to be harvested – teasing out relations and tensions among these techniques in order to explore how they inform the processes through which grapes become suitable or unsuitable for winemaking, and thus valuable or worthless.

Chapter 4

Breakdowns and Botrytis: Valuation and vulnerability at vintage

Early April 2011

Today is an important day. After months of interviews, negotiations, and tentative agreements, The Company's viticulture department has allowed me to accompany Mark (a grower relations manager) and Joe (a winemaker) 'into the field' as they assess the ripeness and quality of grapes at vineyards belonging to some of their external grape suppliers. It has taken a long time and a lot of effort to organise today's appointment, and so I arrive at the South Australian headquarters of The Company's viticulture division in a state of some excitement. But my initial enthusiasm quickly dissipates when, after waiting for a few minutes at reception, I am called into Mark's office to find him holding a spreadsheet with a look of resignation.

Each row on the spreadsheet represents one vineyard block (a discrete management unit of vines whose fruit is grown to supply one particular wine product) which we are supposed to be assessing today in preparation for the harvesting of its grapes. It is a long list – long enough to cover three sheets of A4. Or at least it *was* a long list; most of the entries have been crossed out in yellow highlighter. Mark explains that we won't be visiting the highlighted blocks; his employer has rejected these grapes since he compiled his list yesterday. Only blocks whose grapes are still sufficiently 'clean' for Joe to assess remain un-highlighted, and there are only six un-highlighted rows. By now the end of vintage (the grape harvesting and processing season) is approaching, and I have become familiar both with Mark's terminology and with situations like this one. Viticultural regions across South Eastern Australia have been experiencing extremely heavy rainfall since mid-March.

Occasionally 50 millimetres of rain falls in a single day. And the torrential rains have returned every time that the ground has started to dry out. These are terrible conditions in which to harvest grapes; the rain turns solid ground to mud, meaning that mechanical grape harvesters tend to sink and become stuck if they are driven into a vineyard.

Heavy rainfall and humid conditions are, however, extremely hospitable to a whole host of fungi and especially to *Botrytis cinerea*, a type of green mould better known as the 'noble rot' used in producing certain types of dessert wines. There is, however, nothing 'noble' about the kind of rot that suddenly appeared in vineyards across Australia's eastern states shortly after the rain began. By now I have become familiar with how a 'grey rot' botrytis infection proceeds. First, berries begin turning pink, although this change is only really noticeable in white grapes. Then a few patches of greenish mould appear on the affected grapes, probably a few days after a storm. Over the next two or three days these become balls of green fur covering entire bunches, while the grapes inside shrivel. And the green fur spreads through whole blocks of vines, and often whole vineyards, turning the grapes into mouldy-smelling bags of pulpy mush which disintegrate if you try to pick them – ruining the crop if the grapes aren't picked within those crucial first few days. Which means that grape growers who rely on machine harvesting – and, after four decades of mechanisation, most growers do – and whose vineyards are too muddy to support a grape harvester's weight are often forced to stand by and watch large parts of their crop rot on the vine after a heavy storm. So Mark and I both know what each yellow highlighter mark means: that his employer's technical staff have decided a batch of grapes is too severely damaged by botrytis to be used in making wine. And that a grape grower must be informed that part of their crop has just become worthless, and that they will almost certainly lose a portion of this year's income.

In fact Mark – who looks exhausted – knows this rather too well. He says that this is the most stressful vintage he's experienced in the six years that he has been doing his current



Figure 10: Semillon grapes displaying early (left) and advanced-stage (right) botrytis infections.

job. Because Mark is his employer's main representative to The Company's grape suppliers in the southern viticultural regions of South Australia, and so it's his job to tell grape growers that their crop is diseased. It is Mark's responsibility to explain that they'll have to accept a price penalty, or perhaps that his employer won't be buying their fruit at all. Which makes him very acutely aware of how few of the dozens of blocks shown on that spreadsheet remain clean enough to be worth assessing for purchase. But a brief glance at Mark's spreadsheet also makes something else extremely clear. It illustrates that somehow the activities of tiny fungi have – despite months of meticulous planning and the efforts of dozens of skilled professionals like Mark – thrown The Company into chaos, with catastrophic consequences for many of the people whose livelihoods depend on this year's grape crop.

Introduction: Disruptions and devaluations

Mark's spreadsheet makes valuations, or rather *devaluations*, starkly visible. The highlighter ink marks out blocks whose fruit has become worthless for the purposes of wine production from those whose grapes might still, at least potentially, have value for The Company. Looking at a spreadsheet which has become a sea of yellow lines therefore makes it all too clear that this year the processes which would usually transform the grapes growing in the highlighted vineyard blocks into valuable raw material for winemaking are going badly awry. For fruit which Joe the winemaker was supposed to endow with a product grade and a

price – the key qualifiers which organise the attribution of worth to materials within The Company – during today’s field assessment (as discussed at length in chapter five) is instead being ejected from The Company’s machinery of qualification in an act of radical devaluation.

Latour (2005) suggests that studying cases of socio-technical breakdown – such as occasions when valorisation turns to devaluation – can provide unique opportunities to learn not just about how and why things sometimes fall apart but also about how and why they usually hold together. In particular, it can sensitise researchers to nonhuman entities’ contributions to maintaining the usual ordering of socio-economic life; that is, to ensuring that things turn up in their proper time and place. For while the contributions of nonhumans to social and economic processes may be easily overlooked when they act as they are expected to, they can become painfully apparent when devices fail, materials behave in unexpected ways, or domesticated organisms refuse to collaborate with their human co-workers (Barry 2010; 2013a; Despret 2013a). Disruptions and system failures can thus force thought in novel directions (Whatmore 2013) as previously-unnoticed, and therefore hitherto-unthinkable, material powers and processes erupt into perceptibility and demand to be taken into account (Latour 2004b; 2004c; Virilio 2007). Examining situations, like the 2011 botrytis epidemic, in which market devices malfunction or produce unexpected effects may therefore help scholars to understand how the performative capacities of the materials mobilised within economic arrangements become enabled to affect, underpin, or disrupt commercial processes (Hébert 2014).

Mindful of these arguments, this chapter attempts to gain purchase upon this thesis’ second guiding question – that of how the intervention of unruly more-than-human entities and environments into qualification and valuation processes might trouble extant accounts of economic agency – by investigating how the activities of *Botrytis cinerea* came to make such a costly difference to the worth of grapes. The annual grape harvest is an ideal moment at which to explore how economic processes might be theorised for and within a more-than-

human world, for a host of other agencies, relations, and processes also impinge upon the social and economic lives of many residents of wine-producing regions with particular potency at this time of year. Moreover, it will be my contention that the botrytis epidemic achieved its catastrophic force – and its capacity to intervene into the processes through which grapes are made valuable and valuable grapes are made within The Company – through interfering with these broader more-than-human entanglements. I will therefore begin by introducing some of the processes and practices – and specifically the practices of time-reckoning – through which the qualities of grapes come to matter economically to grape and wine producers as vintage approaches before attempting to analyse how botrytis became capable of wreaking such economic havoc.

Vintage

The activities of nonhuman organisms impinge pervasively on the social and economic lives of many residents of wine-producing regions because viticultural and oenological tasks are ordered into specialist calendars of working seasons (illustrated in Figure 11) corresponding to different stages in grape vines' annual cycles of physiological development (Ulin 1996; 2002). Each working season is characterised by changes both in the pace and content of human labour and in the bodies of vines, so that seasonal change comprises multiple intermingled transformations in interactions between humans and vines. Seasons therefore overlap in gradual, messy transitions or 'liminal periods' (Krause 2013; Olwig 2005). The qualities and market value of developing grapes are scrutinised especially intensely during one such period – namely the transition between the growing season and vintage. Vintage typically arrives somewhere between mid- January and mid-March in Australia's viticultural zones, although this seasonal shift's precise timing depends upon each wine region's local climate and on the year's prevailing weather conditions. As vintage begins, the ripening of grapes precipitates a radical change in the tempo of working and social life for both grape growers and winemakers, whose production of new wine takes

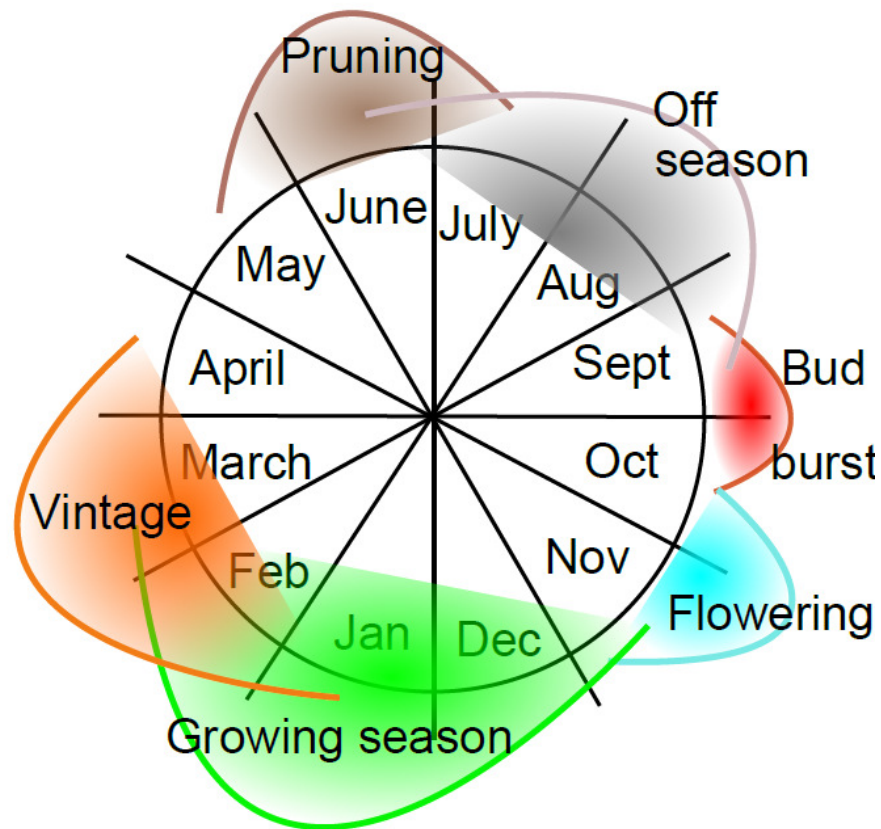


Figure 11: A seasonal calendar of the southern hemisphere viticultural working year.

place alongside the relatively brief annual grape harvest (Ribéreau-Gayon et al. 2006; Unwin 1991).

During the growing season, full-time grape growers and vineyard managers observe a regular routine of leaf thinning and pesticide spraying – tasks usually accommodated comfortably within a working day which begins early in the morning but often ends by mid-afternoon. Winemakers, having usually already matured and bottled most of the previous vintage of wine, often have minimal work commitments and many take long holidays during December and January. But when the grape harvest begins, the ripening of grapes comes to dictate the tempo of their work – and keeping pace with the crop’s development can be gruelling. This task is, however, also crucially important because conveying the crop to the winery in a good enough condition to command an attractive price requires that the harvest

be precisely timed. Grapes cannot be picked until they ripen, but once ripe they must be picked quickly – before bad weather or disease can damage them, or they simply *overripen* – then crushed within a few hours, before they begin decomposing and their taste deteriorates (Ulin 1996).

For grape growers, therefore, an entire year's income often depends upon delivering their crop to the winery ripe and unspoiled. Wine producers, meanwhile, must secure an adequate supply of suitable-quality grapes during the fleeting harvest season if they are to produce a marketable vintage of wine. Thus, during vintage the timing of grape picking and processing affects quality, and grape quality affects valuation and pricing, in ways which make both growers and wine producers acutely aware that their own economic fortunes are bound up closely with changes in the grape crop. The regular working hours of the growing season therefore give way to a frenzied race to pick and process grapes at the precise moment when they attain their optimum ripeness. Winery staff must work until the day's grape intake is safely processed, a task which may require sixteen-hour working days during the busiest stages of vintage. Meanwhile grape growers are obliged, in addition to their regular tasks, to supervise grape picks which – if mechanical harvesters are used – often begin at 1am or 3am so that the fruit will reach the winery by the following morning.

Achieving a successful and profitable harvest therefore demands careful timing (Maclaine Pont 2011). But ensuring that grapes are harvested and processed just when their quality is at its best is rarely easy, and the sheer scale and complexity of The Company's grape sourcing and wine production operations makes it a particularly challenging task for Company employees. Company winemakers and viticultural managers have therefore developed unusually precise and elaborate procedures for coordinating grape harvesting with winery tasks. As such, the case of The Company illustrates particularly explicitly how practices of timing make a difference to the qualities of grapes, and therefore come to affect both their usefulness and value in wine production and the prices paid to their growers. The

following sections will therefore explore how grapes become valuable, and become devalued, through tracing the intricate process of preparing for and managing the grape harvest within The Company's viticultural and winemaking divisions.

Sugary Metabolisms

Mid-February 2011

During the later part of the growing season I spent a day with John, one of The Company's vineyard managers, learning about his preparations for the approaching grape harvest. One of John's, and his workers', main preoccupations during the second half of the growing season is monitoring how ripe, and how close to being ready for harvesting, their grapes are. Covering 550 hectares, the vineyard that John manages is one of the largest that I visited during my time in Australia. It is divided into well over 100 blocks, each of which has its own management plan tailored to its target wine product which guides its pruning programme, its target yield per hectare, the irrigation pattern used, and so forth. All of these variables will affect how fast the berries ripen and at what point they will be considered ripe enough to pick. John has a lot to keep track of.

So twice a week, during the final month or so before each block of grapes ripens, John's staff carry out 'maturity testing' on their grapes. They collect 20 randomly-selected bunches of grapes from each block which appears, based on visual inspection, to be approaching ripeness and, on returning to the vineyard's small field laboratory, crush the grapes and conduct several tests on the juice. They test its sugar content (usually measured in degrees Baume – one degree Baume being roughly sufficient to produce 1% alcohol by volume [or ABV] during fermentation), titratable acidity (a measure of the weight of acid by volume in the juice), and pH (a measure of a solution's effective acidity based on hydrogen ion activity). But of these three measurements, the sugar concentration in Baumes – which



Figure 12: A technician tests the sugar content of freshly-collected juice samples and enters the results into a computer connected to The Company's network.

will determine the resultant wine's alcohol content, influencing its marketability and therefore its value very directly – usually receives the most attention.

These three measurements are so important to Company because all three – and most especially Baume testing – index crucial dimensions of John's fruit's present suitability for winemaking. So this battery of tests is a qualification device (Callon et al. 2002; Musselin & Paradeise 2005; Hébert 2010; Vatin 2013) which distinguishes grapes whose chemical composition qualifies them for immediate use in winemaking from those whose composition currently disqualifies them. Indeed, Maclaine Pont (2011) and Ulin (1996) describe (respectively) Argentinean and French wine producers using sugar concentration tests for precisely this purpose. However, John and his team do not seem, as such accounts imply, to be testing whether or not their grapes are ready for harvesting *right now*. The grapes being tested today will probably not ripen for another month; John can see as much with his own

eyes simply by walking through the vineyard. So when John's staff undertake maturity testing, they are doing something other than simply measuring the grapes' present degree of (un)ripeness. But what might this something be?

Pritchard (1999) reports that the regular maturity testing of grapes became common practice among Australian wine producers during the early 1990s, due to a need for increasingly precise coordination – especially in the timing of grape harvesting – within supply chains organised around the production of 'quality' branded varietal table wines. This observation hints that sugar testing does not simply assess and enact quality, but is also involved in managing time and coordinating productive activity. What might sugar have to do with time? Perhaps more than might be expected for people who attend closely to the activities of, and changes in, grapes and vines. For the growing season is the main period during which vines photosynthesise, metabolising carbon dioxide and water into sugar and waste oxygen. As such, sugars accumulate in grape juice as the growing season elapses, while the acids found there early in the season gradually break down. These changes in chemical composition often feature prominently within definitions and measures of grape ripeness; the higher the sugar concentration, and the lower the acid concentration, the riper the grapes (Hardie 2000; Ribéreau-Gayon et al. 2006; Unwin 1991). So measuring biochemical changes in grapes can help John and his colleagues to judge how far their grapes have travelled from flowering, which initiates the growing season, towards harvest, which concludes it. That is, to assess how 'early' or 'late' a position within the growing season their grapes currently occupy. Which means that by testing the balance of sugars and acids in grapes, growers and winemakers can get a sense of how close their fruit is to being ready to pick. Moreover, repeatedly and regularly conducting maturity tests enables John's staff to establish how much the ripeness of their grapes has changed over a set number of days, and thus to infer how fast the harvest is approaching. Sugar concentrations can thus indicate the speed at which the growing season is elapsing, and when the grape harvest will arrive.

John is not the only one who utilises such indicators. Immediately after completing their bi-weekly tests, John's staff upload the data to The Company's computer network so that its winemaking team in the Barossa Valley can read the results. John's vineyard is several hours' drive away from the winery – as are many of the other sites (whether owned by growers or by The Company itself) from which The Company sources fruit. John explains that sending winemakers in person to view every block in every vineyard which supplies grapes to the winery would be extremely labour-intensive (and therefore expensive) for The Company. But winemakers require some idea of when the grapes will be ripe if they're to plan for vintage, and Baume results allow them in some sense to 'see' roughly how close to harvest-time their grape supply base currently is. So the laboratory equipment used in maturity testing can make the ripening of grapes, and thus the approach of vintage, perceptible at a distance. Its translation of increasingly sugary grape juice into dates which travel electronically enables distant winemakers to gain a sense of how soon their grape supply base will reach vintage without visiting the vineyard in person, much as Latour's (1999b) circulating scientific texts make their faraway referents present (Choy 2011; Lorimer 2008). In so doing, it helps these winemakers to timetable the activities of machinery and human staff into an order which keeps pace with changing sugar-acid balances, holding winery work schedules in step with events in vineyards like John's.

Reckoning Time and Value

The preceding section suggests that maturity testing accomplishes the telling of time within The Company. Company employees use these techniques to position events in a sequence relative to one another, measure the duration of events and processes, and thus coordinate their activities – transforming a qualification practice into a mode of time-reckoning (Malinowski 1927; Munn 1992). This is, however, a peculiar way of reckoning time because, in establishing the proximity of vintage through measuring changes in sugar and acid concentrations, maturity testing effectively makes the speed at which the growing

season elapses contingent upon grape vines' metabolic activities. So within The Company's maturity testing procedures, photosynthesis is empowered to effect the passage of seasonal time. As such, when Company staff analyse grape juice samples they begin to perceive, and to organise their work around, a temporality derived from distinctly nonhuman activities.

The concept of time-reckoning originates from anthropological research into non-western cultivators' and pastoralists' cultivation practices and patterns of transhumance (Malinowski 1927; Munn 1992; Turton & Ruggles 1978). Such texts frequently present success in agricultural production as requiring a fluent temporal coordination between human action and the development of key animal and plant species (Evans-Pritchard 1939; 1969; Thompson 1967). This literature thus figures the ability to perform the right tasks at the right times – to respond in timely and sensitive fashion to crops' or livestock's needs and development – as making the difference between hardship and prosperity for cultivators. Anthropological traditions of enquiry into time-reckoning therefore tend to portray skill and success in raising crops as being contingent upon intense attention to growing vegetation, animal migrations, and environmental events which may affect key productive organisms' behaviour. Cultivators are presented as actively working to attune their own labours to their crops' development by immersing themselves in the goings-on of the nonhumans around them, rendering the timing of economic activities thoroughly contingent upon plants' and animals' biological processes (Harris 1998; Ingold 2000). This striving after coordination is often argued to render the rhythms of agricultural life so dependent upon crop growth that seasonal changes in crop plants, and other environmental processes, become 'time-givers' (Adam 1990) which set the pace not only of labour in the field but also of social and economic activity more generally (Gell 1992). Anthropological time-reckoning literatures therefore describe modes of temporalisation in which the sequencing of events and activities into their proper order and relationship – the passage of time – is accomplished through a practised attention to nonhuman organisms and processes.

Evans-Pritchard (1939; 1969) termed modes of time-reckoning in which the temporal ordering of social and economic life was accomplished through attending to environmental events and nonhuman organisms 'oecological time.' This terminology suggests a holistic regime of time-consciousness premised upon sensitivity to crop and livestock species' corporeal rhythms, in which the passage of time becomes inseparable from sequences of agricultural tasks (Turton & Ruggles 1978). These tendencies towards holism – and particularly a contention that ecological time regimes ensure that social activities conform to a single natural temporal order – have precipitated both accusations of environmental determinism (Gell 1992; Krause 2013; Munn 1992) and rather epochal analyses of such practices' relationship to clock-time (May & Thrift 2001). Such 'task-oriented' (Thompson 1967) temporal regimes are typically depicted as 'pre-industrial' modes of time-consciousness, which are defined in opposition to a modern, Western world in which 'natural' time-givers are presumed to have been largely supplanted by mechanical clocks and standardised calendars. Within this imaginary of two antithetical and incompatible time-reckoning regimes, ecological time becomes identified with nature. Meanwhile "clock time becomes a socio-symbolic invention concerned with more precisely regulating and coordinating the repetition of various social phenomena" (Glennie & Thrift 2009: 43), whose ascendancy standardises time and disembeds it from local environmental rhythms (Castree 2009; Ingold 2000). This treatment of clock-time as a social construction has often led to an assumption that its adoption enables the establishment of human control over activities and processes formerly shaped by natural rhythms and cycles, and reflects their reorganisation according to human social relations and imperatives (Adam 1990; 1998; Postone 1993).

This identification of clock-time with the vesting of agency within an exclusively human social world resonates with, and often echoes implicitly through, the Marxian value theories introduced in chapter two. Marxian thought takes the investment of abstract human labour to be the sole input required by all productive activity under capitalism, and thus the

sole common denominator which makes heterogeneous commodities comparable and through which their relative worth might be rendered commensurable (Postone 1993). Weighing up the quantity of labour required to produce two different commodities, it is argued, makes it possible to judge their relative value in comparison to one another – that is, their exchange value (Harvey 1984) – and thus to establish their respective prices in a fashion which permits market transactions. Such arguments implicitly presuppose that the historical emergence of capitalist modes of production, accumulation, and exchange demands an ability to compare very different kinds of labour according to a common metric – or ‘universal equivalent’ (Grossberg 2010) – shared across all spheres of production (Espeland & Stevens 1998). And social theorists have often argued that it is the clock’s abstraction of time-measurement from the performance of particular tasks that transforms qualitatively distinct kinds of labour into different but comparable quantities of labour (Ingold 2000; Thompson 1967; Glennie & Thrift 2009). The clock’s creation of a measure of time external to the performance of particular activities is thus taken, in rendering the labour devoted to producing different commodities commensurable, to transform labour-time into a homogeneous quantitative measure of exchange value (Adam 2006; Castree 2009).

As such in Marxian thought, and many critical analyses of it, the generalised reckoning of time through clocks implicitly underpins the emergence of abstract human labour as the sole measure of value under capitalism (Castree 2009). In effect, the organisation of economic activity – and specifically of labour markets (Graeber 2001) – according to clock-time comes to both enable and mark a particular set of social, economic, and historical conditions under which the measurement and distribution of value:

“does not express directly the relation of humans to nature but the relations among people as mediated by labor. Hence, according to Marx, nature does not enter directly into value's constitution at all” (Postone 1993: 195).

Through this transformation, human labour becomes the sole agency capable of animating – and engendering value-generating transformations in – effectively inert

nonhuman matter, and thus the sole commodity capable of imparting a surplus value in excess of its own exchange value (Grossberg 2010; Harvey 1984). In many works of social theory the use of clocks therefore becomes all but synonymous with the imposition of capitalist relations and rationalities of production, in which the intensified deployment and exploitation of human labour becomes the primary motor of accelerated surplus value production (Glennie & Thrift 2009; Page 1996; Thompson 1967).

This line of reasoning has profoundly influenced traditions of rural sociology and geography steeped in Marxian political-economic analysis. In these fields, the penetration of capitalism into agriculture has often been depicted as synonymous with the acceleration and compression of nonhuman (re)productive processes (Page 1996) in order to eliminate 'unproductive' seasonal fallow periods and facilitate the continuous exploitation of human labour (Henderson 1999; Mann & Dickinson 1978; Prudham 2003). Agricultural intensification in the contemporary West thus easily becomes conflated with the 'outflanking' of nature (Morgan et al. 2006; Murdoch et al. 2000; Murdoch & Miele 1999) and the reshaping of agricultural timescapes – along with their nonhuman inhabitants – in the image of the social relations of capitalist production (Adam 1998; Boyd et al. 2001). Empirically-researched engagements with the temporal influence of animals and plants in Western agriculture therefore remain scarce, despite repeated calls for social researchers to attend more carefully to how the activities of nonhuman life forms and processes shape the temporal ordering of human social and economic life (Jones 2010; 2011; May & Thrift 2001). As discussed in chapter two, when the temporal specificities of particular plants' or animals' biological processes have impinged on the study of contemporary Western agriculture, they have tended to be analysed primarily as barriers to the adoption of capitalist or industrial production methods. Any influence which such processes might exert on agricultural labour therefore tends to be figured as an archaic vestige of a premodern past rather than an integral part of value creation within contemporary intensive agriculture (Goodman et al. 1987; Inhetveen 1994; Mann 1990; Ulin 1996).

However, The Company is a highly-mechanised, shareholder-owned, international wine company which manufactures beverages on a vast scale and little about the organisation of viticultural production in John's vineyard, which produces around 8,000 tonnes of grapes per year with a permanent staff of just seventeen, could be termed 'archaic' or 'traditional.' So to observe Company employees devoting considerable effort to performing a time-reckoning practice which empowers the photosynthetic metabolisms of grape vines to effect the passage of seasonal time suggests that such forms of time-reckoning may be neither unusual nor marginal to contemporary intensive, and even capitalist, agricultural production. This chapter therefore follows several recent empirical studies of intensive agriculture in emphasising the persistent ability of the temporalities of crop plants as different as apple trees (Jones & Cloke 2002), sugar cane (Richardson-Ngwenya 2012), and wheat (Head et al. 2012) – and of livestock (Baker 2009) – to pattern the work of their human companions alongside, and in complex combinations and tensions with, clock-time.

This contention that clocks and calendars are not necessarily the only, or even the dominant, mode of time-reckoning through which labour is organised within contemporary agricultural production potentially holds far-reaching implications for my analysis of how grapes become valuable at The Company. For if the dominance of clock-time is, as noted above, commonly taken to underpin human labour's emergence as the sole source and measure of value under capitalism, then this may indicate that the appropriation of surplus value through unremunerated labour (Friedland et al. 1981; Harvey 1984) is not the only process through which value is made within The Company. Indeed, this suggestion scarcely seems radical given Postone's (1993) argument that Marx's analyses of human labour as the central engine of value production – and of labour-time as its primary measure – always referred to a specific historical conjuncture (Grossberg et al. 2014). As Grossberg (2010: 318) explains:

“Marx's labor theory of value is specific to a particular mode of production – industrial capitalism, and [...] Marx himself foresaw the coming of another configuration of

capitalism in which the specific organization of value, the specific deployment of labor, and the specific form of wealth that preoccupied [...] Capital would no longer serve as the basis for a viable analysis.”

It was, in short, always possible that the sources and measure of value might be different at other times, in other places, and within different productive practices. Attending to the reckoning of time through maturity-testing may, therefore, disclose processes through which entities and processes other than human labour – perhaps not Postone’s (1993) generalised nature but possibly such specific manifestations of the nonhuman as grape vine metabolisms – can make a difference, and even make value, within The Company. It may, then, illuminate more-than-human dimensions of The Company’s way of producing value. Moreover, returning to John’s office may assist me in identifying more such manifestations of the nonhuman, for I am about to learn that maturity testing needs to be supplemented by other time-reckoning practices, which may serve to specify a little further which nonhumans might participate in valorising grapes, and how their activities come to matter.

Weather-watching

Mid-February 2011

His job done, John printed out a spreadsheet of test results in his office – freshly updated to include today’s data – and showed me how to read the chart. He pointed out how each row held sugar and acid measurement results for one block (grouped together by test date). And how, sure enough, the sugar concentration listed for each block increased as the test dates advanced. But not by very much: John had only started testing these blocks – composed of early-ripening white grape varieties – about ten days before, and so the spreadsheet only listed three rounds of test results. His vineyard was largely planted with red grapes, and these were barely starting veraison – a process in which the colour of grape skins changes from green to red, which occurs when grapes are between one and two months from reaching maturity – and were far too unripe to be worth testing at all yet. He explained

that in a 'normal' year there would be more data by mid-February, because the grapes would be riper. In fact, last year his team had picked the grapes from those freshly-tested white blocks around today's date, but grape ripening was running a few weeks 'behind normal' this year. At the end of the spreadsheet row allocated to each block was a single calendar date: the harvest date predicted for that block by The Company's specialist algorithms based on the test results so far.

But John shrugged and explained that these predictions weren't of much use to him. He didn't bother to look at them very often. When planning for vintage, he usually checked the weather forecasts and then reinterpreted the raw test data himself. And the weather forecasts were currently making him anxious. The growing season had so far been cool, wet, and overcast, so sugar accumulation in the grapes had been very slow. So slow that if it rained heavily in the coming weeks, as weather forecasters predicted, the vines might absorb enough water from the soil to dilute the juice in their grapes and cancel out the small increase in sugar concentration that they had achieved over the last week or two. So the rain might actually leave his grapes further away from ripeness, invalidating the predicted harvest date extrapolated from today's Baume tests. Worse, if the berries soaked up water faster than their skins grew then they might split and lose their juice or – worst of all – become infected by one of many ever-present bacterial or fungal pathogens. If that happened then this year's grape crop might never be harvested at all, and all John's work might be for nothing.

Baume tests are useful because they can, if carefully conducted and interpreted, perform a translation between two very different types of time – the metabolic time of grape vines and the civil calendar according to which working hours and deliveries are scheduled, and by which vintage is organised. But as many time-reckoning texts (Malinowski 1927; Evans-Pritchard 1939; Harris 1998) point out, such translations can be fiendishly difficult to accomplish. As John's dismissive attitude towards the predicted harvest dates suggests, the

growth of vegetation and the ripening of grapes are not fixed in any stable relationship to regular calendars and linking them together requires considerable skill and technical resources. So despite the effort which John and his workers devote to the task, the translation of sugar concentrations into harvest dates remains tentative and temporary. The rate at which vines photosynthesise and sugar accumulates may be entirely unaffected by the advance of calendar dates but it's highly contingent upon environmental conditions, and notably the amount of energy – in the form of both sunlight and ambient heat (Gladstones 2011) – available in their environment. The speed of sugar accumulation (and the proximity of harvest) therefore changes with the weather. Ripeness (and vintage) may arrive earlier or later depending on temperatures, cloud cover, and rainfall over the course of the growing season. So sugar time, as measured through maturity tests, can (confusingly) speed up, slow down, or occasionally even run backwards in relation to the civil calendar. A simple weather forecast can therefore attach numerous awkward qualifiers to John's predictions about when the grape crop is likely to ripen. The vines might yield grapes whose sugar concentration exceeds a crucial threshold *if* the rain holds off; the crop may ripen by a certain date *if* this warm weather lasts.

So while maturity tests can offer a useful snapshot of how close to ripeness a grower's grapes are today, their capacity to predict how ready for harvest those same grapes will be next week only goes so far. And while acknowledging such predictions' contingency upon numerous material entanglements may help to keep John's own work in time with changes in his grapes, it does little to facilitate the precise temporal coordination with other Company facilities and external contractors that the final preparations for a grape pick demand. Grape harvesters and trucks will have to be booked so that they're on hand just when they're needed, but harvesting contractors and haulage firms reckon time in hours, days, and weeks – not Baumes. So Baume tests alone can't fluently translate vines' metabolisms into clock and calendar time in quite the way that is required in order to mediate between and coordinate the heterogeneous humans who need to be assembled if

grapes are to be harvested and processed while they remain both ripe and fresh. If John and his colleagues are to conduct the harvest in a manner which delivers good-quality materials capable of yielding saleable, and economically valuable, wine then they will need to shift their attention from changes in grapes themselves to the bodies and events which affect their vines' metabolisms. Fortunately, however, The Company can bring other ways of reckoning both time and the ripeness of grapes to bear. So during vintage The Company will regularly dispatch a winemaker to visit in person all the blocks in a given region which Baume test results suggest will reach sugar-ripeness within a week or so, and to perform another mode of time-reckoning 'in the field'.

Attunement in the Field

Early April 2011

It is finally time to return to the day in April when Mark showed me his spreadsheet of rejected fruit. After discussing the situation with Joe – the winemaker assigned to conduct today's field grape assessment – Mark has, to my relief, decided that it is still worth proceeding 'into the field' to examine the handful of blocks which remain clean. A winemaker's field assessment is, after all, an important event and cannot be cancelled lightly. Such a visit often marks the first time that a winemaker has tasted this year's grapes, and the tasting also plays a crucial part in determining which wine product the crop will be targeted towards and what price the grower will receive for the fruit (as discussed in chapter five).

Yet the encounter between grape vine and winemaker was surprisingly prosaic to watch as an observer. At every block that we visited Joe would walk down a couple of rows of vines, picking and eating perhaps ten grapes as he went, and within about five minutes he would confidently predict a firm-sounding harvest date. Fortunately, though, Company guidelines require winemakers to record both of the two decisions that they must make during each field assessment (when a block should be harvested and which wine product the

grapes should be targeted towards) alongside a number of formalised criteria on which these decisions are based. So at several blocks I followed Joe as he walked down the rows of vines, looking over his shoulder as he took notes on his handheld computer and recorded his conclusions. By occasionally (but only occasionally; Joe assesses grapes quickly and there is little time to spare) asking questions about what a comment meant, or tasting a grape for comparison, I gradually began to get a sense of what Joe was doing.



Figure 13: Winemakers assess grapes in preparation for harvesting. One (left) picks a grape for tasting while a second (right) burrows into the leaf canopy to achieve a closer look at the grapes.

By looking at the vines close up, sticking his face inside the canopy, and putting grapes into his mouth Joe could pick up on a lot of additional cues about the ripeness of the grapes, and about weather and disease conditions in the vineyard environment in which they were growing. This could be indicated by how the grapes tasted (does this Shiraz have those chocolatey flavours yet?), how the vines looked (are the berries shrivelled? How many leaves are there and what colour are they?), whether there were any visible signs of vine disease (is that pinkish blemish a sign of botrytis?), or whether the ground was waterlogged (is the soil

squelching underfoot?). Each of these subtle signs about the maturity of the grapes and the recent (and likely near-future) weather and disease conditions in the vineyard around them told Joe something about how the grapes were likely to develop over the coming week or so, and informed his decision about when they should be harvested. Signs like whether the grapes tasted riper than sugar tests had suggested, whether their seeds had matured sufficiently to make a dry cracking sound when crushed between a winemaker's teeth, or whether the vines' leaves were yellowing as the canopy began going dormant for the winter, slowing photosynthesis and sugar accumulation. Visiting the vineyard in person therefore made Joe aware of a host of agencies and events (flavours, fungi, wet soil) which a simple sugar test would not register – enabling him to attend to the world of the vines in new and sometimes important ways. His field assessment thereby enabled him to adjust The Company's picking schedule in order to accommodate more dextrously the grapes' probable behaviour over the coming week.

Joe's and John's ways of making good-quality grapes, of producing materials which will be valuable within wine production, certainly require human labour. Copious work – performed by vineyard hands, lab technicians, vineyard managers, grower relations managers, and winemakers – is clearly involved. But this labour seems, at least in the field and at this time of year, to be of a very particular kind. Specifically, both John's maturity tests and weather-watching and Joe's field assessments seem to be attempts to cultivate a perceptual sensitivity to changes in the grape vines with which they work, and to the environments within which those vines grow. For only through closely scrutinising the crop's maturation over several months – through testing and re-testing sugar concentrations in grape juice and attending closely to the taste of grapes – can Company employees tell when the grapes are likely to develop qualities which make them valuable as raw materials for wine production. Only in this way can they discern when the grapes are likely to attain their maximum value as a harvested crop.

This striving to attend to grape vine metabolisms is reminiscent of Ingold's (2000: 415) theorisation of skilled perception, in which responsive and accomplished action relies upon the ability of:

“The skilled practitioner [...] continually to attune his movements to perturbations in the perceived environment.”

By this account, practitioners acquire capacities for action through carefully coordinating their movements with changes in and motions among the more-than-human bodies amid which their own activities take place (Despret 2004; Lorimer 2008; Mol 2010; Whatmore & Hinchliffe 2010). This dextrous synchronisation is achieved through an ‘education of attention’ in which practitioners learn to take notice of events and entities to which their human and nonhuman partners are sensitive, and thus to share their capacities to be affected. Practitioners achieve attunement to the forces and encounters which move others, it is argued, by adopting their manners of movement and temporal rhythms – as when hunters (Ingold 2011), mushroom pickers (Tsing 2009a), ethologists (Despret 2004; Lorimer 2010), or field ecologists (Despret 2013b) develop specialised assemblages of devices and bodily gestures which “re-align their bodies to tune in” to their nonhuman companions or quarry (Lorimer 2008: 384). However, the electronic circulation of maturity test results which gives distant winemakers a sense of how soon their grape supply base will reach vintage illustrates that such sensitivity and attunement to nonhuman temporality need not always be attained through the processes of getting up-close, touching, tasting, and smelling which accompany intimate bodily co-presence (Baker 2009; Harris 1998; Hendriks 2012; Paxson 2013). Any form of equipment which enables its user to be affected, excited, or moved in new ways by the world constitutes a new sensory organ, and becoming a body which can attend skilfully to nonhumans may be as much about acquiring instruments as about learning to use eyes, ears, and skin differently (Latour 2004a; Mason & Hope 2014).

The Company's staff thus produced good-quality, valuable materials by taking pains to attend to the metabolic agencies of grape vines – by scheduling their picking and

processing of grapes in ways which accommodated and, insofar as possible, adopted their distinctly nonhuman temporalities. Perhaps, therefore, it might not simply be the application of human labour to stolidly passive materials which induces the material transformations through which grapes in The Company's vineyards become valuable. Delivering ripe, fresh, good-quality grapes to the winery for processing instead becomes a process of carefully and sensitively synchronising the activities of human workers with capricious nonhuman metabolisms which may unexpectedly send sugar concentrations soaring, or recalcitrantly refuse to alter the biochemical balance of grapes as precious days and weeks slip by. By this account, nonhuman materials and organisms participate all too actively in endowing grapes with quality (and value); they emerge as potent, yet unpredictable, engines of value creation. Yet it is important to specify *which* nonhumans come to matter to the production of quality, and thus of value, within these practices. The limited predictive abilities of maturity tests illustrate that Company staff could not cultivate this sensitive attunement by attending only to the vines' photosynthetic metabolisms 'in themselves.' After all, grape vines' behaviour – and not least the speed with which sugar concentrations in their berries increase or (occasionally) diminish – can change greatly as weather events alter and recompose their material environments (Gladstones 2011). This sensitivity to meteorological processes means that the metabolic agencies by which The Company's staff took such pains to be affected do not reside entirely within the vines themselves. They are an effect of the vines' own capacities to be affected and recomposed (in growth and ripening), or even decomposed (in disease events), by encounters with the varying and mobile assortment of materials which make up the atmosphere and soil around them (Bennett 2010; Deleuze & Guattari 2004; Latour 2005).

Grape growers and winemakers must therefore cultivate a sensitivity to the meteorological encounters to which their vines are responsive in order to anticipate changes in their crop's material makeup, and thus deliver grapes suitable for the often-exacting requirements of winemaking. At minimum this involves the constant, fretful following and

discussion of weather forecasts and sugar test results that I saw at John's office. But as Joe demonstrated, it sometimes also means putting an experienced and highly-trained human body – which has learned, through twenty years of assessing grapes and making wine for The Company, to perceive a wider range of differences in grapes and their environments than, for instance, chemical maturity tests would register – 'in the field' with vines and grapes. Such bodies' sensitivity to traces of environmental events whose occurrence makes a difference to vines, and makes them act differently, enables them to fix harvest dates informed by events in the vineyard. And, in so doing, to help the tempo of The Company's picking, crushing, pressing, and centrifuging operations to also become moved by, and attuned to, the weather.

Joe's field assessment thus gains its finesse in coordinating human labour with the ripening of grapes by multiplying the range of encounters, relations, and sensations through which the vines' environment can affect him – and through him The Company. Viticulturists like John and winemakers like Joe come to understand how their vines are likely to behave and change – and cultivate a knowledge of the correct time at which to harvest grapes – through striving to adopt the vines' capacities to be moved and displaced by other bodies. Performing valorisation in the field seems to depend upon multiplying Company employees' perceptual connections to – and their capacities to be displaced by – the environments which affect its (and its growers') vines. This way of performing valorisation does not demand that the seasonal reproductive cycles of crop plants be remade in the image of the social relations of viticultural production in order to facilitate the intensified application of human labour (Henderson 1999; Mann & Dickinson 1978; Page 1996) but instead requires that human labour be organised in response to the metabolisms of grape vines. That is, that human wine producers struggle – insofar as possible – to accommodate themselves to, and perhaps adopt, the nonhuman temporalities of grape vines.

Readers may find such arguments familiar, for their depiction of agency and skill as a learning to be affected reprises themes discussed in chapter 3 (Despret 2004; Gomart 2004;

Latour 2004a; Whatmore & Hinchliffe 2010). Much like Ingold's (2000; 2011; Harris 1998) enskilment, accounts of learning to be affected – in which sensitivity to differences in others proliferates capacities to act in new and different ways – provide useful resources for understanding how attunement to the activities and performances of nonhumans might assist in harmoniously interweaving human and nonhuman activities and temporalities. But skilful and well-choreographed co-fabrications of valuable grapes were plainly in short supply during Joe and Mark's winemaker field assessment. And it was through the devaluations induced by botrytis, and displayed in Mark's spreadsheet, that this chapter set out to learn about The Company's way of generating and imparting value.

Engaging with devaluation, conflict, and collapse within this idiom of sensitive and skilful agencies can, however, be challenging (Clark 2011). When agency is depicted as arising from a capacity to attune oneself to or be affected by others, it is difficult to figure such outcomes as denoting anything other than brutish intransigence or inattentiveness (see Latour 2004a). Failure becomes evidence of a lack (perhaps of sensitivity or perceptual acuity), and therefore a derivative or secondary condition which reveals weaknesses or shortcomings to be remedied (Harrison 2008; 2009). But this way of characterising discord and impotence does not quite seem appropriate to the catastrophic events of vintage 2011. As discussed above, John, Joe, and their colleagues were engaged in painstaking, diligent, and sophisticated attempts to become affected by their vines and by the environmental events which move them. To dismiss their efforts as evidence of mere clumsiness therefore seems disingenuous, and possibly disrespectful. How, then, to understand a situation in which attunement and articulation with nonhumans proves elusive despite human viticulturists' apparently sensitive and skilful perceptual engagements with them?

One possible approach might involve interrogating 'the nonhuman' – the often undifferentiated counterpart to human agency – in slightly greater specificity. For figuring enskilment and becoming-affected as the cultivation of sensitivity to 'nonhumans' in general

risks collapsing multifarious entities, possessed of highly differentiated capacities to affect and be affected – and perhaps, therefore, inhabiting radically contrasting temporalities (Murphy 2001) – into a deceptively homogenous category in a reductive, simplistic, and perhaps spurious fashion (Head et al. 2014; Lulka 2009). Such a tendency is perhaps at work in the theorisations of 'oecological time' which loom large in the above account of attunement. Evans-Pritchard (1939; 1969) seems to have formulated this concept based upon an understanding of an ecology as a stable and self-regulating system – an understanding distinctly at odds with contemporary thinking among ecologists (Clark 2011; Lorimer 2012; Lorimer & Driessen 2013; Szerszynski 2010; Zimmerer 2000). Moreover, something of this holism possibly lingers within more recent accounts' emphasis on skilful humans' capacities to achieve temporal alignment with events in their environments (Harris 1998; Ingold 2000; 2011; Krause 2013). For speaking of temporal attunement to the environment perhaps still implicitly invokes a singular natural time common to all of its nonhuman constituents, to which human activities might unproblematically conform (see Inhetveen 1994) – and thus risks overlooking the frictions, disruptions, and tentative articulations which encounters between multiple more-than-human temporalities may engender (Brice 2014a; Jones 2011). In order to develop an account of grape harvesting and processing during vintage which is more attentive to nonhuman difference – and to its attendant possibilities for disruption, disarticulation, and devaluation – I will now shift my focus to another location within The Company. One in which time-reckoning practices must contend with very different nonhumans.

Masses and Volumes: Machining time in the winery

Mid-March 2011

I started observing work at The Company's Barossa Valley winery during the early stages of vintage, before the rain began. During my first day on site Nathan, the winemaker who I was work-shadowing, took me to see the winery's crusher in action. The Company's

The images originally presented here have been removed from the version of this thesis which is freely available via ORA at the request of a research participant.

Figure 14: (Left) A forklift truck dumps a bin of grapes into the receival bin above the crusher. (Top right) waste matter is expelled from the de-stemmer and removed by conveyor belt while (bottom right) grape must falls into the pump's collection hopper.

winery, like most wineries, has only one crusher. All the grapes that this facility processes must pass through this machine before winemaking proper can begin, so to a large extent the crusher dictates the pace of work at the winery.

The crusher stood two storeys high, although most of it was underground. Nathan explained that the crusher is so tall because it combines three different machines into a single unit (see also Ulin 1996). The top section, the crusher proper, puts grapes under pressure and splits their skins, releasing the juice within. Below, a de-stemmer separates out stalks, stems, pieces of leaf, and other detritus, leaving the grape skins, flesh, and juice to drop down into a pump beneath. This forces the pulpy, juicy mess which remains (known as grape must) through pipes and hoses and into a tank where fermentation can begin. Because these three machines were built as one unit, all three can process approximately 100 tonnes of grapes per hour. Winemakers like Nathan therefore know that the crusher can process about 50 tonnes of grapes in each 30 minute crushing slot, and so each parcel of fruit can be assigned a

fixed block of time (measured in minutes) during which it will be crushed. If the crusher's working, of course, and if the trucks carrying the grapes arrive on time.

Wineries contain numerous machines – pumps, presses, filters, perhaps centrifuges – each with its own processing speed, but this crusher offers a helpful example when talking about time because it integrates three machines into one. These different machines work together because they share a common body of specifications for processing speeds, calculated in mass per hour, and so all can handle the same tonnage of grapes over a given period of time. Sugar concentrations and weather forecasts don't affect the crusher's processing speed – indeed, a partial and selective insensitivity to local environmental contingencies is often a signature achievement of mechanisation (Ingold 2000; 2011; Mackenzie 2002) – although power cuts and delayed grape deliveries certainly do. In consequence crusher time is, in sharp contrast to grape vines' metabolic time, invariant and therefore predictable – at least if the power stays on and the grapes arrive on time. This interchangeability between time and mass (a reasonable proxy for volume, since the density of grape juice varies only so much) is crucial for Nathan. Because Nathan is responsible for grape intake at this winery, and sometimes he needs to coordinate the activities of different machines very precisely indeed to ensure that operations are performed in the right order.

For instance, the winery staff face a major logistical problem in that they will fill every fermentation tank on site four or five times over during a typical vintage. Nathan expresses this relationship through a mathematical formalism, which he calls the fill-rate. The Company's Barossa Valley winery has a fill-rate of roughly 450%, meaning that they can keep only around 23% of their total crush for a typical year fermenting in tank at any one time. This is an unusually high fill-rate; a smaller, privately-owned winery's annual grape crush might typically be closer to 150% or 200% of its fermenter capacity. The Company's high fill-rate maximises the volume of wine fermented per tank, and thus minimises equipment costs. But winery staff can only ferment grape juice into wine if they have a

watertight (and preferably temperature-controlled) container available in which to keep it while the yeasts are working, so The Company can only crush grapes if an empty fermenter is available to receive them. As such, during the busiest periods of vintage the winery can only receive grapes when an older batch of material finishes fermentation and is transferred to a storage tank, so crusher slots can become scarce at this time.

Nathan tries to minimise the impact of this shortage of space through close temporal coordination, arranging crusher slots so that fresh grapes will be delivered as soon as a tank has been emptied and cleaned for them – but things don't always go to plan. It's not unusual, later in vintage, for trucks carrying grapes to arrive before their fermenter is ready and for the grapes to be left waiting outside the winery. Nathan doesn't like this, because in the meantime the fruit is likely to spoil (especially on hot days – grapes remain sensitive to their surroundings even after being picked) but, despite his best efforts, it still sometimes happens.

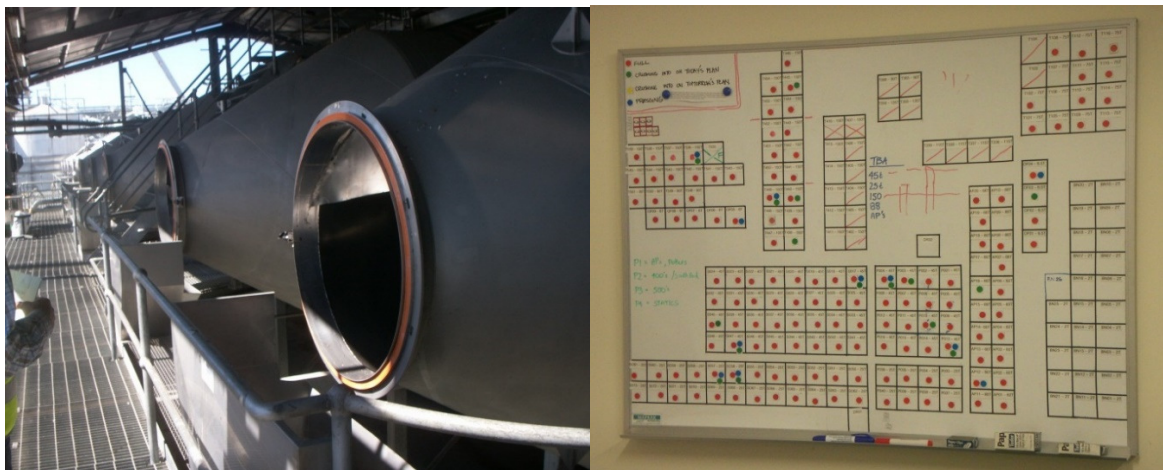


Figure 15: (Left) Within The Company's winery, a rank of 45-tonne rotary fermenters stretches away towards a far larger storage tank at the end of the gantry. (Right) This whiteboard diagrams the winery's 'tank farm', helping Nathan to plan fermenter allocations. Each square represents one fermenter, and most contain a red sticker (denoting that they are full). Several also contain a blue sticker (denoting that they will be emptied today) and a green sticker (denoting that they are scheduled to be filled today). Together, they show that a full fermenter will be emptied and refilled within the day.

Moreover, grapes cannot be crushed into just any fermenter. Matching grapes to fermenters is a complex process which enfold issues of quality grading and the characteristics and requirements of different wine products, as well as the ripening of grapes and the availability of fermenters (as discussed in chapter six). Simply put Nathan is supposed, when allocating grapes to fermenters, to keep contrasting batches of material separate. He definitely doesn't put different grape varieties in the same fermenter, and he tries to avoid mixing grapes from different regions or quality grades whenever possible. Preventing such unwelcome blendings can become a fiendishly complicated business during the busier stages of vintage, since when grouping (or 'streaming') incoming grapes into fermenters Nathan must find a tank of the correct size to hold the fruit destined for each product. 45 tonnes (approximately two trailer-loads) of similar fruit would, for instance, require a 45 tonne fermenter, while four trailer-loads would ideally be crushed into a 90-tonne fermenter. Moreover, grapes must be delivered in the right sequence so that similar batches of fruit can be crushed into the same fermenter one after another, and so much of Nathan's work consists in getting similar batches of grapes to arrive at the winery together.

Fortunately for Nathan – and for Mark, with whom he works closely in settling and adjusting harvest dates with grape growers – the predictability of machine processing rates and the stability of their formalised relationships with clock time enables Nathan to predict (roughly) when crusher slots and fermenters of various sizes are likely to become available. Sequences of different tasks therefore can, through some very complicated book-keeping, be planned and scheduled in advance. So although he usually only plans a precise crushing schedule one working day in advance, Nathan does typically have a general idea of how much fruit the winery will be able to process and how he might organise it into streams several days in advance. It's therefore crucial for Nathan to know which grapes are ripening and need to be picked a few days before they arrive at the winery, so that there is time to agree and organise a pick date with the grower and to match the grapes to a fermenter.

Temporal Incongruities: Nonhuman difference and indifference

The reckoning of time – and of the right time to pick and process grapes – is thus performed very differently at the winery. Here, holding human labour in a productive temporal relationship with the activities of the nonhumans which must be mobilised if the qualities of materials are to be transformed in ways which make them valuable is not a matter of attending to weather events or sugar concentrations. The right time to harvest instead depends upon how many hours it will take to centrifuge a certain volume of freshly-fermented wine, or how quickly fermenters can be drained and cleaned. In consequence, grapes cannot be picked simply because they are ripe and the weather is good, and competent harvesting is not solely or entirely a question of achieving attunement to grape vine metabolisms. Picking must also fit around fill-rates and processing speeds, around the tonnes-per-hour of crushers and the winery's finite volume of fermenter space. This work of 'fitting around' falls to grower relations managers like Mark, who is responsible for ensuring that grapes from the southern viticultural regions of South Australia are matched to crusher slots which coincide with a time when they will be ripe and ready for picking. Mark's words in an interview illustrate a complex negotiation between the differing temporal demands of the various bodies involved:

"we then put in what we'd like to the winery, we say 'We'd like to pick this much, this is what we think', um, then, I guess, differing priorities are taken into account. For instance, if the canopies are failing in a region and they're running out of water, well, that might take priority over another region that's not so hot. Or [...] a good example is, you know, Barossa Shiraz is very important to our company. And, you know, Barossa Shiraz might take precedence over another Shiraz because we have a labelled, appellationed product. Then it comes down to... we'd like to pick 3,000 tonnes of Barossa Shiraz over this week but we might be limited by the amount of trucks we have – 'cause that's all external. We might be limited by the amount of harvesters, so then that's got to be taken into account. [...] And then it's a matter of me, based on what I saw with the winemakers, sort of going down a list from ripest to less ripe, um, and then there's also all the idiosyncrasies in that. So you don't just book from the ripest down [...] the winemaker grades the fruit appropriately, that's got an impact on it too. You know, we probably wanna look after the super-premium fruit that's out there and we're probably

a little bit more fussy about Baume with that kind of fruit. You know, like, Eden Valley Riesling, for example, and Adelaide Hills Sauvignon Blanc. So then, yeah, the priorities are worked out after that. We put in more or less what we think we can achieve. [...] And then that's sent out to the growers, they'll confirm that's OK to happen, and generally that's sort of a 7-10 day period, if you know what I mean. So we're sitting here Monday morning, we're probably looking at picking, sort of Monday [the following week], Tuesday onwards."

Sugar concentrations, fruit quality, and weather conditions certainly feature in Mark's account of scheduling, but so do trucks and grape harvesters belonging to external contractors which may be unavailable, growers who may be unable to work to a given schedule, and 'crusher slots' which are available only in limited numbers. In Mark's account, achieving and maintaining attunement to nonhuman temporalities (Harris 1998; Ingold 2000; Krause 2013) seems like a rather less harmonious and rather more precarious, nerve-racking task. Rather than simply adopting the temporality of one set of nonhuman bodies, he and Nathan must constantly attend to and coordinate multiple entities and processes – crushers, centrifuges, grape vines, heat waves, and more – whose entirely different (and mutually *indifferent*) capacities for temporal relation are often in tension (Clark 2011; Thrift 2008). As such, there is little prospect that The Company's activities might ever unproblematically 'fall in' with an overarching temporal order of the kind evoked by references to a singular ecological time (Evans-Pritchard 1939; 1969; Inhetveen 1994). For crusher processing speeds are as insensitive to weather conditions as are grape vine metabolisms to the availability of fermenters. Grapes will ripen, and overripen, and perhaps rot, regardless of whether or not Mark can book a crusher slot for them, just as fermenters do not obligingly empty themselves if a heatwave accelerates the ripening of grapes.

Events in the vineyard can, unless carefully monitored and managed, therefore easily drift dangerously out of alignment with the winery's picking and processing schedules. Maintaining a productive temporal relationship between these locations, and between the activities of their respective nonhuman inhabitants, takes constant, arduous work. Nathan spends hours in his office each day during vintage, compiling a 'daily plan' of delivery times, crusher slots, and destination fermenters for the grapes which are scheduled to arrive the

following day. And he often spends much of the next day talking to grower relations managers like Mark, adjusting this plan to accommodate fruit which will arrive late. Mark, meanwhile, is used to taking calls at all hours of the day and night, six or seven days a week, from growers who are having trouble picking their fruit to schedule.

So during vintage, the work of making valuable materials and making materials valuable at The Company requires that different practices of reckoning and managing time, and specifically of coordinating human labour with the activities of nonhumans, be held together in a generative tension. Valorisation is, by this account, performed neither through dragooning the (re)productive cycles of grape vines into conformity with a single regime of human labour-time, nor through human workers' adoption of a single nonhuman organism's or a unified ecological system's natural temporal rhythms. Instead, practices such as Nathan's planning and Mark's scheduling highlight that the activities of vines, machines, and weather events (among other participants) need to be laboriously coordinated not only with the labours of human workers but with *each other* if the qualities of materials are to be transformed in ways which will give them value in making wine. Valorising grapes thus entails at least temporarily bringing multiple nonhuman processes – and the divergent time-reckoning practices associated with them – into alignment with one another, and managing the frictions which encounters between their attendant enactments of time frequently generate (see also Brice 2014a). While, for instance, fermenter availability may be (moderately) predictable up to a week in advance, the weather – and the grape vines and other vineyard organisms which it affects – can do distinctly unexpected things over even a few days. And this often creates something of a temporal incongruity, or mismatch, between the behaviour of vineyard ecologies and that of winery machinery during the crucial week or so between field assessment and harvesting.

Just how pronounced, and how damaging to the work of valorisation, such temporal incongruities can become was illustrated on that day in mid-April when Mark explained to

me just how completely The Company's meticulous scheduling of vintage had broken down under the pressure of the botrytis outbreak. Readers may recall a small but significant detail about Mark's largely crossed-out spreadsheet from the beginning of this chapter: namely, that it had been compiled just one day earlier. Botrytis damage had rendered all but six of the blocks on Mark's itinerary unsuitable for winemaking within a day of his drawing up his list. Admittedly the area where Joe, Mark, and I were assessing grapes that day had been particularly badly affected by botrytis damage, but such situations were hardly unusual in viticultural regions across South Eastern Australia after the rain in March and April. Moreover, with botrytis rotting apparently healthy grapes within two or three days of the first signs of infection appearing, grapes would continue to be rejected right up until blocks were picked. In a later interview, Mark recounted one such rejection episode which took place right outside his office, in one of The Company's own vineyards:

"What we did have issues with was how quickly the disease moved. Generally the [field technical officers] work 5-6 days a week, and normally if they do a damage assessment, if it's getting picked for delivery on a Monday, picked Sunday night for early Monday morning, normally a damage assessment Friday's fine, no problem. 'Cause normally it's sunburnt, that's normally more what we're dealing with, or if it's bot., it doesn't move that quickly. Now we had real issues with blocks that got assessed on a Friday afternoon, picked Sunday night, assessed at 4% [of bunches affected by botrytis] or something like that and the winemaker's ringing me going 'This is shit, what happened there?' And I'm, like, well I'm seeing blocks... you know, our own Chardonnay that you drove down on the left, that was really interesting to see that, 'cause obviously that's our own asset so we really wanna protect that and look after that. [...] It's our fruit so we're keeping an eye on it and [our vineyard manager], he did a very good job, he got a lot of it pretty ripe and... he was stressed, he was very worried about it. And I went out and had a look, I got the guys to do some assessments, and sent off a big email to everyone, you know, the group white winemaker, logistics guys, my boss, [the vineyard manager] – saying 'Look, don't panic, I've been out there myself, on Friday, it's fine. It's no problem.' I think I worked from home Saturday, came in Sunday, drove in Sunday morning and thought 'I might go have a look at that botrytis.' And it was after some rain – it rained on the Tuesday or Wednesday so it was 4 or 5 days post-rain, really humid day on the Saturday, I walked in and I went... 'Houston, we have a problem.' I didn't even bother getting into the office, I got on the mobile and I said 'We've gotta get this stuff off,' it went *really* quickly. And no one's ever seen anything like that."

Mark's account makes a significant point about botrytis: that its metabolic activities, and thus its capacities to affect grape vines are, like the behaviour and affective capacities of grape vines themselves, extremely weather-dependent. The Chardonnay outside Mark's

office window went mouldy within two days because conditions that weekend were humid. But it is difficult, if not impossible, to build such dramatic responsiveness to weather events into the scheduling of labour at a winery where the precise management of fermenter space and crusher slots requires that the harvesting, delivery, and processing of grapes be booked up to a week in advance. So The Company's elaborate procedures for coordinating the erratic passage of seasonal time in its suppliers' vineyards with the predictable but often inflexible processing rates of its winery equipment struggle to accommodate the unruly and unpredictable metabolic propensities of botrytis. The winery team's need to plan grape processing days in advance does not facilitate a harmonious relationship with the temporalities of grapes when the latter can, if affected by extreme rainfall events, be decomposed into worthless waste by fungi within a day or two. This temporal incongruity thus enabled the widespread presence of botrytis to interfere catastrophically with the ever-precarious temporal relations between vineyard and winery, as I discovered after my trip into in the field with Mark and Joe, when I work-shadowed Nathan for the first time since the rain began.

Mid-April 2011

Shortly after arriving at the winery, I sit down to talk to Nathan in his office. He brings me up to speed with what has happened here since my last visit. Nathan has been too busy to allow me to work-shadow him for the past three weeks or so, and now he's showing me why. We're looking through the winery's grape intake statistics on his computer screen. They show that the winery had two extremely busy weeks in late March and early April, right around the time that the botrytis epidemic reached its height, as the workers frantically crushed grapes at maximum capacity – trying to process as much fruit as possible before it became too mouldy for winemaking.

The sheer volume of grapes processed isn't the only reason that Nathan has been overworked. Ever since the rain started, the painstakingly-compiled intake forecasts on

which he usually relies when building his daily plans have been rendered almost worthless. Over the past few weeks The Company's technical officers have rejected so much fruit during the interval between its field assessment and its planned harvest date that Nathan has had very little idea which grapes will make it to the winery until they actually arrive at the crusher. Last week only 80% of the winery's scheduled grape deliveries actually arrived, and that wasn't his worst week during this vintage. Moreover, he has been forced to accommodate what he calls 'panic picking' by growers who became nervous after enduring one storm too many or discovering a suspected botrytis infection in their grapes and begged their local grower relations manager for an earlier crusher slot. So Nathan has also had to schedule in additional consignments of possibly-mouldy fruit (which might yet be rejected before delivery) for crushing on short notice.

This plays havoc with Nathan's daily plans. It's not easy to arrange three or four deliveries of similar grapes into the right order and crush them into the same tank at the best of times, but the task becomes nearly impossible when there's a good chance that two of them will never arrive. So Nathan frequently has to rewrite his fermenter allocations from scratch, so that they will fit the motley assortment of grapes actually arriving at the crusher. Doing so is not just stressful but time-consuming; he has been working far longer hours than usual, trying to keep pace with a constantly-changing situation. Things are, however, becoming somewhat calmer now. Only 5% of this week's scheduled deliveries have so far been rejected before arrival. But Nathan tells me that this probably just means that botrytis infection is now so rife among those grapes still in the field that most of the damaged fruit is being rejected before it's even assessed by a winemaker. The situation remains very uncertain, and Nathan isn't yet ready to begin trusting his intake estimates again, but the winery has been crushing far less fruit since the beginning of April and its grape intake – which peaked a fortnight ago at nearly 10,000 tonnes in a single week – is expected to fall into the hundreds of tonnes next week. Nathan expects The Company's total grape crush for vintage 2011 to be far smaller than in a typical year. He doesn't yet have the figures, but he

already knows that his colleagues rejected a sizeable portion of this year's contracted grape crop.

Nathan's daily plans help to hold the temporal activities of grape vines and of machines in their proper, productive relation – and thus to maintain the close coordination between vineyard and winery workers required to deliver good-quality grapes to the winery. But to accomplish this daunting task they need to be as carefully attuned to, and therefore as easily affected by, changes in grapes (Despret 2004; Harris 1998; Ingold 2000; 2011; Latour 2004a) as they are to the processing cycles of winery machinery. So when those grapes were attacked by botrytis, its unruly metabolic temporalities intruded into a closely-monitored but unstable temporal relationship between several very different nonhuman participants in wine production. In chaotically subverting the metabolic processes through which the qualities of grapes – and the passage of time in the field – are constituted, botrytis dragged events in the vineyard out of alignment with the winery's processing plans. And in disrupting the temporal relationship between these sites and bodies of practice, it shattered the orchestration of different materials, workers, and sites required to produce valuable materials. Valorisation gave way to sudden and unpredictable devaluations as botrytis' metabolic transformation of grapes also disrupted work at the winery – affecting, displacing, and interfering in quite unexpected, and problematic, ways with work schedules which winemakers had carefully calculated around clocks and processing speeds. So when fungal damage made the composition of the grape supply and its suitability for winemaking uncertain from one day to the next, the winery processing schedule's very sensitivity to the changing qualities of grapes rendered work at the winery as erratic as the metabolisms of grape vines and fungi.

As such, the same sensitivities to nonhuman temporalities which enabled The Company to make grapes valuable also facilitated the devaluation of these materials. The situation in some respects resembles that confronted by David Stark's Wall Street

arbitrageurs, for whom the act of becoming attached to a securitised asset during a trade is less an acquisition of a valuable good than the assumption of a strategic exposure to fluctuations in that security's price. When understood through exposure a trade becomes, in effect, the acquisition of a financial susceptibility to the uncontrollable (albeit perhaps moderately foreseeable) actions of other traders and investors through:

“the impact that a change in some variable (such as the price of an asset) can have on the wealth of the trader” (Stark 2009: 128).

The same relationships with securities which enable traders to accumulate value therefore inescapably also render them vulnerable to being affected by the actions of others in ways which may expose them to devaluation, or the loss of wealth, for:

“Arbitrageurs can reduce or eliminate exposure along many dimensions, but they cannot make a profit on a trade unless they are exposed” (ibid 2009: 130).

Stark's analysis implies that *arbitrageurs'* modes of attachment to securities (and of becoming affected, through them, by market processes) share a rather peculiar quality with The Company's attachments to grapes (and with its ways of becoming affected, through them, by vines and their environments). Like Stengers' (2010: 29) *pharmakon*, both attachments' “effect can mutate into its opposite, depending on the dose, the circumstances, or the context”. For like Stark's traders, The Company's staff must cultivate capacities to become affected by (Bennett 2010; Despret 2004; Lorimer 2008), or attuned to (Harris 1998; Ingold 2000; Lorimer 2010), weather events which affect grape vines' metabolisms and to the processing speeds of winery machinery in order to intervene in their activities in ways that generate value – for instance by harvesting grapes at the appropriate time. Yet it was precisely *because* the making-valuable of grapes demanded a sensitivity to the metabolisms of vines, and to the biophysical encounters which affect them, that changing environmental conditions were empowered to turn valorisation to devaluation.

These parallels between Company employees' relationships with vines and their environments and those of Stark's traders with securities and their markets should not,

however, be overstated. The capricious environment to which *arbitrageurs* expose themselves is of a kind familiar to economic sociologists. It is:

“a social construct consisting of other traders and other interconnected instruments continuously reshaping, in feverish innovation, the properties of that recursive world” (Stark 2009: 152).

It is therefore the actions of human traders, speculators, and investors – albeit ones whose calculations mobilise a plethora of market devices – which continually recast and transform *arbitrageurs'* attachments to securities. These market-spaces therefore retain a distinctly intersubjective flavour, for within them the powers of things remain safely enrolled into the performance of economic theories and rationalities (Hébert 2014). The processes and protagonists to which Company viticulturists' and winemakers' attachments to grapes exposed them were of a rather different order. It was unusual weather conditions which triggered the fungal metabolic transformations that came – through the precise calibration of The Company's intake and processing procedures to the changing qualities of grapes – to make such an economically catastrophic difference by throwing the work of Company managers into chaos and jeopardising its growers' incomes.

This was not the work of market devices built to assist other economic agencies in generating value, but of materials and organisms affected and articulated by relations and encounters with bodies – such as rainstorms and fungal spores – entirely indifferent to the imperatives of market ordering. The botrytis epidemic's devaluation of grapes thus reaffirmed that the performances of the nonhumans mobilised in the production and processing of The Company's grapes made a difference to the value of these materials, and were indeed constitutive of Company employees' capacities to make materials valuable. However, they did so in a less celebratory fashion than is suggested by the vocabulary of skill, attunement, sensitivity, and agency in which such accounts of learning to be affected are usually couched. Analysing The Company's valorisation of grapes through the case of the 2011 botrytis epidemic thus enables this chapter to articulate an often-overlooked corollary

of accounts of the construction of economic (and other) agencies through alliances with nonhuman bodies (Çalışkan & Callon 2010; Callon 1998b; 2007b; MacKenzie 2009; Muniesa et al. 2007). Namely, that while agency may emerge from an embodied sensitivity to others, a corporeal existence which is not bounded against the influence of other bodies necessarily *also* engenders a passive exposure to events (Clark 2011). Attending to the devaluations induced by botrytis thus occasions a recognition that while learning to be affected by nonhumans may generate capacities to produce and calculate value – and more generally to act (Latour 2004a; Hustak & Myers 2012; Whatmore & Hinchliffe 2010) – the same process also engenders passivity and vulnerability to being swept away involuntarily by unwanted and unexpected encounters (Harrison 2008). Abilities to be affected by nonhumans thus also beget a susceptibility to being forced by those same nonhumans into unwelcome, threatening encounters and positions (Bennett 2001; Deleuze & Guattari 2004). Analysing the enactment of value as a more-than-human affair thus renders the work of valorisation a more ambivalent, pharmacological (Stengers 2010; Kirksey et al. 2013) business than is usually acknowledged. For by this account, vulnerability and devaluation are not hallmarks of a brute insensitivity figured negatively as a mere lack of skill but are instead constant and constitutive companions of capacities to generate value.

Conclusion: Sensitivity and vulnerability

Proposing, as this chapter has, that the associations among humans and nonhumans which generate skill and agency – and capacities to produce and assess value in particular – are inescapably also sources of vulnerability to its undoing changes the stakes and implications of economic engagement with a more-than-human world. Previous engagements with more-than-human dimensions of economic processes have tended to emphasise the potential for alliances with, or skilful attunement to, nonhuman bodies to augment the capabilities of economic agencies, endowing them with enhanced capacities to define or assess value, and to impose their valuations upon others (Çalışkan & Callon 2010;

Callon 1998b; 2007b; MacKenzie 2009; Muniesa et al. 2007). They have thus tended, in foregrounding the figure of the market device (Hébert 2014), to replicate a broader tendency within relational accounts of embodied skill to identify sensitivity to others with the expansion of capacities to perceive and affect them (Clark 2011; Harrison 2008; 2009). This chapter has argued, by contrast, that attachments to nonhumans can engender not only sensitivity and skill but susceptibility and vulnerability; that the same relations which generate capacities to impart value to materials may also erase their worth as the composition and disposition of the environments which affect an economic agency's nonhuman constituents and partners shift.

The very relations which imbue materials with value thus take on a 'pharmacological' character (Kirksey et al. 2013; Stengers 2010). Their effects become prone to reverse themselves as the environments and encounters which affect their nonhuman constituents shift, so that sources of financial strength become economic vulnerabilities which impart susceptibility to impoverishment instead of propensities towards enrichment. This proposition thus disrupts the implicit normativity of relational-materialist accounts of enskilment and agency (Hustak & Myers 2012; Ingold 2000; 2011; Latour 2004a; Whatmore & Hinchliffe 2010) in which entanglement with and sensitivity to other bodies is figured rather one-sidedly as amplifying agency (Clark 2011; Harrison 2008; 2009). For it suggests that incautious – or even inescapable – embroilments in more-than-human processes may render such hybrid agencies vulnerable to becoming affected by, and economically exposed to, the actions of nonhuman entities and events which may be unpredictable, uncontrollable, and entirely indifferent to human needs and desires. The implication is, in short, that sensitivity to the value-producing (or –destroying) powers of nonhumans is not to be indiscriminately or incautiously sought. The point is once again illustrated by Stark's (2009: 130) *arbitrageurs*, who seek to:

“cut entanglements along some dimensions precisely to focus exposure where they are most confidently attached.”

But how might producers and purchasers of grapes go about ‘focusing,’ or selectively cultivating, their attachments to these materials? How might they distinguish relations generative of value from those which threaten to destroy it, and thus manage their vulnerability to being affected by the unruly environmental processes to which these materials are exposed? The question is especially pressing within The Company because here, as among many Australian wine producers, the harvesting of grapes by external growers precipitates a market transaction – an occasion when the worth of these materials must be evaluated and converted into a price. But how are the participants in such transactions to assess what price it is appropriate to pay to enter into an association with such unreliable materials, or indeed whether they should become attached to them at all? The next chapter investigates these questions by examining how wine producers went about perceiving and valuing botrytis damage in grapes.

Chapter 5

Calculations and Externalisations: Transacting material uncertainties

Mid-March 2011

“A mysterious certainty dominates our lives in late capitalist modernity: the price. Not a single day passes without learning, making, and taking it.” (Çalışkan 2007: 241)

But what happens in the absence of Çalışkan’s omnipresent certainty? This question begins to develop on the way to another vineyard and another grape assessment. It’s one of the few clear, dry days in mid-March 2011, and I am sitting in Sam Bartoli’s pickup truck as the owner and manager of Bartoli Wines drives to a grower’s vineyard. Sam explains that he’s anxious to examine a particular block of Riesling grapes, and to agree picking arrangements for it. Marco, the vineyard’s owner, has told him that his Riesling is showing signs of botrytis infection, and this news puts Sam’s commitment to purchasing the fruit in question.

When we arrive, Marco leads us to and through the block in question, commenting on the condition of the grapes as he goes: ‘There’s not too much botrytis in that.’ ‘It looks OK, doesn’t it?’ In many ways Sam’s movement through the block, looking intently at bunches and tasting berries, closely resembles The Company’s winemaker field assessments (see chapter four). But there are subtle differences. For one thing, Sam and I visit Marco’s vineyard unaccompanied. Bartoli’s – a company with just four full-time workers – has no grower relations managers, and today Sam plays both roles. For another, there are no written grape supply contracts here; Bartoli’s source most of their grapes under long-standing informal agreements with just seven local grape growers. And today we move much more slowly through the vineyard than did Mark and Joe, stopping frequently to discuss the grapes’ deterioration. There’s much to query and debate, for neither Marco nor Sam is sure how to judge the severity and implications of this block’s botrytis infection. Marco doesn’t realise,



Figure 16: (Left) Botrytised Shiraz grapes squash together and jam in the receive bin at the Bartoli winery. (Right) A single bunch salvaged from the bin for closer inspection; many berries are so soft that they have burst under pressure.

and Sam has to explain, that all the purplish berries as well as those which have already shrivelled are infected – or that botrytis develops fast and the pink berries will wrinkle and wither, then turn to mush, during the next few days. Marco reacts with concern, and protests vehemently that he’s never seen botrytis in his vineyard before. But he’s delighted when, a few minutes later, Sam pops a couple of botrytised grapes in his mouth and concedes that (perhaps to his surprise) they actually taste OK. Possibly carried away with enthusiasm or relief, Marco tells Sam ‘Well, if it tastes good then it *is* good – you’ll just have to learn to make botrytised wine!’

This suggestion doesn’t impress Sam. He picks a bunch of grapes and points out the grey mould on the skins to Marco and I, explaining that while the flesh and juice inside the berry may taste fine, contact with mouldy skins could contaminate and damage them. That if botrytis infection proceeds too far then the skins will disintegrate and clog his press, preventing the extraction of any juice at all. Sam sounds knowledgeable, or at least more so than Marco and I, but he admits that he’s gleaned his knowledge about botrytis from the internet over the last few days. *He’s* never dealt with botrytis before either. He’s almost as

uncertain as Marco about how to distinguish usable grapes from those which are too badly botrytised to be processed into wine, but as a buyer who needs to decide whether (and if so how much) to pay for this fruit he's less flippant about experimenting with the possibilities of mould.

Sam pauses, mulling over the implications of this purchase. The grapes taste fine but he has no experience from which to infer the winemaking implications of a given flavour or texture in botrytised fruit, so taste counts for little today. He doesn't know what that grey mould on the skins might do to the juice. So Sam will be taking a chance in buying this rotting fruit; it may change in unpredictable and unwelcome ways. If he agrees to purchase it then he will certainly have to pay for it, but he cannot be certain whether he will be able to find a use for it. However, an important overseas customer has recently expanded their regular order with his bulk wine brokering business (a different company whose grape and wine supply base he keeps largely separate from his own small winery and the Bartoli Wines brand). This year they want to buy hundreds of thousands of litres of extra Riesling from Sam. Additional Riesling is, however, proving difficult to find at acceptable prices this year; the cost of bulk wine has increased dramatically since the botrytis outbreak began. Indeed, this is why Sam is interested in buying Marco's grapes. Sam does not consider Marco's fruit suitable for the Bartoli Wines label, and he has not dealt with Marco before, but these Riesling grapes might (hopefully) yield wine good enough to satisfy his customer. Rejecting Marco's grapes will certainly make scraping together enough material of appropriate quality even more difficult. So perhaps the possible costs of failing to fulfil a lucrative order, and potentially upsetting a loyal customer, outweigh those of buying a few tonnes of potentially unsaleable grapes.

To Marco's delight Sam announces that Bartoli's will crush his Riesling tomorrow as planned, but on one condition: he will take the Riesling only in order to see what he can do with it. Sam intends first to find out what kind of wine Bartoli's can make from these grapes and *then* to pay Marco a price appropriate to that wine's value. So although Marco's Riesling

will be picked and processed tomorrow (a costly endeavour in itself), the question of the material's value will be left open for now. Nothing is explicitly said, but I suspect that if Bartoli's deem the wine unsaleable then Marco will receive a very low price for his fruit. However, Marco – who was previously facing the possibility of losing his buyer entirely and being paid nothing at all for his crop – seems happy to accept this arrangement. Even if he cannot be sure, with no price agreed, that his payment will even cover the cost of growing the grapes, he still seems to feel that Sam's offer is better than making no sale at all.

Introduction: Priceless or worthless?

There is something troubling about this encounter between grape grower and wine company proprietor. At first glance it seems to be a straightforward market transaction (Çalışkan & Callon 2009; 2010; Callon & Muniesa 2005; Knorr Cetina 2006; Slater 2002). If the purchase goes ahead then Sam will become the owner of some grapes which currently belong to Marco, offering Marco some money in exchange in order to compensate, or cancel out, Marco's loss of his grapes – leaving Sam and Marco 'quits' when the purchase is complete. The two may remain friends, but both will be free to enter voluntarily into any future commercial dealings as autonomous equals, unencumbered by debts or obligations to one another – just as they entered voluntarily into this purchase. So Sam and Marco act as buyer and seller respectively, and the grapes play the role of the commodity (Callon 1998b; Carrier 1995; Gregory 1982; 1997; Strathern 1988; Tsing 2013).

However, something crucial to any market arrangement is missing: Sam and Marco do not agree a price. Sam has agreed to pay Marco *some* money for his grapes, *some* time, but none of us knows exactly how much money will move or when. This is puzzling. Market exchanges are usually characterised as being temporally bounded, or framed (Callon & Muniesa 2005; Hinchliffe et al. 2007; Slater 2002). Their defining trait is that the terms, form (typically monetary), and quantity of compensation to be delivered to the seller are agreed alongside – and with explicit reference to – the negotiation of the transfer of goods to the

buyer. Performing these operations simultaneously establishes the equivalence of the things exchanged, leaving the transacting parties equal, independent, and free of lingering obligations to one another (Callon 1998b; Latour 2013; Vatin 2013).

But it is difficult for Sam and Marco to establish how much money botrytised grapes might be worth. They are uncertain about what botrytis can do to grapes, and therefore cannot be sure what botrytised grapes might do in, and for, Sam's winery. Specifically, Sam can neither tell whether these materials can be made into wine which his overseas customer will buy nor judge their suitability to his and his customer's requirements. And with no way of knowing what he can do with these grapes, how is Sam to judge – or to agree with Marco upon – their value? The pharmacological character (Kirksey et al. 2013; Stengers 2010) which encounters with botrytis imparted to grapes – and to the relations through which their qualities and values arise – within The Company (see chapter 4) thus re-emerges in Sam's dilemma. Will these materials be a valuable asset or a costly liability to Sam? There seems to be no way to tell. The answer depends on the specificities of their interaction with an obscure and little-understood fungus – and is therefore likely to change for no reason that Sam or Marco can discern. Sam and Marco therefore face a seemingly insurmountable problem of valuation – and specifically of *evaluation*; of assessing the value of Marco's grapes and establishing how much money that value might be equivalent to (Vatin 2013). Yet even under such unpromising conditions, grapes *are* sometimes transacted. Indeed, Marco's grapes will be picked and transported to Sam's winery the following day. And somehow – although how this will be achieved remains unclear in the case of Marco's grapes – these grapes' travels must remain yoked to the circulation of money. How might this feat be accomplished? Through what measures, relations, and criteria might the monetary value of materials whose capacities to relate to and displace other bodies are as uncertain as those of botrytised grapes be established? In examining this particularly challenging qualification and valuation problem, this chapter begins to address this thesis' first key question – that of how the sensory qualities of materials come to matter economically within the Australian wine

industry, and of what organisations of the valuable this process might precipitate. I will begin engaging with these concerns in the following section by examining some of the practices through which the grapes' passage from vineyard to winery is effected.

Crossing the weighbridge

The grapes which are loaded onto trucks and driven away from Marco's vineyard will have to pass a test before being granted admittance to the Bartoli winery. Each consignment of grapes must be weighed upon delivery, because grapes are usually priced by the tonne and grape growers' incomes therefore depend upon the tonnage of grapes that they supply. Usually the entire truck is parked on a weighbridge (a large weighing machine positioned on the road approach to the winery) while the measurement is taken. This also affords winery staff a brief opportunity to inspect the grapes, and to refuse to accept delivery if they are damaged or contaminated, before the fruit enters the winery itself. The weighbridge therefore forms a sort of threshold or border, at which entry to the winery may be selectively permitted or refused.

After each grape delivery, the grower who supplied the fruit visits the Bartoli winery and collects a small paper receipt called a tare from the office. The tare's return to the grower witnesses and records that the winery has received and processed a certain quantity of grapes from them – confirming that a transaction has taken place. In reading the receipt, and accepting the tonnage that it displays, the grower agrees with the winery on the quantity of material transacted. Tares which circulate in counterpoint to grapes acknowledge in writing that possession and ownership of these materials has passed from grower to winery, and may be invoked as authoritatively objective witnesses to the transaction (Latour 1999b; Mélard 1998) in any subsequent payment dispute.

The image originally presented here has been removed from the version of this thesis which is freely available via ORA at the request of a research participant.

Figure 17: Technicians inspect and sample bins of grapes on the flatbed of a recently-arrived truck at a winery weighbridge.

These arrangements embody a specific history of commercial relations between Australian grape growers and wine producers. The outsourcing of grape production has been common practice among Australian wine producers since at least the 1870s, and for most of the following century grapes would be sourced predominantly through spot purchases and 'handshake agreements' between grower and winery (Beeston 2001; Haughton & Browett 1995). Winemakers were therefore likely to encounter grapes for the first time upon their arrival at the winery, making the inspection of fruit at the weighbridge particularly important. Meanwhile, agreeing upon the tonnage of fruit delivered was critical because grapes were – as Maclaine Pont (2011) describes in Argentina – often priced by weight rather than by quality. While more elaborate contractual arrangements, in which wineries stipulate target grape quality specifications and specify quality-based pricing structures in advance, have become commonplace since the 1980s due to the intensified attention to grape quality

which accompanied Australian wineries' shift from fortified to table wine production, elements of these older exchange practices still survive (Faith 2003; Pritchard 1999).

Perhaps, then, it is unsurprising that something along the lines described above happened at every winery with which I worked. The exact physical arrangements might vary, especially at larger wineries equipped with automated weighbridges and elaborate computer systems, but the event that the tare witnesses remains much the same. As grapes pass across a weighbridge, ownership of these materials passes from grower to wine company. Which means that the grapes which Sam inspects in Marco's vineyard are not his (not yet, and maybe not ever); only when he physically admits them into his winery will he become their owner. This situation is not unusual; an estimated 73% of the grapes crushed in South Australia in 2011 were purchased from growers rather than 'estate grown' in vineyards directly owned by a wine producer (Inness & Purtle 2011). As such, most of the grapes grown in Australia become detached from their producers and attached to wine companies through a transfer of ownership at the weighbridge. Admitting grapes into a winery therefore carries important consequences, for it reconfigures growers' and wine producers' relations with the materials crossing the weighbridge – and, by extension, their relationships with one another. Economists and sociologists usually describe these entanglements and disentanglements as a transfer of property rights; a reassignment of exclusive entitlements to use or dispose of a good for one's own private ends and to enjoy whatever value this might yield (Hann 1998; Strathern 1988). The money that the buyer pays to the seller replaces this entitlement's value to them, compensating for their disentanglement from any transformations and revaluations which the goods in question might subsequently undergo.

However, the kind of value over which property rights grant or prohibit entitlements rarely exhibits the pharmacological unruliness with which Sam must grapple when deciding whether to buy Marco's grapes. The attachments at stake in the discourse of private property rights convey affects which make and unmake worth in a comfotingly unidirectional fashion,

as befits its long-established interweaving with the subject/object dichotomy (Maurer 1999; Strathern 1988). Property rights are concerned primarily with human subjects' entitlements to do things to and dispose of quiescent objects, which are claimed as private property – and thus imbued with value – through the application of human labour (Strathern 1996; 1999). By this account – which the social scientist's contention that property is really a question of social relations among people quietly reproduces (for instance Hann 1998; Macfarlane 1998) – valuation and devaluation are emphatically *not* the more-than-human processes described in chapter four. For by this reasoning only human action can revalue objects of property, meaning that in the absence of human meddling their worth will remain reassuringly stable. Economic value is thus depicted as being dependably immune to being transformed by the intervention of nonhumans, meaning that:

“the emphatic focus on the ‘persons’ in such accounts has occasioned a tendency to neglect the significance of the ‘things’ transacting relations between them” (Whatmore 2002: 60).

Yet the significance of the claims which the material specificities and becomings of such mere owned things can make on their owners (Whatmore 2007) is easily illustrated by, for instance, the way that transferring ownership at the weighbridge divides up production costs between growers and wine producers. Liability for the financial costs of transforming materials into wine travels along with ownership. The grower, the fruit's owner until it crosses the weighbridge, pays for all expenses – including those of picking and trucking – incurred in delivering grapes to the winery to be accepted or rejected. If an unexpected rainstorm necessitates the purchase and spraying of additional pesticides to ward off downy and powdery mildew then the grower's relation of ownership to the grapes on their vines will attach the cost of doing so to them, and not to the winery which will later purchase those grapes. The grapes' sale price is supposed to compensate growers for such costs – although in practice grapes are currently often priced well below their cost of production (Hackworth 2011; WFA et al. 2009). But the twin circulations of things described above – the grapes' crossing of the weighbridge and the tare's return – usually combine to attach all subsequent

costs (for instance those of any treatment which grapes might require during vinification to combat botrytis damage) exclusively to wine producers. The grapes' movement across the weighbridge thus disentangles growers from the biochemical and economic transformations that their fruit will undergo as it ferments and, subsequently, circulates as a finished wine. In cutting off ownership relations it blocks affective flows from grapes to grower, preventing the grapes' ensuing corporeal and economic transformations from affecting them in financial registers (Strathern 1996; 1999).

Social theorists' discussions of property relations tend to focus on how such operations of cutting-off, or alienation, enable things to circulate alone without affecting their former owners (Appadurai 1986; Carrier 1995; Harvey 1984; Slater 2002; Tsing 2013). But as my discussion of production costs illustrates, the imbrication of people and things within new entanglements of ownership is an equally important dimension of property relations – and of market transactions (Callon et al. 2002; Callon & Muniesa 2005; Hinchliffe et al. 2007). Ownership both purifies *and* hybridises entities, and is as productive of associations as of separations (Strathern 1996; Whatmore 2007). Perhaps, then, examining Sam's impending ownership of Marco's grapes as an entanglement in the many messy flows passing through these rapidly-changing materials, which are as likely to make unwanted and costly demands upon him as to offer themselves for use towards his own ends, can afford some analytical purchase on his dilemma. Seen in this way, purchasing grapes is yet another way of becoming sensitive to the things which affect grapes and the changes which they undergo when brought into relation with new bodies. So in purchasing Marco's grapes, Sam will acquire not only rights to affect these materials but also new capacities to be affected by what they may become – and thus new vulnerabilities to being displaced by the influences (such as botrytis) which move them. Meanwhile Marco stands, in selling his grapes, to become unaffected by whatever material and economic transformations which they may undergo in future. This interpretation casts Sam's potential ownership of these materials – contrary to orthodox economic theory (Çalışkan & Callon 2009; 2010; Latour 2013) – as transforming not just his

rights to do things to the grapes but also those grapes' capacities to act unbidden on him and his company. Owning goods – such as mouldy grapes which might or might not yield saleable wine – can, then, expose the human participants in a transaction to new economic vulnerabilities as well as offering new opportunities for accumulation.

So in reconfiguring attachments between persons and grapes, the transfer of ownership at the weighbridge redistributes both value and vulnerability between grower and winery. How should such changes be compensated? The answer is unclear, for the new arrangement of entanglements is contradictory. Marco is relinquishing his grapes, but also terminating his exposure to the potentially costly interventions of botrytis. Sam gains ownership of the grapes (for now a valuable asset), but also becomes ensnared in their metabolic entanglements with botrytis – a condition which may become an expensive liability. Moreover, he is expected to *pay* for this privilege. The amount of money which is redistributed to Marco to balance the transfer of his grapes will have to be adjusted to take account of the contrary nature of these affective entanglements before the transaction may be closed. But how is this perverse configuration of desires and attachments – in which the each party's interests both oppose those of the other and contradict themselves – to be reconciled in a manner which produces an outcome acceptable to both? How might a price appropriate to what these grapes can do be agreed?

Uncertainty and (in)Calculability

Such questions about how Sam and Marco's quite different interests as buyer and seller might be rendered commensurable draw this discussion back to questions about pricing, and specifically about the *calculation* of mutually acceptable prices for goods. Calculation involves first specifying a desired state of the world, then working out and implementing the steps required to bring it about (Hinchliffe et al. 2007). Calculative action is therefore goal-directed (Appadurai 2012; Mitchell 2002). It seeks to transport intentions from plan to execution without deformation, directing action along paths which require few

unexpected mediations and introduce minimal drift from the expected destination (Latour 1988). Calculative action is thus defined by an absence of surprising collisions with entities and forces which threaten, like botrytis, to subvert circulations and alliances from their anticipated ends (Callon et al. 2009; Latour 1999b). The performance of calculation therefore demands that the capacities of and relations among the agencies at stake – and by extension the consequences of a given act or transaction by the calculating party – be explicitly known and highly predictable (Callon 1998b).

Markets are often depicted as devices which produce calculative action by manufacturing compromises which realise – at least to a tolerable extent – the outcomes envisioned and pursued by both buyers and sellers (Çalışkan & Callon 2010; Callon & Muniesa 2005). Marketisation studies scholars argue that they accomplish this by entangling potential purchasers with things offered for sale through a process of reciprocal qualification, or ‘mutual adjustment,’ which tests both each good’s characteristics and behaviour and each buyer’s practices, preferences, and projects, so that each good’s capacity to realise their goals and desires becomes apparent (Callon et al. 2002; MacDonald 2013; Sjögren & Helgesson 2007). This process of ‘profiling’ makes the heterogeneous interests of buyer and seller – and their respective valuations of goods – simultaneously present (Callon 1998a; Callon 1999). The very different interests and practices which inform their respective valuations, as expressed in an offering and a return, are thus rendered comparable and commensurable, enabling agreement on a price (Garcia-Parpet 2007; Hinchliffe et al. 2007).

But for a thing to become attached to a future state of the world, and thus become calculable, buyers must understand its capacities and qualities. They must know what becoming entangled with it through purchase can *do* for (and to) them, and understand how they might use (or be displaced by) it – and, as detailed in chapters one and two, such knowledge must be laboriously achieved through qualification processes (Callon et al. 2002; MacKenzie 2009; Vatin 2013). This striving after qualification seems to be informing Sam’s

concern with finding out what Marco's grapes can do in a winery and what kind of wine they might make. Sam must know that he can make wine with Marco's grapes which will be acceptable to his overseas buyer before he can price them and proceed with his purchase. Qualifying Marco's grapes is therefore an investment in rendering their future behaviour sufficiently predictable and stable that they may be ranked, calculated, valued, priced, and transacted – and may therefore be bought and sold as goods (Sjögren & Helgesson 2007). Callon terms this process variously objectification (Callon & Muniesa 2005) and pacification (Çalışkan & Callon 2010: 5) to emphasise that:

“it is the passivity of things that transforms them into goods, and that enables agencies to form expectations, make plans, stabilize their preferences and undertake calculations [...] and establishes the possibility of entering into cooperative or competitive relationships of exchange.”

By these criteria botrytis is a poor excuse for an object and botrytised grapes make even worse goods. Botrytis' capacities to relate to and affect other bodies (most worryingly winegrapes) are persistently unclear. Like Stengers' (2010: 29) *pharmakon*, it offers “no fixed point of reference that would allow us to recognize and understand its effects with some assurance”. Across South Eastern Australia, grape growers and wine producers like Sam and Marco are struggling to understand this fungal entity's prodigious propensities to associate – and to become – with other bodies. They can identify botrytis visually – as pink, shrivelling berries and green or grey fur growing on grape skins but they can find no consistent, predictable pattern to its appearance, or its behaviour. Different vineyards, blocks within vineyards, and even different rows and individual vines, develop botrytis infections at different times and of varying severities. Viticulturists disagree on the sugar concentration at which botrytis development is triggered. Far from remaining stable and passive, it is continually doing unexpected things and combining with other bodies in unforeseen ways.

That botrytis should behave in such radically unstable and unpredictable ways is strange, because this fungus often occupies a stable and elaborately-defined place in other winemaking collectives. Some French and German vigneron deliberately inoculate and

painstakingly culture it (as noble rot) in certain white grape varieties to produce highly sought after sweet dessert wines (Paul 1996; Ribéreau-Gayon et al. 1980; Ribéreau-Gayon et al. 2006). So it's not botrytis in general which refuses to behave consistently, but South Eastern Australian botrytis (as grey rot) specifically. These Jekyll-and-Hyde incarnations of botrytis as noble rot and grey rot – as value-enhancing treatment and value-annihilating pathogen – emphasise afresh its pharmacological qualities. For botrytis is capable of becoming both medicine and poison to winegrapes and to the commercial arrangements convened around them – and, as I shall argue below, of making the constitution, affects, and effects of its host materials and assemblages radically uncertain (Kirksey et al. 2013; Stengers 2010). Don – the grower encountered in chapter one, who is both a long term grape supplier to Bartoli Wines and one of the few growers in his region to have previously encountered botrytis– has views on why this might be:

“most growers have not seen botrytis, ‘cause they’re too young. We haven’t really had a botrytis outbreak here for *years*, that I know of anyway. Not a severe one. I had some, out here [pointing uphill] where the Shiraz are now [...] I got botrytis there one year, about 30 or so years ago. [...] But that was slow moving, yeah. And that’s probably the most I’ve ever seen. But most growers wouldn’t have known what botrytis was like. I’d say 90% of them wouldn’t have had a clue. ‘Cause there’s not many old growers left, they’re all retired or have died.”

According to Don, botrytis’ capacity to confuse growers and winemakers stems partly from the decades-long intervals which punctuate botrytis outbreaks in South Australia. It has a temporal dimension. Even Don himself, overseeing his 39th vintage in 2011 and approaching retirement, has encountered botrytis only once before and *that* botrytis was very different from the virulent grey rot of the 2011 epidemic. It seems to have been the 2010-2011 growing season’s extreme weather conditions which made this difference between past and present botrytis. As noted in chapter four, 2011 was South Australia’s third-wettest year since comparable records began in 1900 and the first quarter was the state’s wettest on record (BOM 2011; 2012). The unpredictability of epidemic Australian botrytis therefore has much to do with its sensitivity to extreme weather conditions which recur out of step with viticultural and winemaking careers, meaning that each new



Figure 18: These Semillon grapes seem to be hosting multiple species of fungus. While a mature botrytis mycelium's distinctive grey tufts are visible in the background, the grapes in the foreground appear to be accommodating a more unusual white mould.

generation of South Australian grape and wine producers will probably face it unprepared and inexperienced.

Myriad other environmental entanglements – biotic as well as meteorological – can, however, also affect what botrytis can do. Infected grapes were often colonised by other moulds with even less welcome capabilities, such as *Aspergillus niger* (or 'black rot'), alongside botrytis. These other fungi might interact with botrytis in unexpected ways, forming complex mycological assemblages within which individual organisms could be difficult to identify (Brice 2014b; Tsing 2011). With the promiscuous microbial sociability (Hird 2009) of fungi sometimes placing even the species of the organisms infecting grapes in question, these materials' winemaking qualities could only be guessed at. Botrytis' ontological slipperiness is therefore closely linked with the irreducibly transformative

environmental entanglements which characterise fungal sociality (Tsing 2012a). Thanks to its propensity to combine unpredictably with weather conditions, other fungi, and innumerable other entities, identifying the presence of *Botrytis cinerea* through discoloured, furry, or shrivelled grapes tells wine producers like Sam very little about the extent and type of contamination which its presence might cause in wine. Such modes of assessment can therefore also offer little assistance in determining how a wine will taste, or who might be enticed to buy it and at what price.

Like those of other ecologically contingent phenomena such as bush fires (Clark 2011; Franklin 2008), the disruptive capabilities of grey rot remain recalcitrantly specific to the unique material-energetic assemblages constituting each infection event (Ribéreau-Gayon et al. 2006). *Botrytis* thus acquired its pharmacological (Kirksey et al. 2013; Stengers 2010) disposition because winemakers could not disentangle this organism's own capacities for relation from those of its endlessly variable environmental surroundings. They could not assign objective qualities, stable across sites and seasons, to an invariant botrytis-in-itself and therefore could neither specify nor predict its capacities to displace other bodies – and specifically to affect and alter grapes and the materials produced from them (Latour 1999b). Two especially important relations remained opaque: first, that between a fungal infection in grapes and biochemical changes in wine – that is, the association between the qualities of grapes and those of wine. Second, that between biochemical contamination and a wine's quality and marketability, or the connection between the composition of a wine and its suitability for commercial circulation (and thus its value within a market transaction).

As botrytis travelled, so its unclear capacities for relation destabilised the behaviour – and the worth – of the materials which it invaded. *Botrytis* became a pharmacological supplement to the socio-material fabric of winemaking, whose arrival rendered its hosts' capacities to be affected and to affect others bewilderingly erratic. Its presence transformed grapes into materials bearing powers as unpredictable and environmental sensitivities as

incomprehensible as those of botrytis itself – transforming them into material uncertainties, interaction with and among which produced highly unpredictable outcomes. Sam’s inability to price Marco’s grapes illustrates the difficulties that such material uncertainties can create. He cannot offer a price because he doesn’t know what a botrytis infection will do to the wine which will be made from these grapes (which may turn to mouldy sludge before they arrive at the winery anyway). He doesn’t know whether his overseas customer will accept such wine. So how, given that his interest in these materials is contingent on their suitability for making wine that he can sell profitably, are he and Marco to settle on an appropriate price for Marco’s grapes? Sam doesn’t yet know what his interests are because he cannot tell how becoming the owner of those grapes might enable botrytis to affect him. Crucially, he cannot tell whether he can make money with these materials or not.

Calculating and Externalising

What is to be done with such material uncertainties? The arguments outlined above suggest that in order for calculation (and therefore transaction) to take place market spaces must admit only inert objects, disentangled from their environments, which will act only if moved by some identifiable human agency (Berndt & Boeckler 2009; Callon 1998b; 1998a; Çalışkan & Callon 2010). Only such pacification can render the world sufficiently predictable for buyers and sellers to have confidence in the value of their goods and to engage in exchange (Busch & Tanaka 1996; Slater 2002). Materials whose qualities and affective capacities change rapidly and which behave in unexpected ways – botrytis-infected grapes for instance – have no place within markets, for their instability precludes secure attachment to future states of the world. If such material uncertainties intrude into market arrangements then calculation’s secure pathways from means to ends break down and uncertainty creeps in as unintended consequences displace planned outcomes (Biggart & Beamish 2003). Conditions of uncertainty thus seemingly preclude market transactions (Appadurai 2011; 2012; Callon et al. 2009; Stark 2009).

This account positions uncertainty as calculation's other (Callon & Law 2005). It becomes a constitutive outside against which frames of calculation are carefully demarcated and to which unruly and excessive agencies which overflow calculability are relegated (Callon 2007a; Miller 2002). Uncertainty comes to be whatever, and wherever, calculability is not (O'Malley 2004; Stark 2009). This opposition between calculation and uncertainty has often occasioned a preoccupation among economic sociologists with explaining how calculated exchange – buying and selling goods – becomes possible at all in a world which is often highly uncertain (Biggart & Beamish 2003; Callon 1998b; Clark 2011). The solution favoured by both conventions theory and marketisation studies is, as detailed in chapter two, to suggest that non-economic expertise must be mobilised to test, measure, qualify, and quantify the capacities for relation and action belonging to any 'enigmatic' agency that intrudes into the frame of calculation before valuation and exchange may resume (Karpik 2010; Musselin & Paradeise 2005; Thévenot 2002; Vatin 2013; Wilkinson 1997). These approaches thus suggest that market transactions become possible only when uncertainties have been 'internalised' into calculability in a process analogous to the objectification and pacification of goods (Callon & Muniesa 2005; Çalışkan & Callon 2010). The unruly sources of the processes which had overflowed calculability – and those agencies' capacities to displace others – must be identified, re-establishing the clear causal relations which they had muddled (Callon 1998a). Once their capacities for (inter)action have been rendered explicit and foreseeable – or qualified (Callon et al. 2002) – these objects may be included in calculations. Uncertainty is transmuted into risk as the consequences of actions become probabilistically specifiable once more (Callon et al. 2009).

As Vatin (2013) argues, such accounts organise these operations into a certain temporal sequence. Qualification – and therefore the stabilisation of market-worthy goods – must be completed before buyers and sellers may begin valuing goods against one another or commensurating their respective (e)valuations. But often this separation between processes is difficult to maintain in practice (Helgesson & Muniesa 2014; Heuts & Mol 2013). Such is

certainly the case for Sam because, as chapter four discussed, decisions about purchasing and picking grapes are time-sensitive – and they are doubly so when the grapes in question are infected with fungi which may decompose them into worthless mush within days. So serious was this danger that even growers whose winery customers were signatories to the Australian Wine Industry Code of Conduct (WFA & WGGGA 2008) did not appear to be utilising the code's provisions for resolving grape price disputes by invoking independent expert judgements. And with good reason: a field inspection by an approved viticultural consultant might take several days to arrange, imposing a delay which would probably prove catastrophic. So by the time that Sam's uncertainties about the effects of botrytis infection on wine could be authoritatively settled, the grapes in question would almost certainly have become so rotten as to be unsuitable for winemaking. The grapes' perishability forced Sam to decide quickly, even if he could not safely calculate what (if anything) Marco's grapes might be worth to Bartoli's. In a problem rather familiar to agro-food geographers, goods which remain ill-qualified, unstable, prone to change as they travel, and thus 'unfinished' must nevertheless be transacted (Hébert 2010; Murdoch et al. 2000; Paxson 2013).

Sam's dilemma challenges conventions theorists' and marketisation studies practitioners' assumptions that market action, and specifically transaction, can only take place once the internalisation of uncertainties has solidified any amorphous agencies which might disturb mercantile operations into objects capable of supporting cool calculation (Vatin 2013). His transaction with Marco elides this temporal separation of qualification from valuation and exchange, and thus calls into question marketisation studies practitioners' tendency to invoke the internalisation of unpriceable externalities and the making-calculable of hitherto-incalculable phenomena as retrospective explanations for the emergence of 'perfect' markets (Garcia-Parpet 2007; Knorr Cetina & Preda 2007; MacKenzie 2009; Muniesa 2007; Sjögren & Helgesson 2007). Perhaps, then, investigating what grape growers and wine producers actually *do* when confronted by material uncertainties might provide insights into

the roles and workings of economic calculation processes by offering an opportunity to examine their failures and absences as well as their successes (Hébert 2014; Miller 2002).

So how *do* Sam and Marco manage to act – and transact – even when the “engines for turning situations into calculative problems” (Stark 2009: 15) supplied by qualification are absent, or else appear in unconventional forms? Far from internalising their uncertainties about the capabilities of botrytis – converting them into calculable risks – Sam and Marco seemed to be *externalising* botrytised grapes’ more uncertain capacities for relation. Instead of testing and determining the wine-producing capacities of botrytis-infected fruit, they displaced the problematic question of the relationship between the qualities of grapes and those of wine (and therefore of these materials’ value to Sam) from consideration and calculation. Sam could accept Marco’s grapes precisely because he did *not* negotiate a price, leaving the question of their value to him (and of Marco’s compensation) for some later date. This could be settled after winemaking was complete, at a time when Sam could find out what these materials could do and the relationship between the qualities of botrytised grapes and of wine might become less obscure.

However, temporally displacing pricing in this way does not simply solve the problem of material uncertainties; it also creates new tensions and confusions. For if the price of Marco’s fruit depends on botrytis’ as yet uncertain capacities to affect wine quality then the material encounters and transformations that these grapes undergo after entering the winery will affect Marco as well as Bartoli’s. Displacing price might enable Marco to escape the paralysis of incalculability and dispose of some troublesome grapes, but it nevertheless leaves him still entangled with botrytis. He remains sensitive, and vulnerable, to its capacities to affect and damage his fruit. So this way of transacting leaves both Marco *and* Bartoli’s exposed to being displaced in ways as yet unknown by botrytis.

Temporally displacing pricing therefore denies growers the disentanglement from botrytis – the capacity to become *insensitive* to its effects upon its changing host materials

during vinification – that priced transactions impart. For instance, when I interviewed Don two months later, in May 2011, he had not yet been paid by – or even settled a price for his fruit with – Bartoli's. Don, for his part, claimed not to mind this; he had experienced delays in payment before during his decade of supplying grapes to Bartoli's. Such delays were, it was true, one of the main drawbacks to this partnership from his perspective. But Don felt it was more important that Bartoli's had always paid him generously (at least if his fruit was up to scratch) and accepted this delay because he trusted that they would pay him well – if tardily – again this year. Other growers are, however, less comfortable with delays in and uncertainties about payment, and more alert to the precarious financial position in which this can place them. Elaine and Andre, a retired couple with a small vineyard in McLaren Vale, explained in another interview how the anxieties caused by delayed payments had precipitated the breakdown of one of their past grape supply contracts:

Andre: “we had a three year contract and in Australia, you probably know what the contract terms are, that you get paid one third, one third, one third. A third in the month following picking – so, if you picked in March then on the 30th of the next month, April, you'd get one third of the contract paid. Then a third at the end of the financial year, so 30th of June. And the last, any outstanding balance, which is one third, in September, end of September. But [the winery owner], he had a slightly different approach. He'd pay after he'd sold wine [...] It was a pretty tough time for us, because Rabobank the, um, the Dutch bank, had loaned to a lot of wineries and growers, but they were calling in their loans.”

[...]

Elaine: “And then, as [we] approached '08, the next season, we still hadn't received all the money from the season before. [...] And we were also wary that, maybe, that winery's financial situation would mean they would go bankrupt. And if our fruit went to him, and then he went bankrupt, we would *lose* it, we would have nothing.”

Andre and Elaine were so alarmed by this prospect that they voluntarily terminated their contract with this winery in 2008, after only one vintage. Terminating a contract was a decision that most growers would, by the late 2000s, have made only in extreme circumstances. A wine producer who signs a grape supply contract with a grower is legally obliged to purchase that grower's grapes – at least if they match the specified quality criteria – for the contract's duration. Andre and Elaine's contract thus guaranteed that they would be

able to sell their grapes every year until its expiration, and thus provided them with a highly desirable degree of commercial security in an environment in which large volumes of grapes were, by the late 2000s, going unsold (see chapter one). Their drastic action in terminating their contract therefore illustrates how the temporal displacement of payment leaves growers still entangled in the relations which effect their fruit's material transformation and economic circulation, and thus prolongs their vulnerability to being affected by the costs of any adverse changes that it might undergo. Under the standard three-stage payment arrangement that they describe above, a grower might lose a year's work and investment without compensation should their crop spoil before delivery to the winery. However, acceptance at the weighbridge and a firm price offer resolves this danger – insulating them from the effects of any damaging relations that might affect these materials in future. But if pricing and payment are displaced, as they were for Don and Marco (and, under rather different circumstances, for Andre and Elaine), growers may face the possible uncompensated loss of a crop for months or even years to come.

Pricing Botrytis

Sam was, then, engaged in a strange sort of market transaction with Marco and Don – if such it was. Because these transactions provided no price for their grapes, they did not disentangle Bartoli's growers from their relations with (and vulnerability to being affected by) either Sam's actions or those of botrytis. Both growers and wine company remained exposed in unspecified, uneasy, and potentially costly ways to botrytis' uncertain capacities to affect the materials fermenting in Sam's winery for months after the last grapes had crossed the weighbridge. Sam's unpriced purchases prolonged exactly the sort of messy, paralytically uncertain entanglements from which market arrangements are supposed to liberate economic agencies (Callon 1998b; Callon & Muniesa 2005; Çalışkan & Callon 2010; Tsing 2013). So are there other ways of transacting material uncertainties, which might be productive of less ambiguous and less threatening attachments to botrytis?

The Company seems to have found such a way. By the time that I interview Don in May, The Company has already settled its payments to growers – and thus redistributed and fixed both exposure to botrytis and monetary compensation. Mark the grower relations manager is already approving the first of the three standard payments to his growers. This does not mean that Company winemakers know vastly more about the qualities of their wines than Bartoli's staff do about theirs; that Company materials are better-objectified (Callon & Muniesa 2005). Indeed, the qualities and commercial uses of The Company's red wines will not officially be determined until the classification tasting the following month, when the entire winemaking group performs a final taste assessment on every tank in the winery and the wines will receive the final quality grading which guides their allocation to various products (see chapter six). However, The Company is prohibited from displacing questions of price into the future as Sam Bartoli did. The Australian Wine Industry Code of Conduct obliges them to fix their grape prices publicly before vintage begins so that they cannot later use their influence as a large-volume grape purchaser to manipulate price negotiations unscrupulously (WFA & WGGGA 2008). Moreover, The Company's own grape grading and valuation procedures (which predate the code) preclude such temporal displacement. For none of the material changes which grapes undergo after crossing the weighbridge, and none of the winemakers' repeated reassessments of their qualities during vinification and maturation, are allowed to affect the prices that The Company pays its growers. The Company's grape prices are instead based entirely upon winemakers' assessments of the quality and condition of the fruit in the field.

This forces Company viticultural staff to make the relationship between botrytis infection and the value of grapes calculable in the vineyard. This valuation process appeared briefly in chapter four, in the field assessments during which a winemaker attaches grapes to a suitable wine product (or 'grades' them) after tasting them. The Company's winemaker field assessments encounter many of the same difficulties in relating the materialities of grapes to the quality of wine as Sam Bartoli faced in Marco's vineyard. Moreover, these

difficulties matter financially in similar ways, because the price of each batch of grapes depends upon which product grade the winemaker attaches them to during the assessment. Yet briefly revisiting my day in the field with Mark and Joe will illustrate that their grape assessments differ from those performed by Sam Bartoli in one crucial respect.

Early April 2011

At all but one of the vineyards that we visit Mark, Joe, and I are greeted on arrival by the owner or vineyard manager. Mark briefly introduces Joe and I and then, just as Marco guided Sam and I to the block which concerned us, the grower or vineyard manager leads us to the block scheduled for assessment. Mark does most of the talking – it's his job to stay in regular contact with growers and to be familiar with them – while Joe walks the rows alone, looking, tasting, and recording. His assessments take only a few minutes. We leave each vineyard within 15 minutes of our arrival, and there's little of the drawn-out deliberation over botrytis which I encountered in Marco's vineyard. When Joe returns from the rows he tells Mark and the grower or vineyard manager which product grade he has assigned to the block and the three briefly discuss harvesting options. Their conversations involve Baume levels,¹² canopies which are shutting down (slowing photosynthesis), weather conditions, wine products, crusher slots, and much more. But one entity is conspicuous by its absence: botrytis is rarely mentioned.

At least not until we visit our third vineyard of the day, where Joe examines some Cabernet Sauvignon vines with an emerging botrytis problem. This assessment plays out somewhat differently; shortly after we arrive at the block Mark is distracted by a phone call from a grower who urgently needs to book in his grapes for picking and crushing. With Mark otherwise engaged, the vineyard manager follows Joe into the vines and pesters him with

¹² The assessment criteria for each Company product grade specify a minimum acceptable Baume value. The Company applies price penalties to grapes which fall slightly outside the target Baume range, while more significant mismatches between specified and measured Baume values result in grapes being re-graded towards an alternative product. An acceptable sugar concentration forms a necessary, but not a sufficient, condition for material's inclusion in any given Company wine product.

questions about how bad his block's botrytis infection is and how much longer the grapes will remain pickable. This interrogation seems to make Joe distinctly uncomfortable. It isn't, he explains awkwardly, his job to know about vineyard diseases or to assess their severity; he's only competent to judge the ripeness and quality of the grapes themselves. These are questions for another member of Company staff, the Field Technical Officer (FTO), who will inspect the block separately later – and no, he *doesn't* know when the FTO will visit.

The discussion which ensues after Joe finishes grading this block is similar to those which take place at every other vineyard we visit that day. Joe tells the vineyard manager that his fruit is less ripe, in terms of sugar *and* flavour, than The Company would normally like and that it will probably be downgraded to a lower-quality wine product than usual – most likely MacLennan's Drive Cabernet Sauvignon. The Company might also have to impose a price penalty for low Baume levels. But with the vintage drawing to a close, the weather getting colder, the vines' canopies shutting down, and rain forecast over the coming



Figure 19: The leaves of these vines are changing colour, indicating that photosynthesis – and therefore sugar accumulation in their grapes – is slowing

weekend, this fruit is unlikely to ripen much further even if it *is* left on the vine. The vineyard manager should talk to the owner and, if his employer agrees, call Mark to arrange a pick sometime in the next few days.

This assessment, which frames the vineyard manager's decisions about his picking schedule, is restricted to considering familiar entities and processes. Joe knows both grapes and MacLennan's Drive Cabernet Sauvignon very well. The weather contributes its own irreducible uncertainties, but these can be managed by picking the grapes quickly – while today's weather forecast remains relatively reliable. Winemaker field assessments are restricted to answering questions about the capacities of *grapes*, and it's this restriction that enables them to attach material to a wine product – and thus to a price per tonne. Once again, botrytis and its contagious capacities are rendered conspicuously absent from the discussion – although even a cursory glance at the grapes themselves renders its tangible presence equally noticeable.

But Joe's deflection of the vineyard manager's questions also reveals where this way of framing harvesting decisions has displaced, or externalised, the question of botrytis damage *to*. Botrytis will be considered in a second assessment carried out by the FTO, which evaluates not the grapes' ripeness and quality but their 'purity and condition' – a catch-all term which denotes many types of damage to grapes, ranging from downy and powdery mildew infection to sunburn and split berries. The Company employs FTOs seasonally during vintage to quantify and record the extent of any damage to grapes before they are picked. As each block supplying The Company approaches ripeness, an FTO visits the vineyard and harvests 100 bunches of grapes according to a standardised random sampling formula. The FTO then visually inspects each bunch, comparing it to a set of standard illustrations of bunches in which various percentages of berries (1%, 5%, 10%, 25%, 100%) are affected by a particular type of damage; by botrytis, sunburn, or berry split for instance. Through averaging all of these bunches' percentage damage scores, the FTO translates a block's

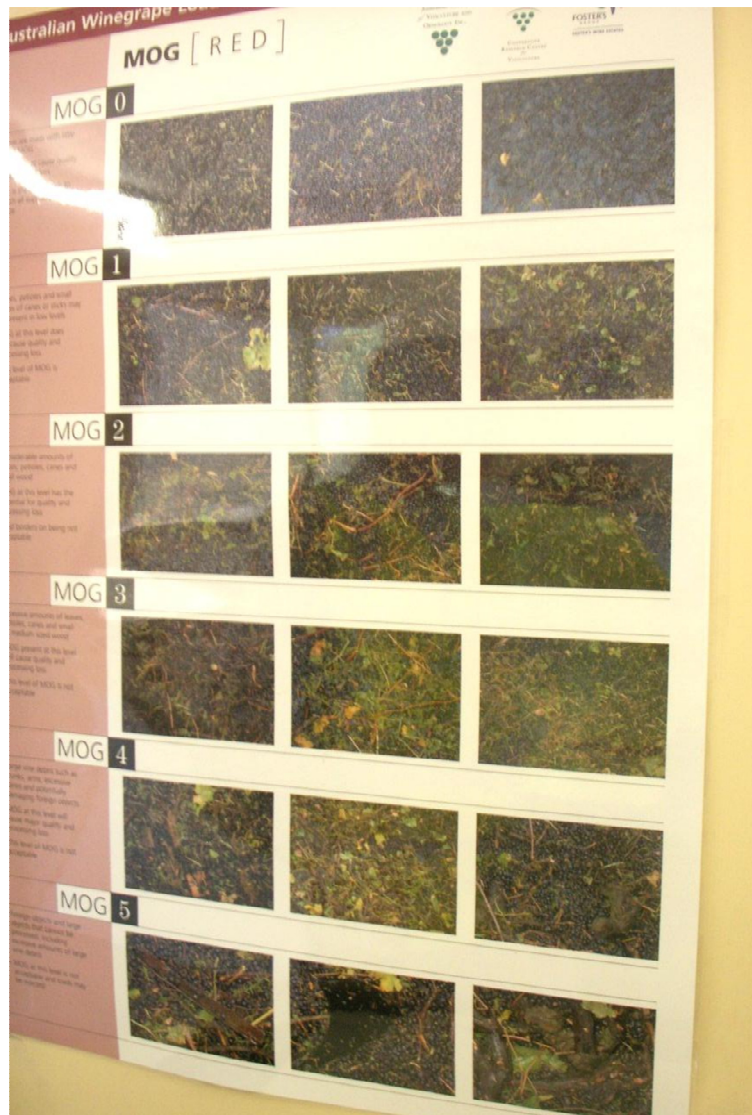


Figure 20: The photographs on this wall chart are used to identify varying levels of contamination with Matter Other than Grapes (MOG) in freshly-picked grapes. The Company's FTOs quantify Botrytis damage using a similar system.

unevenly-distributed intertwinings of vinous and fungal life into a single number: the percentage of grapes damaged block-wide. This enumeration practice renders the fruit's condition comparable to that of grapes in other blocks (Choy 2011; Latour 1999b; Lorimer 2008) and, crucially, enables the severity of their various infections to be ranked – rendering botrytis damage calculable (Callon 1998a; Callon & Muniesa 2005; Espeland & Stevens 1998; Sjögren & Helgesson 2007).

The Company's viticultural staff are proud of this procedure, and particularly of how it enables them to compare the severity of botrytis infections which are distributed within individual blocks in complex, uneven, idiosyncratic ways. They emphasise their sampling frame's statistical rigour and the assessment's unusual sensitivity in quantifying infection severity at berry rather than bunch level. They also impress upon me the importance of that precision, for this number will help to determine what price The Company pays for the fruit in question. But not in the vineyard and not immediately, because The Company's bifurcation of grape quality and botrytis infection assessment into two separate operations first requires that the question of how botrytis infection might relate to the qualities, potential uses, and worth of grapes be displaced yet again.

This displacement is not primarily temporal, as it was at Bartoli's, but is instead spatial and material in character. Enumeration, in converting a heterogeneous multitude of grapes – displaying varying degrees of mouldiness and potentially scattered across several hectares of vineyard – into a number, converts botrytis infection into a format suitable for “transport into a formal, calculative space” (Muniesa et al. 2007). It enables botrytis to circulate in new ways and reach into new sites (Choy 2011; Latour 1999b; Lorimer 2008), meaning that the relation between botrytis infection and price need no longer be determined in the vineyard – or indeed in the winery, where the question of just how contamination might be associated with quality and value remains intractably obscure. Instead, having first been translated into a pair of numerical formalisms – price in Australian dollars (a function of product grade) and percentage of grapes affected by botrytis – these two terms may be recombined according to the reassuringly reliable conventions of arithmetic as Mark calculates grape payments to growers in his office in May. The relation of percentage botrytis damage to the monetary value of a tonne of grapes now finally becomes specifiable in advance of the calculation of prices. The Company's grape supply contracts fix them in a relation of proportional reduction: starting at 3% botrytis damage, for each additional 1% of damage The Company will apply a 5% penalty to the standard price for grapes of a given

product grade. Working out a price now becomes a simple matter of combining a product grade's standard pricing with a block's botrytis damage percentage. It therefore becomes easy to calculate that some hypothetical grapes assessed as having 4% botrytis damage would, if attached to a product whose standard price is A\$1,000 per tonne, attract a 10% price penalty – meaning that their grower would be paid A\$900 per tonne.

The Company's bifurcation, and subsequent recombination, of the work of qualifying and valuing grapes ingeniously constructs a calculable relationship between the extent of botrytis infection and the value of grapes – determining the price that The Company should pay in order to enter into ownership relations with botrytis-infected fruit (Callon & Muniesa 2005). Moreover, it enables pricing decisions to be traced back (Choy 2011; Latour 1999b) to quantifiable differences in botrytis infection, which are comparable across different blocks and can be demonstrated to growers in the event of pricing disputes. The elaborate specification required to make paths of action calculable thus renders attachments to past states of the world and attachments to future ones equally resolvable. Both growers and Company staff set great store by this capacity to demonstrate that grape price penalties are determined by differences – in quality, ripeness, or botrytis damage – between blocks of grapes *themselves*. While growers were often unhappy about receiving price penalties, especially if they felt that The Company had allowed their fruit to deteriorate during the interval between assessment and picking (see chapter four), real anger tended to be reserved for wine producers unable to demonstrate a non-arbitrary basis for their application of price penalties.

This way of specifying relationships matters because specifying and fixing the connection between botrytis infection in grapes and their price per tonne stabilises The Company's relationships to its growers sufficiently that both materials and prices can circulate immediately. These calculative arrangements enable transactions to be closed as The Company promptly compensates growers for their grapes (Callon 1998b; Callon &

Muniesa 2005; Latour 2013; Slater 2002). Bifurcating and then recombining botrytis infection and grape quality thus simultaneously disentangles growers from their fruit and botrytis from the environmental specificities which render its capacities to act and to affect so deeply unpredictable (Clark 2011; Franklin 2008; Tsing 2012a).

Externalisation and Exposure

However The Company's way of reconstructing calculability depends upon yet another disentanglement and displacement. The Company's prices for botrytis-infected fruit are calculated without reference to botrytis' capacities to affect grapes' and wines' suitability for inclusion within its different products. These qualities cannot, after all, be firmly specified until after Mark has approved and dispatched the growers' first round of payments. Only the qualities of grapes *as grapes* (not as wine) and the extent to which botrytis is visibly present (not what it can do) are at stake in The Company's grape pricing formula. This mode of valuation therefore makes grape prices calculable by detaching them from questions about what The Company itself can do with botrytised fruit, and what entanglement with botrytis might do to its wine. It seems, bizarrely, that The Company becomes enabled to value botrytised grapes – and thus to engage in market transactions – by evacuating its own interests from the frame of calculation rather than through proliferating and strengthening attachments between the qualities of goods and the purchaser's desires as marketisation studies accounts propose (Callon 1998a; Callon et al. 2002; Hébert 2010; Slater 2002). The same uncertainties which dogged Sam Bartoli in Marco's vineyard therefore continue to haunt The Company's relationship with the various grape-derived materials which now populate its wineries. For The Company still has no way of firmly attaching these materials to the many wine products which must be produced and sold.

The price penalty system therefore leaves The Company strikingly exposed to botrytis activity, for it makes no distinction between grapes which are valuable and those which are worthless to them and for their purposes. It provides no means of refusing

entanglements with materials so badly damaged by botrytis that they cannot be used to make wine at all, ownership of which can only affect The Company (and its products) in adverse and costly ways. The Company therefore performs another bifurcation, differentiating between fruit which is and is not allowed to cross the weighbridge. Here, materials are again split apart through the FTO's purity and condition inspection. The Company simply refuses to accept delivery of any grapes assessed to have a botrytis damage level of 10% or above, 'rejecting' them as potentially costly contaminants. This is a very different way of externalising uncertainty. Instead of preserving the capacity to transact materials by displacing their uncertain capacities to *relate* from calculation, rejection preserves the reliability and calculability of the materials to which The Company relates by displacing *material uncertainties* from transaction. Only grapes which are sufficiently 'clean' of botrytis will be admitted to the winery and permitted to mix into (and affect) The Company's wine blends, and so The Company will only have to compensate growers for disentanglement from grapes which they can actually use. Just as grape assessment is bifurcated, so is the circulation of grapes.

But which grapes are clean enough? There seems to be no way of knowing. The Company's contracts classify all grapes below 10% botrytis damage as being sufficiently clean, but it's unclear why this should be so. Nobody can recall why, many years earlier, price penalties and rejections had been tied respectively to thresholds of 3% and 10% botrytis damage. These numbers were certainly not derived from first-hand experience with contaminated materials, for the 2011 outbreak appeared to be The Company's first encounter with significant quantities of grapes bearing rejectable levels of botrytis since the specifications were introduced. As vintage 2011 wore on, both Nathan and Mark repeatedly questioned whether or not 10% botrytis damage in fact constituted a suitable rejection threshold. Thus the pharmacological incalculability of botrytis, and the uncertainty about how to manage relations with it, which the purity and condition assessment had exiled from The Company's transactions with growers reappeared within The Company's own

attachments to botrytis. Even, it seemed, selectively refusing relations with excessively 'mouldy' grapes could not counteract The Company's exposure, via the material fermenting in its wineries, to botrytis' unpredictable subversions of both qualification and valuation.

Only after the classification tastings, at which botrytis-affected materials were qualified for the first time *as wines*, could relations between botrytis damage percentages and materials' suitability for specific wine products be made visible and calculable. But as Mark explained during a telephone interview in late 2011, this specification of relations exposed uncomfortable disjunctions between grape supply contracts' ways of differentiating useable from useless materials and that performed during classification tastings:

"We've reduced our tolerance on botrytis. We're gonna reduce our tolerance to 5% 'cause what we found was, er, the old, um, 10% – so the penalties going from 3[%] to 10[%] – was just too much. [...] as a general rule, anything between 5[%] and 10[%] was rubbish and we'd struggle to make bottle quality out of it. Now I think I explained to you in the field that day [...] if we can't make [MacLennan's Drive] quality out of it, we don't want it. And bulk wines, it's not what we want, we've got too much of it... we're always gonna produce some bulk from, like, our pressings and things like that, and we've got enough of that and there's no money in it. So we don't wanna take in [4 litre cask-]quality fruit"

Mark's reference to MacLennan's Drive is significant, for this one brand – a range of wines sourced from across South Eastern Australia, targeted at the commercial market segment (see table 1), and widely available at approximately £6.00 per bottle in the UK – accounts for a large proportion of The Company's sales by volume. It's also The Company's cheapest bottled wine range and is positioned towards the bottom of their internal product quality hierarchy. If a wine is unsuitable for inclusion in a MacLennan's Drive blend then The Company is unlikely to be able to sell it profitably, and has little incentive to accept the entanglements and vulnerabilities that ownership entails. Yet Mark was telling me that The Company's purity and condition standards had entangled it with so much material which was unsuitable for MacLennan's Drive, and was therefore effectively almost worthless to them, that their botrytis tolerance would need to be halved.

It seems that botrytis' capacities to affect grapes – and thus the qualities and product classification of finished wines – could eventually be made calculable during the classification tasting. But this calculability could be achieved only retrospectively, after the grapes' metamorphosis into wine was complete. It could not guide decisions by attaching actions to future states of the world as do the forms of calculability which are usually identified with market transactions (Callon 1998b; Callon & Muniesa 2005; Sjögren & Helgesson 2007; Slater 2002; Stark 2009). Although the calculations through which The Company priced, and accepted or rejected, grapes could disentangle materials from growers and determine the quantity of compensation owed to them, they accomplished this only by divorcing such decisions from botrytis' capacities to affect The Company itself. In turn, this unintentional disentanglement resulted in The Company purchasing – and becoming exposed to the costs of involvement with – large quantities of grapes unsuitable for their own wine products.

If The Company still allowed material uncertainties into its wineries, and remained vulnerable to being expensively affected by them, then what did all this counting of botrytised grapes and calculating of grape payments accomplish? It did not make botrytis' capacities to affect wines and wine companies any more immediately calculable for The Company than they were for Sam Bartoli. But in promptly and unambiguously settling the terms on which ownership entangled growers and wine company with – or cut them apart from – botrytis, The Company's purity and condition standards made quite an important difference. They enabled Company viticultural staff to choose their employer's entanglements with grapes based on the uses to which *they* thought that fruit could be put – however unsuitable for those uses some of the materials allowed into The Company's wineries might actually turn out to be. For all the grapes suitable only for 4-litre cask wine admitted to the winery due to an overly generous botrytis tolerance, plenty of even more diseased fruit – perhaps up to one quarter of The Company's total crush in a typical year – was not. This rejected fruit's deterioration would not financially affect The Company; they would not have to pay for it, spend money on vinifying it or dispose of it should it prove

unsuitable for MacLennan's Drive. Being largely a grape *purchaser* enabled The Company to partially insulate itself from exposure to botrytis by refusing relation with the most severely damaged grapes through its rejection procedures.

However, the opportunity that the transfer of ownership at the weighbridge affords wineries to avoid entanglement with troublesome materials by externalising them through rejection also traps grape growers in costly relations with rotting fruit. Already entangled, through ownership, with their grapes and therefore already affected by botrytis, growers' ability to achieve a similar indifference to the changing materialities of the crop was contingent upon a winery *choosing* to buy their grapes. The arrangement of grape growers and wine producers as sellers and purchasers thus entangles them with fruit in different ways (Slater 2002), and produces asymmetrical capacities for choice and action at the weighbridge. It enables wine producers to disentangle themselves more easily from the hazards and costs that materials which defy objectification can impose on their owners – leaving growers far more exposed than are wine producers to being economically affected by the uncertainties that weather, botrytis, mildews, and other inhabitants of vineyard environments (see chapter four) can introduce into their grapes. It was therefore almost always the wine producer's relationships with and uses for materials, however tentatively or inaccurately calculated, that were at stake when the weighbridge entangled growers and wineries with – or cut them apart from – botrytised grapes. The possibility of externalising most of the costs of botrytis damage to growers was therefore also implicit in the winery's prerogative to assess and distribute relations according to fruit quality and purity. Rejections usually left grape growers with little prospect of disentangling themselves from ownership of the most contaminated and worthless grapes, which would become irredeemably rotten before they could hope to find another buyer, and therefore from liability for the costs of growing them.



Figure 21: Botrytised Riesling grapes left to decompose on the vine after vintage 2011.

These were often abnormally large costs, for growing grapes during the 2010/2011 growing season had been unusually expensive. The frequent heavy rain sparked a prolonged onslaught of vineyard diseases – including downy and powdery mildews, botrytis, and other moulds – which could be contained only through frequent, costly pesticide spraying. One grower in the Clare Valley estimated that the year’s weather conditions had forced him to more than double his spray frequency, increasing his cost of production by 30-50%. Under such conditions, a cool climate grape grower whose fruit was rejected could be left bearing costs of up to A\$10,000 per hectare of unsold grapes. Moreover, there seemed to be little prospect that these costs might be compensated through the insurance industry’s machinery of risk management. Australian viticultural insurance policies typically cover reductions in the yield of grapes produced – usually due to a handful of low-probability, high-impact

weather events (namely fire, frost, and hail) – but not damage to the crop's *quality* (see Agricola Crop Insurance n.d.; CGU Insurance Limited n.d.; Elders Insurance 2012). And the downgrading or rejection of grapes due to disease damage is classified as a hazard to quality rather than yield – and therefore as uninsurable.

The calculative processes through which wine producers selected and priced their relations with botrytised grapes were therefore hugely important in mediating and distributing the costly displacements caused by botrytis during vintage 2011. In the absence of insurance cover for botrytis damage, a wine producer's assessment of whether a grower's grapes should be accepted or rejected could – in the most severe cases of infection and among those growers whose finances were already most strained – potentially determine whether a grower could remain in business until the following season or would be forced to cease trading.

Conclusion: Economies of relations

This chapter has examined grape growers' and wine producers' attempts to make grapes imbued with the pharmacological powers of botrytis circulate through market transactions. This task was challenging, for such materials' qualities – and thus their capacities to enter into, and affect other bodies within, economic relations – were as unpredictable, ill-qualified, and changeable as those of grey rot itself. These materials were prone to shift, for reasons unclear to their owners, from being valuable assets which human and microbial workers might transform in profitable ways to being worthless liabilities capable of imposing costs upon their purchasers. Botrytis' prolific capacities to forge metabolic entanglements with its environment thus made purchasing infected grapes less a means of acquiring rights over the pacified objects of property which populate most accounts of market exchange than a hazardous taking-on of economic exposure to the dangerous metabolic potencies of pathogenic fungi.

Making the qualities, capabilities, and worth of such unstable materials sufficiently calculable to support price formation, and by extension market transactions, required measures quite different from those described within both marketisation studies' and conventions theory's accounts of the resolution of quality uncertainty. With only a few short days in which to negotiate a transaction before infected grapes became irredeemably mouldy, growers and wine producers were unable to explore, test, and stabilise every encounter and relation capable of affecting botrytis and of altering the qualities and value of infected materials. Neither The Company nor Bartoli's made the price of botrytised grapes calculable by *internalising* botrytis into the calculative metrologies of pricing as an agency with predictable capacities to affect and be affected which could be taken into account within market-spaces (Callon 1998a; Callon & Muniesa 2005; Callon et al. 2009; Vatin 2013). Botrytised grapes were instead transformed into calculable goods through *externalising* botrytis' influence on their qualities – and thus their value – from the calculation of prices.

This solution subverts the temporalities commonly attributed to qualification and valuation by sociologists of markets (Callon et al. 2002; Callon & Muniesa 2005; Stark 2009; Wilkinson 1997). It challenges a prevalent supposition that the qualities and worth of things must be made, and made knowable, through qualification before they may be compared in (e)valuation practices (Helgesson & Muniesa 2014; Vatin 2013). Moreover, and perhaps even more fascinatingly, this operation of externalisation was performed in contrasting ways by different wine producers. Bartoli's judged the worth of contaminated materials by observing and testing how their qualities developed and changed during their months-long metamorphosis into wines – that is, through examining the effect of botrytis contamination on the taste, colour, scent, texture, and chemical composition of each specific wine-in-the-making. Meanwhile The Company did so by enumerating and aggregating visibly-botrytised grapes to produce a quantitative measure of the proportion of grapes affected, enabling it to price infected grapes *without* reference to the worth of the wines that they might become. While Bartoli's determined the value of infected grapes through testing the qualities of the

wines that those grapes subsequently became, at The Company only these materials' qualities as grapes – their taste, texture, and sugar ripeness, but also the proportion of berries that were discoloured, shrivelled, or furry – would inform operations of pricing.

These two different ways of qualifying botrytis-infected fruit thus led Bartoli's and The Company to value and price their growers' grapes through reference to entirely different materials. As noted above, such differences between methods of valuation – and between their outcomes – are far from trivial for growers whose financial survival may hinge on the result of a wine producer's grape assessments. But they are also theoretically significant, for the calculation of a price transforms an exchange into a market transaction – signalling that the seller has been fully compensated for their goods and thus sealing the fulfilment and cessation of the transacting parties' obligations to one another (Callon 1998b; Carrier 1995; Hinchliffe et al. 2007; Slater 2002). Different ways of calculating prices might, therefore, reveal different ways of making materials into marketable goods, of formatting a market transaction, and of organising the entanglement and disentanglement of goods during transfers of ownership.

Thus at Bartoli's, where the qualification processes through which Sam intended to price infected fruit would last for months, grower and wine producer remained entangled both with botrytis and with one another over a prolonged period. With no price agreed, both parties remained invested in – and continued to be affected by – the changes which materials supplied by growers like Marco would undergo (and by the potentially malign influence of botrytis). This mode of qualification thus generated a form of transaction whose temporal boundaries were both extended and ambiguous. One in which valuations and obligations would remain vague until the pharmacological powers of botrytis could be sufficiently specified and stabilised – one might say pacified (Çalışkan & Callon 2010) and objectified (Callon & Muniesa 2005) – to permit the precise characteristics and uses of each specific batch of materials to be settled. At The Company, meanwhile, the enumeration of percentages

of botrytis-damaged grapes offered a measure of infection severity which could be used to quickly and transparently calculate a price and close a transaction – rapidly extricating growers from their entanglements with botrytised grapes and The Company from its entanglements with grape growers. But although this qualification practice accomplished the rapid and definitive disentanglements required to calculate a price in a timely manner, it also partially divorced The Company’s valuations of grapes from their usefulness and worth in wine production.

These details provide tantalising clues about what matters most in the configuration of a market transaction within each company. Sam Bartoli’s overriding concern seems to be to establish what sort of wine each batch of botrytised grapes will become; to learn what qualities it will exhibit, which (if any) of his products it might be suitable for, and how much money the finished wine might be worth. And, subsequently, to pay a price appropriate to the specific qualities and worth of the materials supplied by each grower – however long this process may take and even if it demands that his company remain caught up in unconventional entanglements with growers and botrytis in the meantime. At The Company, meanwhile, fine-tuning the correspondence between the qualities of the wine produced from each batch of grapes and the price paid to acquire it seems to be less important than the ability to calculate that price quickly, and to demonstrate that differences in price are derived from differences between blocks of grapes *in the field*. Avoiding entanglements with materials which are unsuitable for inclusion within saleable wine products surely remains important, as demonstrated by The Company’s subsequent halving of its botrytis tolerance. Nevertheless, the overriding imperative which informs its procedures for qualifying and valuing botrytised grapes seems to be to close each transaction as quickly and definitively as possible; to promptly complete each exchange and thus circumscribe the duration of its attachments to growers.

These differences suggest that particular aspects and qualities of exchange relationships *themselves* assume differing degrees of importance within The Company's and Bartoli Wines' respective ways of calculating grape prices. It seems that variations in the way that the qualities of materials like grapes are assessed – for instance in how the severity of a botrytis infection is evaluated – are deeply interwoven with differences over what is important in a market transaction, and which sorts of exchanges are qualified as 'good.' At Bartoli's a good transaction – the sort to be striven after – is, above all, one in which the price paid for a specific batch of grapes corresponds closely to the price which the wine made from it is likely to command. Meanwhile, at The Company a good transaction seems, above all, to be one in which it is possible to calculate a price promptly, and thus to complete and terminate the exchange. Examining how wine producers assess and qualify the capabilities of materials such as botrytised grapes can therefore make visible contrasting ways of qualifying and valuing exchange relationships *among the transacting persons*. Perhaps, then, different ways of assessing and enacting the quality – and the value – of materials (such as those employed by Bartoli's and The Company) might precipitate contrasting economies of relations among the persons caught up in their production and circulation. Moreover, perhaps these economies of relations not only distribute value differently, but in fact perform the valuation of goods – and of persons and the relationships between them – in fundamentally different ways. But *why* might they be so different? And what might be the implications of practising such very different ways of enacting and distributing quality and value?

Chapter 6

Consistency and Commodification:

Economies of comparison and substitution

“...the fact that [ValueFresh] is selling a brand, in my view, endorses that brand. So you’ve got to take, I feel, responsibility for managing that [brand’s] quality; if that quality isn’t, in your opinion, there then you’ve got to do something about it. [...] because [the ValueFresh] brand, ‘[ValueFresh]’, is their most valuable asset. Customers trust it. So you can’t let the customer down! So it isn’t about just buying the least expensive... liquid that will legitimately do the job, it’s about buying well and getting the wine quality and the wine style right, and making sure it’s consistent.”

- Simon, former Australia & New Zealand category wine buyer for ‘ValueFresh’ (a major UK supermarket chain)

“Our biggest blends are some of the [MacLennan’s Drive] wines, and they’re, you know, huge. And that’s why this company is distinctive by its large, um, its preference for very large tanks. [...] So that means that you can have a, maybe a four million litre blend, which is not uncommon, and we’ve got a couple that are quite a bit bigger than that, in four tanks, you know? And that means homogenous blends. You know, other wineries that do big blends quite often have much smaller tanks. So they’ve got blends, er, spread across 100 tanks. And I don’t see how every one of them could be identical, they just couldn’t be. Whereas with us, I think consistency is important. You know, sometimes it’s perhaps almost considered a negative word, because it implies, you know, particularly *your* bloody [British] media, your Jancis Robinsons and things like that, love to paint us as, you know, boring. But consistency is sort of a... a double-edged sword, because you know, at least you know the bottle of 2008 [MacLennan’s Drive] Shiraz-Cab you buy at the beginning of the year will be the same, exactly the same, as the one that you buy at the end of the year. I mean they say that at McDonald’s, don’t they? You know, ‘Oh, the burger you get in Siberia tastes just the same as the one you get in... wherever.’”

- Nathan, Company winemaker

“The last thing we want is, a, a bottle shop anywhere around the world that can’t get enough [MacLennan’s Drive], that’s the worst thing we can do. [...] [because] if you can’t consistently keep it on the shelf, if you lose your spot on the shelf, well, someone else’ll take it.”

- Mark, Company grower relations manager

Introducing Consistency

Simon, Nathan, and Mark all agree: a wine must be consistent in order to become, and remain, a commercial success within the mainstream retail trade in branded Australian wines. All three are imbricated within this trade by virtue of their employers' entanglements in the very particular commercial relations and geographies constructed around brands such as MacLennan's Drive (the mainstay of The Company's sales by volume). Targeted at the wine market's 'commercial' or 'popular premium' price segment (see table 1), such wines are produced to suit mass-market consumer tastes and often sold in volumes of millions of litres. Producing wine on so grand a scale requires the formidable production capacity and financial resources of beverage conglomerates like The Company's parent group, and the large-volume blends which result are sold and distributed largely through national-scale grocery retailers such as ValueFresh. Indeed, retail chains like ValueFresh and its competitor supermarkets are arguably the only actors within the wine trade capable of distributing the vast volumes of wine produced and marketed under the commercial-segment brands owned by The Company and its competitors. Large-volume Australian wine producers such as The Company and (often overseas-based) chain retailers such as ValueFresh are thus rendered interdependent through their mutual investment in modes of provisioning which require large, regular shipments of homogeneous stock (Gwynne 2008; Maclaine Pont 2011).

Within and through such modes of provisioning, it becomes important that wines should not vary too much; that they should be 'consistent'. Yet consistency seems to be complicated both to talk about and to achieve in practice. The form of consistency that Mark talks about – stability in the volume of wine produced each vintage, ensuring that each product is reliably available on retailers' shelves and in distributors' warehouses – is distinct, if certainly not separate, from that which Nathan's and Simon's comments highlight. *These* versions of consistency concern a constancy or sameness across bottles, blends, and vintages in the quality and style – meaning the taste, smell, and mouth-feel – of the wines labelled and

sold under a particular brand and product name. A consistent wine is thus a wine which can be relied upon both to be available and to exhibit a self-similarity in its qualities over time.

Examining the term ‘consistency’ therefore foregrounds a privileging of homogeneity, stable availability, and self-similarity in wine that is shared among Company staff and retail chain wine buyers. In this it echoes previous social research engagements with multiple food retailers, which consistently depict supermarkets like ValueFresh as striving to provide an invariant range of products with fixed qualities through imposing uniform textures and dimensions on fresh produce whose size and qualities vary greatly in the field (Dolan & Humphrey 2000; Tsing 2013) and instituting year-round sourcing of formerly-seasonal foodstuffs (Adam 1998). Freidberg (2004; 2007) argues, in a claim reminiscent of Simon’s quote, that such standardisation of foodstuffs facilitated the rise of chain retailers and remains central to their consumer appeal. In this account the retailer’s brand becomes a guarantor of both the safety and the palatability of the produce stocked on their shelves. The ‘consistency’ of quality and supply which chain retailers insist that foodstuffs display is, in short, presented as facilitating food purchases – and thus conferring great commercial value upon food homogeneity – by settling consumers’ uncertainties over the quality of foodstuffs (Paxson 2013). As Ponte (2009) and Gwynne (2008) illustrate, the commercial segment wines targeted at such retailers are no less subject to this imperative towards consistency than are beans, apples, or mushrooms (Aylward 2008; Maclaine Pont 2011; Overton et al. 2012).

Yet this common emphasis on consistency and sameness among producers and retailers dealing in mass-market ‘commercial’ wine brands contrasts starkly against the often-unwelcome material differences which saturate viticultural and winegrape processing practices. As detailed in chapters four and five, grapes – and, I shall suggest, the materials-becoming-wine to which they give rise – are awfully variable things. Growing on vines that are constantly being reconstituted through intercorporeal exchanges with the innumerable

materials and organisms which compose their environment, grapes display a disconcerting openness to mycological and meteorological affects which are prone to transform their qualities and worth in varied, unpredictable, and sometimes costly ways. This chapter aims to interrogate this dissonance. It asks how – through what modes of transaction and qualification practices – this heterogeneous mass of changeable materials can be made to circulate within an economy which both demands and presupposes qualitatively and volumetrically consistent products. In so doing, and drawing from Busch & Tanaka's (1996; Tanaka & Busch 2003) argument that qualification and grading practices reconstitute both things and the humans entangled with them, it seeks to understand the economies of relations which are mobilised in the endeavour of making wine consistent. In the process, this chapter continues exploring the questions about what organisations of the valuable, and what economic consequences, might be precipitated through practices of attention to the sensory qualities of materials which were introduced in chapter one, and which chapter five began to address. Specifically, I will ask: what are the implications of organising the qualification, valuation, and transaction of materials around the imperative of consistency? Through what economies of relations, and at what cost, is wine made consistent?

Tasting Ferments

In order to begin exploring consistency's economies of relations I will need to situate this tricky concept – to find a location where consistency is being pursued. The Company's Barossa Valley winery provides an ideal vantage point from which to observe consistency's enactment, for it contains a room designed for the sole purpose of amplifying, identifying, arraying, and ordering difference and sameness in the tastes of wines. I therefore begin in the tasting laboratory – in mid-April 2011, late in the afternoon and near the end of a long day's work, amid the disorderly mass of hopelessly-variable fermenting grape must which is to become next year's consistent commercial wines.



Figure 22: The tasting laboratory at The Company’s winery. In the foreground, two ranks of sample bottles have been laid out on benches in preparation for the winemaking team’s afternoon ferment tasting.

I am momentarily dazzled as I follow Nathan into the tasting lab. Every surface in the room gleams a uniform aseptic white under bright striplights. The use of colour is deliberately restricted here so that winemakers may judge and contrast the colour of juice or wine samples against a uniform background, free from extraneous influences which might distract them or confound their perceptions. This room is built, in accordance with the conventions of organoleptic assessment¹³ (Grainger 2009; Peynaud 1984), to sharpen winemakers’ sensory impressions and to facilitate the comparing of wines. Waiting for us on the lab benches, arranged carefully into several neat rows among the stainless steel sinks and

¹³ Peynaud (1984: 3) states that: “Tasting (sometimes called organoleptic examination or sensory analysis) is the appreciation by sight, taste, and smell of the sensory properties of a wine.” Peynaud’s influential definition – like Méadel & Rabeharisoa’s (2001) account of soft drink manufacturers’ use of tasting sessions – thus characterises organoleptic assessment as a fairly commonplace body of formalised tasting practices.

spittoons used to dispose of wine after tasting, are around 130 glass bottles. Laboratory technicians have spent the afternoon preparing this room – drawing off, bottling, and labelling a sample from each red wine fermenter, then arranging the bottles on the benches – so that the winemakers can perform their twice-daily tasting of red wine ferments.¹⁴

The sample bottles contain dull, murky reddish or purplish liquids. These are ferments – musts which have been inoculated with yeasts which are even now inducing rapid and complex changes in their biochemical composition. The conversion of sugars into alcohol is, due to the commercial significance of a wine's ABV, the most frequently-monitored of these material metamorphoses but it is only one among many such processes. Ferments are in-between materials; no longer juices, but not yet wines. The word 'liminal,' an echo from my days as an anthropology student, seems an appropriate adjective for these materials-in-transition which are neither one thing nor the other, and I write it down. But I quickly dismiss the thought. Nathan is talking again, explaining how each row of bottles consists of samples drawn from fermenters of a particular type – mirroring the grouping-together of similar fermenters in one area of the tank farm – and how the samples' locations within the tasting room therefore loosely reflect the ferments' locations within the winery.

Nathan and I are soon joined by Joe, along with Ian (another of The Company's red winemakers) and Harvey (one of two trainee winemakers hired temporarily to assist the permanent winemaking team during vintage). I am, Nathan tells me, welcome to observe the tasting or even to participate if I wish – although I should be aware that, with so many fermenters currently full, participation can be 'a bit of an endurance test.' I accept his invitation to taste the ferments, and we begin our task. The winemakers split into a pair of two-man teams in order both to work through the inordinate number of samples before us more quickly and to reduce the somewhat daunting number of ferments that each team must taste. Each team is led by a senior winemaker – Nathan leading one team, Joe leading the

¹⁴ The winemakers conduct a similar ferment tasting each morning at around 7.30am or 8am.

other – who works his way methodically down a row of sample bottles. Nathan assigns me to Joe’s team, explaining ruefully that the tanks whose contents Joe will be tasting tend to contain The Company’s better fruit, and that despite the challenges of vintage 2011 he would like me to take home *some* positive impressions of The Company’s wines.

Our assessment of each ferment is a brief, cursory business and I almost immediately find myself struggling to both take notes and taste my sample in the time available. On opening each new bottle, the team leader pours a small quantity of its contents first into his own glass and then into those of the other team member(s). All participants then briefly sniff their portion of ferment, hastily swirl it around their mouths, then quickly spit it back out and empty the leftovers into a spittoon. The entire process takes around 30 seconds, of which only perhaps 10 seconds is devoted to nosing and tasting the sample, and we move on to pouring out the next sample without even pausing to rinse our glasses. We silently repeat this 30-second sequence – pour, sniff, swirl, discard – about five times before Joe turns to me to explain why he has not yet made a single comment or issued a single new instruction regarding the handling of the wines.

It transpires that Joe’s reticence about commenting on the ferments (whether verbally or in writing) indicates that none of those so far tasted have yet developed any serious faults, and that he therefore need not change the way in which they are being treated. The ferment tasting, Joe explains, is not about undertaking a considered evaluation of the samples – or about forming critical or aesthetic judgments about their qualities as potential constituents of The Company’s products. Its purpose is rather to check that the ferments do not exhibit any glaring defects which the laboratory staff’s regular monitoring of Baume levels and less frequent tests of pH and titratable acidity have not registered. Such vigilance is crucial, for fermentation is a hazardous process which entangles wines-in-the-making in relations with microbial companions almost as capricious as those left behind in the vineyard (as detailed in Brice 2014b). The yeasts’ biochemical refashioning of the materials on and

within which they live is a complex process whose outcome often surprises winemakers, and ferments are prone to develop a variety of faults. Flavours may also unexpectedly appear or dissipate as non-odiferous precursor compounds are converted into substances to which human senses respond more noticeably (or vice versa), and rapid changes in acidity and tannin texture may occur. By compelling participating winemakers to taste a sample drawn from each fermenter, the daily ferment tasting aims to ensure that emerging faults are not overlooked amid the tumult that vintage brings to winery life; that they are registered and (if possible) corrected.

Faced with this setting and this task, Joe tells me, the winemakers' palates play a role akin to that of the instruments found in the analytical laboratory next door. Tasting, as it is performed here, does not evaluate the economic or aesthetic goodness of the ferments but simply registers sensations which are signs that these materials are becoming something other than non-faulty, clean wines. 'We're basically just looking for a few things,' Harvey interjects, 'lack of fermentation; stinkiness; unbalanced, sour, mouth-watering acidity; and mouldiness.' Only if a winemaker's palate registers one of these handful of defects, which assault the senses in ways that are difficult to overlook even during a single brief taste among so many others, will a sample elicit any verbal response or oenological intervention. The majority of the samples – be they good, bad, or indifferent; destined for prestigious iconic brands or four-litre cask blends – will provoke only a tick on the spreadsheet, or 'fermentation chart,' which lists and describes the samples laid out before us.

Before we have tasted even ten ferments I give in to my protesting fingers and restrict myself to taking notes only when Joe dictates an observation or instruction regarding a 'problem tank' for Harvey to record on the fermentation chart, concentrating instead on keeping pace with the tasting. Joe's palate agrees with acidity tests that the acidity of the Barossa Valley Merlot in rotary fermenter 10 has dropped too far (its pH is too high, its TA value too low) and the ferment is at risk of bacterial spoilage. The cellar staff will need to



Figure 23: Joe swirls a ferment sample around in his tasting glass before sniffing and tasting it. Below, a fermentation chart – on which he will subsequently record his assessment of the sample – sits on the tasting bench.

offset this by adding extra tartaric acid to the tank. The contents of open fermenters 12 and 13 taste ‘fishy’ to Joe – he suspects that a secondary malolactic fermentation has started prematurely, before the yeasts have done their work, and with the skins still in the tank. Joe doesn’t judge it necessary to intervene right now, but these ferments will have to be monitored especially carefully from now on. I pause long enough to record such utterances, but I find myself increasingly losing track of fermenter numbers and the non-faulty samples begin to blur together in my memory.

I am already becoming somewhat disorientated by the rapid-fire substitution of ferments when we taste through several samples of recently-inoculated must. These samples, which are as yet little more than grape juice, seem overpoweringly sweet in comparison to the ‘older’, ‘drier’ ferments which preceded them and I struggle to perceive anything other

than a general sugary, fruity sensation. But it is when I return to tasting more mature ferments, whose sugars have been largely converted into alcohol, that I experience the full, shocking intensity of this contrast. Now *everything*, as I cannot help remarking to Harvey (breaking the studious quiet of the tasting room), tastes the same to me. More specifically, all the ferments – Shiraz, Merlot, Cabernet Sauvignon – now taste equally sour and bitter. As my mouth struggles to adjust to the absence of sugar, I find that I have lost whatever ability I had previously possessed to discriminate between and compare the tastes of ferments. Yet I am advised not to worry about this; I will still know a serious fault if I find one, and nothing short of a serious fault matters at the ferment tasting.

I stagger on through the tasting, growing increasingly confused as my hands, mouth, and nasal passages encounter a bewildering variety of ferment samples – sickly-sweet, almost dry, pinkish-red, inky purple – in rapid succession. I begin to understand Nathan's comment about the ferment tasting being an endurance test – and to develop the beginnings of a headache. By the time the onslaught of samples finally ceases, my disappointment with my battered palate's growing indifference to the samples that I am attempting to taste and the sparseness of my notes is eclipsed by an overwhelming relief that the ordeal is finally over. Glancing somewhat queasily up at the tasting room clock I realise that I have tasted perhaps 60 or 70 ferment samples during the preceding 45 minutes.

In my car, driving home after bidding goodbye to the winemakers (whose working day also concludes with the ferment tasting), I cough and splutter into the Dictaphone perched on my dashboard. My irritated gums and throat impede my attempts to describe the ferment tasting verbally, and my voice proves almost as inadequate to the task of making sense out of the sensory assault I have just experienced as were my handwritten notes. I am still confounded by the indistinct jumble of nearly-juices and nearly-wines, of pleasant and revolting flavours, of varied colours, of grape varieties and regions of origin, which have traversed my nose and mouth. As I ponder this problem it gradually dawns on me that the

ferment tasting has condensed into a single room, and a single tasting, all the material diversity to be found across the vineyards of South Australia. Ferments sourced from warm-climate vineyards sit next to cool-climate material, botrytis-infected material alongside clean, low-quality and high-quality ferments are placed side by side, Pinot Noir rubs up against Cabernet Sauvignon.

Making sense of this riot of heterogeneity – comparing, ordering, and classifying sensations and materials – suddenly seems a hopeless task, and I recall Joe’s and Harvey’s admonitions against attempting to form critical judgments about the ferments. How indeed, and on what criteria, might I compare a freshly-inoculated ferment against a nearly-dry one, or a severely-botrytised one against a clean one? As I had discovered when the sugar hit of newly-inoculated ferments paralysed my palate, such juxtapositions simply overwhelm the taster – unleashing intense but incommensurable sensations which linger and clash. Such extreme contrasts simply swamp the more specific and subtler qualities of other ferments until the taster’s palate becomes numbed and insensitive to all but a few unmistakable indicators of faultiness (lack of fermentation, stinkiness, excessive acidity, mouldiness). Despite my best efforts, then, perhaps it is when my notes are at their most inarticulate, disorderly, insensitive, and partial that they most faithfully describe the practice of ferment-tasting.

Liminality and the passage between worlds

The ferment tasting makes one thing clear about the business of making wine consistent: it will be neither easy nor straightforward. Even after the grapes are crushed, and the must safely protected from the vagaries of the world outside its tank by steel walls and elaborate cooling systems, the spectre of viticultural variability and heterogeneity is not easily exorcised. Indeed, fermentation – the very transformation of grape juice into wine – can be effected only by embroiling material just recently stabilised and secured within the winery in further subversive, and potentially hazardous, microbial entanglements. The yeasts

used by The Company are, it is true, domesticated. They even come packaged as commercial starter cultures whose particular capacities to forge relations with and transform grape juice (and thus produce certain qualities in materials-becoming-wine) are explicitly qualified as unique selling points. But this does *not* mean that every aspect of the complex interplay between yeast and grape juice which makes up any particular ferment can be specified in advance.

The passage from grape must to wine accomplished through fermentation is, then, a journey whose destination can be somewhat surprising; ferments may be materials-becoming-wine, but it is not yet entirely clear what *kind* of wine they will become. Ferments therefore remain, like the botrytised grapes encountered in chapter five, unstable and uncertain materials. Their chemical composition and sensory qualities are constantly changing, and no description or classification of them is likely to be accurate for long. Ferments are not, therefore, very amenable to qualification because, soon enough, each individual ferment will differ even from its ever-changing self as much as (or perhaps more than) from its neighbours on the lab bench. Faced with this spectacle of irrepressible *inconsistency*, even the most experienced of winemakers can be certain only of one thing about a ferment's organoleptic qualities: whether they amount to a fault or not.

Ferments are, then, rather nebulous materials; no-longer-grapes and not-yet-wine, exactly what they *are* – what they can *do* to, or for, The Company's products and their position within hierarchy of product grades – remains loosely defined and weakly elaborated. The ontological amorphousness of these in-between materials first brought the word 'liminal' to my mind at the outset of the tasting, and it compels me to return to the concept of liminality now. Liminality is an idea with a long history in anthropological thought, forming the mid-point of van Gennep's (1977: 10) tripartite sequence of rites of passage – ceremonial performances which effect “a passage from one situation to another or from one cosmic or social world to another”. In van Gennep's typology, liminality is a condition interposed

between 'rites of separation' which extricate those undergoing the rite from their former social positions, relations, and identities and 'rites of incorporation' which forge new identities by positioning them within new social entanglements (Boland 2013). Liminality is thus a condition of being in-between two well-defined and stable social locations, during which one "wavers between two worlds" (van Gennep 1977: 18). Turner (1967: 96) describes this 'wavering' as denoting a:

"structural 'invisibility' of liminal personae [...] They are at once no longer classified and not yet classified. [...] Particular form here becomes general matter; often their very names are taken from them and each is called solely by the generic term".

This vocabulary of rites of passage (van Gennep 1977) helps to call analytical attention to the way in which reconstituting the identity of an individual simultaneously refashions the entire social cosmology of associations within which they are located. Yet equally significant is the emphasis that it places, under the name of liminality, upon the ambiguities, gaps, intervals, and disjunctions – the social and ontological slippages – which attend the act of passing between worlds of relation. Turner's (1967) 'structural invisibility' depicts liminal entities, in-between worlds and identities, as being external to all conventions of relation, positioning, and classification. The act of severing these liminal personae from the social entanglements which formerly defined them has rendered what they are and what they can (and may) do unclear, and indeed somewhat indeterminable. Bearing few of the qualities, relations, or capacities characteristic of their past or coming position, liminal personae are rendered largely undifferentiated from, and substitutable for, one another. In short, they are disordered – impossible to sort or hierarchise according to their qualities or functions. No classificatory rules or procedures govern their relations to one another or specify which combinations between them are permissible or inadmissible (Boland 2013).

Despite their uncomfortably structuralist tone, then, Turner's (1967) and van Gennep's (1977) analyses exhibit surprising parallels with the relational ontologies of science studies. Both contend that persons, and in the latter case things, are known by and

through their relations and that to excise an individual or material from their constitutive entanglements is to render them deeply socially and ontologically ambiguous (Latour 2005). Indeed, this similarity underlies Busch & Tanaka's (1996) suggestion that the modes of testing and grading materials termed qualifications within conventions theory and marketisation studies (Hébert 2010; Thévenot 2002; Wilkinson 1997; Vatin 2013) may be understood as being rites of passage. This fusion of theoretical resources, by attending to liminality, foregrounds the proposition implicit within theories of marketisation that qualifying goods – positioning them in relation to comparable articles – entails *both* the loss (or coarsening) and the proliferation and specification of relations, qualities, and identities (Callon et al. 2002; Callon & Muniesa 2005). To state this point in slightly different terms, the vocabulary of rites of passage – which treats separation from and incorporation into worlds of relations as interdependent but nevertheless distinct operations – can help to illustrate that qualification both reduces and amplifies goods (Latour 1999b).

Such an account certainly offers some purchase upon the sensory messiness of the ferment tasting. If ferments are understood as liminal materials, in-between identities and bearing only the most weakly-elaborated qualities – which is to say capacities to affect, be affected, and relate – the somewhat chaotic mix of sensations to which the ferment tasting gives rise becomes more comprehensible. The ferments, now separated from their former identities as grapes, are removed from the classifications, rules, and hierarchies which would usually determine the order of tasting. Ferment tastings may, therefore, qualify as occasions of “unfettered, spontaneous free association” (Boland 2013: 234) – a characteristic which gives such liminal rites considerable potency as sites of experimentation with novel combinations of entities and orderings of relations. The samples are tasted simply in order of tank number, and so the ferment tasting throws up unlikely juxtapositions of materials and qualities which only intensify the confusion of the occasion as materials of different grape varieties, quality grades, and stages of fermentation are placed in unlikely proximity. The *literal* opacity of red wine ferments (the dull, cloudy hue produced by sediments and

impurities suspended within the fluid) is, then, a fitting metaphor for the ontological nebulosity which these liminal materials display in the tasting lab.

The vocabulary of rites of passage thus links my perception of ferments within the tasting lab as insensible, indescribable, incomparable, and incalculable with these materials' temporary sundering from both of the two worlds of association which will define them as grapes and as wines. Considering the ferment tasting as a rite of liminality (van Gennep 1977) therefore implies the ferments have already lost certain relations and qualities in ceasing to be grapes, and must gain others in order to become wines. In short, it suggests that traces of the reductions and amplifications (Latour 1999b) through which materials become wines, and become consistent, might be detected by comparing the relations and qualities borne by ferments – first with those of grapes and then with those of wines. This might clarify which attachments must be lost and which must be gained if these materials are to become consistent.

One such trace of the severing of relations through which grapes have become ferments can be found in print. Each row of sample bottles is accompanied by a fermentation chart – a spreadsheet printout designed to supply winemakers with all the data that they require to assess what qualities and behaviour are to be expected of each ferment in the row and what forms of oenological intervention it might need. The sheets list each ferment's grape variety, its region of origin (unless a tank contains material sourced from multiple Geographical Indications), the mass of the fermenter's contents in tonnes, the number of days since fermentation began, and the intended temperature of the fermenter – along with several readings of its actual temperature and Baume level taken throughout the day. Yet right now I am more interested in what does *not* appear on the fermentation chart – in what has *disappeared* from notice since Nathan compiled his daily intake plans for these materials (see chapter four). Because while most ferments' regions of origin are clearly listed, the

fermentation chart contains no column detailing the grower(s) or block(s) from which the material fermenting in any of these tanks was sourced.

This erasure of the growers who supplied the ferments' constituent grapes and of the vineyard sites where they grew suggests that materials' sites of origin cease to be salient to their arrangement, ordering, and assessment during fermentation. By the time the ferments are arrayed in the tasting lab, the endless, incalculable entanglements with a specific vineyard environment through which grapes grow and develop their qualities have lost their capacity to impose themselves unbidden on the winemakers' work and senses by affecting and reconstituting The Company's materials, and so have ceased to *matter*. It therefore seems that grapes become ferments through being excised from the more-than-human social worlds in which they grew and gained their identities, and beginning to be ordered, classified, and defined along different lines.

Traces of the new social and spatial orderings of materials enabled by this sundering from viticultural relations can already be perceived in the layout of the tasting room. A new world of relations is nascent in the way that the ferment tasting brings together materials formerly dispersed throughout scattered vineyards and imbricated within their endlessly-variable environments. Within the tasting lab, an entire state's worth of materials-becoming-wine can – regardless of their origin or organoleptic similarity – be arrayed side by side within a single space. They can encounter, and be contrasted against, one another as a winemaker tastes along a row of sample bottles. So perhaps the gathering of ferment samples in the tasting lab constitutes an act of 'framing' in Callon's (1998a: 253; Slater 2002) terms:

“a violent effort to extricate the agents concerned from this network of interactions and push them onto a clearly demarcated 'stage' which has been specially prepared and fitted out.”

Identifying the tasting lab as a space akin to the classificatory 'frames' (Callon & Muniesa 2005) or 'grids' (Latour 1999b) which often underpin comparative devices in economics and science invites certain expectations about the 'rites of incorporation' through

which the ferments will become wines. In accounts of framing, the act of arranging things within a single space allows them to be shuffled about, juxtaposed, and compared in new ways (Callon et al. 2002; Garcia-Parpet 2007). Framing devices thus proliferate a new world of associations among things – and reconstitute their identities – by facilitating comparisons between them (Beunza & Garud 2007; Çalışkan & Callon 2010; Stark 2009). So the tasting lab can be understood as a comparative device, and one which specifically facilitates the making of comparisons – and relations – not among vineyards or blocks, but among tanks. It thus effects an ontological reconfiguration that is as much spatial as it is social in character.

Yet my account of the ferment tasting illustrates that this process has not, as prior accounts of framing practices (Callon et al. 2002; Callon & Muniesa 2005) might suggest, established orderly relations of similarity and difference among these materials or grouped them into clearly-defined categories. Instead, concentrating formerly-scattered materials together in the tasting lab seems only to highlight the daunting difficulty of comparing ferments. Far from homogenising and stabilising materials – making them consistent – this first foray into the tasting lab seems merely to have condensed all the material variability which had formerly been dispersed across South Australia. Far from facilitating the comparison and classification of materials, concentrating the ferments together has *intensified* their heterogeneity to the point of inducing utter incomprehension in tasters. Arraying the ferments within the tasting lab's frame has limited even experienced winemakers' capacities for sensory assessment to positioning these materials on one side of a simple binary: faulty or not faulty.

As such, although much of the socio-material apparatus which will later mediate the ferments' incorporation into a new world of associations – and thus their acquisition of new identities as wines – is already in place at the ferment tasting, this is not quite a rite of incorporation (van Gennep 1977). The ferments are still too unstable and too rapidly-changing to justify the painstaking work that would be required to establish and describe a

more elaborate new ontological location for them (Latour 1999b). The ferment tasting cannot, then, disclose exactly what kind of a world of relations, and what kinds of materials, are being prepared in the tasting lab. Ferments are still too ontologically vague, too ambiguous and weakly attached to one another, to support this kind of explication. To understand the precise character of the relations which must be forged for ferments to become wines, and for materials to become consistent, I will have to mobilise another vantage point – and attend to another tasting.

Centrifuging and Comparison

It is time to return to the tasting lab – to the same room, and even the very same afternoon on which the ferment tasting described above took place. It is around 3pm; the afternoon ferment tasting will start in about an hour, but for now another tasting session is in progress. Once again, a row of sample bottles lie open on the bench in front of me. But not all tastings are alike (Méadel & Rabearisoa 2001), and this time the liquid which flows from a bottle into a tasting glass as Joe pours out his first sample is neither dull nor murky. Its surface gleams as it reflects the striplight above. The materials that Joe is about to begin tasting have become *wines*.

The wines before us are, Joe explains, at a very specific stage in their development. With most, if not all, of the sugar that they once contained now converted into alcohol – and their yeast colonies largely dead – the biochemical upheavals of fermentation have slowed dramatically, if not ceased entirely. With fermentation's dangers and transformations now behind them, these wines have become (somewhat) stable once more; the way that they look, taste, smell, and feel in the mouth is likely to remain much the same next week as it is today. But although they have recently been pressed to separate the wine from the grape skins and other impurities with which it had previously shared its fermentation tank, these wines are far from 'finished' or ready for bottling. They will soon undergo centrifuging – a final effort to separate out sediments suspended in the wine – after which they will be transferred to oak

barrels or stainless steel storage tanks where most will undergo a secondary malolactic fermentation and higher-quality wines will be aged before bottling and release.

It is these storage and ageing arrangements which are at issue in the tasting that Joe is currently preparing. Just as the winery has a finite number of fermenters (see chapter four), so the availability of barrels and storage tanks is also limited. The winery may, Joe estimates, be capable of fermenting about 450 discrete batches of juice or must over the course of a vintage, but it can store only about 250 separate parcels of wine and so many fermenter-loads of material will have to be blended together after centrifuging. Joe is therefore attempting, much as Nathan does when composing his daily crushing plans, to distinguish materials which are sufficiently similar to be blended into a single tank, or 'packed up', from those whose qualities are incompatible and which must be kept separate.

But Joe, unlike Nathan, does not need to reference spreadsheets or make phone calls to grower relations managers in order to discern similarities and differences in quality among his materials. Arraying the wines side-by-side has become a simple matter of going into the tank farm outside his office door, running off samples from the appropriate fermenters, and lining up a few bottles in the tasting lab. And so in lining up these six samples on the bench before us, Joe is constructing a new comparative device – and enacting a new framing of relations (Callon 1998a; 2007a; Callon & Muniesa 2005; Slater 2002). The framing work being done in the arrangement of this tasting session is significant, for this time Joe has collected just a handful of carefully selected wines on the bench. This time the tasting lab convenes a collective composed exclusively of wines whose component grapes were previously (if tentatively) classified, through taste assessments in the vineyard and through fermenter streaming, as suitable for similar products. In this case, for MacLennan's Drive Merlot or for products of a similar quality grade. This means there is a good chance that the resultant wines will be similar enough, *at least in grape variety and in taste*, that they may be



Figure 24: A row of six wine samples is arranged in a line in preparation for Joe's pre-centrifuging tasting. In contrast to the ferment tasting, during which each winemaker uses a single glass for all of the samples, here each sample is presented in a separate glass.

blended together. So the very act of arranging a few, and *only* a few, wine samples within the tasting lab's single spatio-temporal frame is already enacting similarity and homogeneity.

Joe takes a sip from the glass at the left-hand end of the row of samples, and invites me to do the same. He is tasting this sample, he explains, largely in order to calibrate his palate. This wine was graded as MacLennan's Drive Merlot after finishing fermentation but did not have a particularly pronounced taste. It is currently maturing in a stainless steel tank packed with oak staves, so that it will at least contribute a distinctive oaky flavour to the final product blend. But for now the oak flavour is overpowering – when I copy Joe and sip from the glass, I can taste only the acrid tang of wood smoke. And this, Joe explains, is precisely the point. The sample, while expressing a few of the basic characteristics required of

MacLennan's Drive Merlot, is relatively flavour-neutral... aside from the taste of the oak. By referring frequently back to this sample throughout the tasting, Joe will contrast its taste against those of the other Merlots – emphasising what is unique about each sample and accentuating any differences between its taste and that expected of MacLennan's Drive Merlot.

Joe moves on to the second glass. This wine was made from grapes grown in Padthaway, in the south-eastern corner of South Australia. It tastes fruitier than the first; Joe thinks it tastes of red berries. Its more intense taste marks it out as being of slightly higher quality than the reference sample, so he probably won't blend it into a tank destined for MacLennan's Drive. But Joe's surprised when he moves on to the third sample – this wine is *very* different, and not just because it's made from McLaren Vale grapes. It tastes sour, or tart, like green apples. Probably its acid balance is slightly wrong – too much malic acid, too little tartaric acid. This acid imbalance might later cause the wine to become insufficiently acidic-tasting, or 'flabby,' but fortunately it can easily be remedied by adding synthetic tartaric acid. But there's something else too: this wine *smells* very different from the others. There's a floral component to its scent, almost like violets. This is not suitable material for MacLennan's Drive Merlot, which need only show the red berry and plum flavours expected of a varietal Merlot wine. In fact it doesn't really provide quite the mix of flavour characteristics that The Company expects in *any* of its Merlot products. But it is interesting; most likely it will prove useful in adjusting one of their 'Founder's Reserve' blends (a semi-premium product range of slightly higher quality and somewhat riper, more full-bodied style than MacLennan's Drive) – either the Founder's Reserve Merlot or the Cabernet-Merlot. After cleansing his palate with a sip from the reference sample Joe proceeds to the fourth wine, drawn from a large-volume tank of Barossa Valley Merlot. *This* sample is different again; riper and richer than the others. He describes it as feeling soft, heavy, and full-bodied in his mouth. This wine is much better than the first *or* second samples – and it is perfectly suited to Founder's Reserve varietal Merlot.

The difference made by the precise framing of relations built into this tasting – by Joe’s exclusion of all but a few (by some measures) highly similar wines from the space of the tasting lab – is already clear to see. And to *hear*. During the ferment tasting Joe rushed through his assessments, but here he takes his time in tasting each wine. And, more importantly, Joe talks at length in between sips rather than responding to all of the samples with a mute tick. He describes their qualities – and specifically the ways in which the wines taste or smell similar to or different from one another – using a varied vocabulary of referential descriptors to identify the constituent sensations which compose the particular taste of each sample (Shapin 2012). So *this* tasting practice constructs a tightly-delimited space of comparison which renders Joe articulate (Despret 2004; Latour 1999b; 2004a) – enabling, even impelling, him to provide a specific, detailed description of each sample’s unique qualities (Hennion 2005; Méadel & Rabeharisoa 2001). Beginning from a sample with a known taste and a determinate product grade – the oaky-tasting reference sample – heightens his awareness of the different ways in which the other wines affect him. This comparison focuses Joe’s attention on the fruity flavour of the second sample and the floral aroma of the third – sensations which he is suddenly acutely aware that the previous sample did *not* induce. So within this frame of similarity (Callon & Muniesa 2005; Hébert 2010), within a filter which screens out differences inimical to considered comparison of samples, the shock that tasting different samples in succession produces in Joe yields quite different effects than it did in the ferment tasting.

In this latter setting a few crude contrasts (for instance between sweetness and astringency) no longer dominate the taster’s perceptions, overpowering other sensations. Comparing wines chosen for their similarity (in grape variety and product grade) instead accentuates subtle distinctions among samples, which stand out more clearly against a background of similitude. In this way, then, the comparative tasting becomes a device for *sensitising* Joe’s palate – the act of placing similar wines alongside one another within the tasting lab renders slight contrasts between materials, which might go unnoticed elsewhere,

perceptible to Joe (Hennion 2007). So the tasting lab constitutes a form of equipment, or *agencement*, which produces both new qualities – new capacities to affect, move, and elicit a response from a human body – in the wines, and new sensory faculties – new capacities to perceive, and be provoked to act differently by, differences in the wines – in Joe (Çalışkan & Callon 2010; Hennion 2005; Méadel & Rabeharisoa 2001; MacKenzie 2009). By reconfiguring the spatio-material arrangements within which the encounter between sample and taster takes place, the framing of this second tasting has altered both Joe’s palate and the wines that he is tasting (Latour 2004a; Hutter & Stark n.d.). No longer an instrument for registering technical faults, Joe’s nose and mouth (and the wider lab) have become a device for describing the slightest differences in the wines’ capacities to affect and displace human tasters.

None of which is particularly surprising; that both the tastes of things and human bodies’ capacities for sensory perception (for becoming affected by them) take shape in and through relations has been a favourite proposition within science studies for some years (Despret 2004; Latour 2004a; 2004b; Lorimer 2008; Lorimer 2010; Méadel & Rabeharisoa 2001; Vannini et al. 2010). As Muniesa & Trébuchet-Breitwiller (2010: 323) note, “To get oneself affected requires some work.” But in *this* tasting, the relationship between tasting body and tasted wine is not being worked on as an end in itself. Joe is not one of Hennion’s (2005; 2007) celebrated amateurs (at least not during work hours). Here and now he is a busy professional and, while this tasting practice *does* work on his own relationship with the wines, it does so instrumentally as a means to the end of specifying relations (of similarity and difference) among the things tasted.¹⁵ So perhaps this tasting is a case of qualification in action (Callon et al. 2002; Hébert 2010). Where, at the beginning of the tasting, Joe faced a line of five wines which were all somewhat like MacLennan’s Drive Merlot but whose precise

¹⁵ The comparative tasting described here thus differs from the modes of sensory assessment described by Méadel & Rabeharisoa (2001) and Muniesa & Trébuchet-Breitwiller (2010) since it is only indirectly concerned with elaborating the relationship between product and consumer.

organoleptic qualities (or capacities to affect a taster) were uncertain, only two such unknown quantities remain. The others have gained more specific and determinate characteristics; they have become differentiated from the reference sample, and from one another, by a multitude of specific affective capabilities. One tastes of red berries, another smells of violets, a third feels soft and heavy in the mouth.

This tasting is not, however, only an exercise in description; rendering *Joe* articulate is not the goal. The point of comparing samples is to enable Joe to work out how they differ from the reference sample and thus judge whether they are better or worse than – or, as is the third sample, simply very different from – it. The act of comparison thus makes perceptible patterns of resemblance in the qualities of these materials which might have gone unnoticed had they remained spatially and temporally dispersed (Latour 1999b; Lorimer 2008). Lining up, and tasting, samples side by side thus also enables Joe to pose new questions about the ways in which they affect tasting humans. Is this sample higher- or lower-quality than the last? In what ways are they different? Might they complement each other if blended together, or would one detract from the other's sensory appeal? Through this process of comparison, against the reference sample and against one another, Joe begins to interrogate and construct relations between the wines – he begins to *rearticulate* his materials; to entangle them in new attachments (Latour 2004a).

Joe moves on to the fifth sample, a second Barossa Valley Merlot, but quickly concludes that while the fourth and fifth wines may share the same region of origin they resemble one another much less in taste. Disappointingly, he tells me, this second Barossa Merlot is nowhere near as good as the first. It reminds him more of the second wine, the one from Padthaway which tasted of red berries. Perhaps the second and fifth wines can be blended together for maturation. After tasting the reference sample one last time, Joe comes to the sixth and final sample – a South Australian Merlot, a blend of materials sourced from more than one viticultural region. This one tastes similar to the fifth and second wines; it has

the same fruitiness, the same taste of strawberries – and the same potential suitability for a product better than MacLennan’s Drive.

As Joe is finishing his tasting Nathan, who has just finalised tomorrow’s daily plan, joins us in the tasting room. He picks up the glasses and begins to taste, replicating Joe’s comparison of the six samples as Joe summarises his conclusions about each wine for Nathan’s benefit. This, I am told, is standard practice. Although Joe bears overarching responsibility for managing centrifuging and ‘packing up’ wines after fermentation he will, if possible, usually seek ‘second opinions’ on his assessments from other winemakers in order to offset the individual idiosyncrasies of his own palate. Today, Nathan largely confirms Joe’s descriptions of the wines as he tastes quickly through the six glasses. All five freshly-pressed wines are, he observes, actually ‘looking better’ than their current product grades had led him to expect. These five wines are *too* good for MacLennan’s Drive; Joe will have to either ignore or change their product grade when he decides whether and how to pack them up for storage. Now Joe outlines his plans for these wines to Nathan. After centrifuging he will send the third wine – the McLaren Vale Merlot that smelled of violets – to small oak barrels in order both to keep it separate and to augment and develop its already distinctive aroma. This way a more complex version of this parcel will not only be available, but will (being spread across many different barrels) also be easy to subdivide should the winemaking team later decide to blend it into more than one product. The fourth wine – the ripe, full-bodied Barossa Valley Merlot – he will re-grade as Founder’s Reserve Merlot. He will simply keep this wine separate in its own small storage tank for now, so that its distinctive character is not altered, damaged, or dissipated through blending. The second, fifth, and sixth wines, however, all taste quite similar; all of them are fruity, and all taste of strawberries to Joe. And all are probably good enough to merit re-grading as Founder’s Reserve Cabernet-Merlot. So these three wines are sufficiently alike that packing them up into one tank after centrifuging – merging the three wines into one – probably won’t eliminate *too* many unique specificities of taste and aroma, or jeopardise the new blend’s quality grading. The three are, in effect, being

deemed sufficiently homogeneous that they may be merged together without losing their distinctive qualities – and this mapping of similarity and difference will soon be embodied in their physical blending into a single uniform tank of wine. Nathan nods his approval, and Joe departs to compose the centrifuging and blending instructions which will guide the enactment of the pickups that he has just described.

Double-Movements: Qualification and incorporation

The wines on the bench are both tested and classified during this comparative tasting interposed between fermentation and centrifuging. As Joe and Nathan draw out the specific organoleptic qualities (the taste, scent, and texture or ‘mouth-feel’) of each sample before them through comparison and contrast, they also construct more precise relations of difference and resemblance – of distance and proximity – among these wines (Beckert & Musselin 2013; Callon et al. 2002; Hébert 2010). This making of organoleptic similarity and difference *matters* because, as Joe’s plan for centrifuging and pickup illustrates, this process renews and realigns samples’ attachments to particular product grades. For instance, Joe knows immediately that just as the fourth sample, the Barossa Valley Merlot, is higher-quality, riper, and more full-bodied than the reference sample, so Founder’s Reserve Merlot is riper, richer, and higher-quality than MacLennan’s Drive Merlot. Mapping out resemblances and divergences among the wine samples thus establishes a new system of positioning which dissipates the ambiguity that had surrounded their qualities, and therefore their potential suitability for specific products within The Company’s range, during fermentation. The tasting begins to accord these materials a definite location – and an identity – within The Company’s system of product grades once more (Callon & Muniesa 2005).

Joe’s post-fermentation tastings might, then, be understood as post-liminal rites, through which new wines are incorporated into a new world of associations. Just as van Genneep’s (1977) initiands gain new offices, privileges, obligations, and affiliations through

such rites (Turner 1967), so new wines gain new qualities, uses, and positions within The Company's product range – new identities – during the tasting. These materials thus leave behind the liminal status of ferment to become *specific* wines – although not necessarily the specific wines prefigured in the product grades attached to their constituent grapes in the vineyard. Fermentation has a tendency to at least modestly displace materials' positions within The Company's product range, and Joe did not confirm a single one of his samples' original attachments to MacLennan's Drive Merlot during the pre-centrifuging tasting that I attended. He was surprised to find that none of these materials had developed into the wines that they were expected to become; that instead all had acquired unexpected – and unexpectedly positive – qualities.

Callon *et al's* (2002) double movement of qualification – in which goods become both more singular and more comparable – can be discerned within this movement of incorporation. This tasting practice amplifies each sample's distinctive qualities through comparison so that the wines may be grouped into more specific and internally homogeneous categories composed of more similar wines (Hébert 2010). Comparative tasting thus redistributes differences and similarities in taste into closer alignment with product grades, so that organoleptic *differences* between wines increasingly mark the boundaries between products and *similarities* in taste become predominant among wines of the same grade (Cronon 1991).

It is in relation to this making of comparability, similarity, and homogeneity that I want to re-emphasise qualification's parallels with van Gennep's (1977) rites of passage. For van Gennep's contention that gaining a cluster of relationships, and the identity, singularity, and specificity which they impart, also entails the initiand's loss of their former identity and social world is relevant to the case of wines two, five, and six – the three similar-tasting Merlots which will be blended together in one tank. By arraying all three within a single comparative frame (Callon 1998a; Callon et al. 2002; Callon & Muniesa 2005) – the tasting

lab bench – Nathan and Joe have become able to classify these three wines as organoleptically similar. They taste and smell alike. But in other respects the wines are quite *unlike* one another. Wine two was grown hundreds of miles away in Padthaway, while wine five was grown nearby, in the Barossa Valley, and wine six has already lost its regional identity during fermenter streaming. The Company’s comparative tastings are, then, a practice which asserts the impressions that wines leave upon a tasting human body – in the form of flavours, textures, and aromas – as the primary measures through which similarities and differences among these materials are to be judged, ordered, and classified (Latour 2004a; Méadel & Rabeharisoa 2001). They make similarities in *taste* among Merlots from vineyards situated as far apart as Padthaway and the Barossa Valley more important, and more consequential, than wines four and five (which taste noticeably different) having both been grown in the Barossa Valley. Thus, comparative tasting defines a wine’s identity through its organoleptic qualities almost to the exclusion of all else; in the tasting lab the wine *is* its flavour profile.

Distributing difference and similarity in this way, so that all three wines become attached to Founder’s Reserve Cabernet-Merlot – a product sourced from across South Eastern Australia, the world’s largest GI for wine, which stretches across five Australian states (Wine Australia 2013) – has its consequences. Blending these three wines together will sever the identities of wines two and four not only from their vineyards but also from their viticultural regions of origin. Once these materials are mixed with each other, and with a non-regional product, Australian GI regulations will no longer permit their identification or labelling as products of Padthaway or of the Barossa Valley (see chapter three). For these two wines at least, then, the elaboration or amplification of their organoleptic qualities entails a weakening in their attachments to the vineyard sites and viticultural regions in which they were grown. So this qualification practice (Callon et al. 2002; Hébert 2010) does not simply render the qualities of goods explicit and predictable (Busch & Tanaka 1996; Çalışkan & Callon 2010) but draws out *certain* axes of similarity and differentiation among things, often

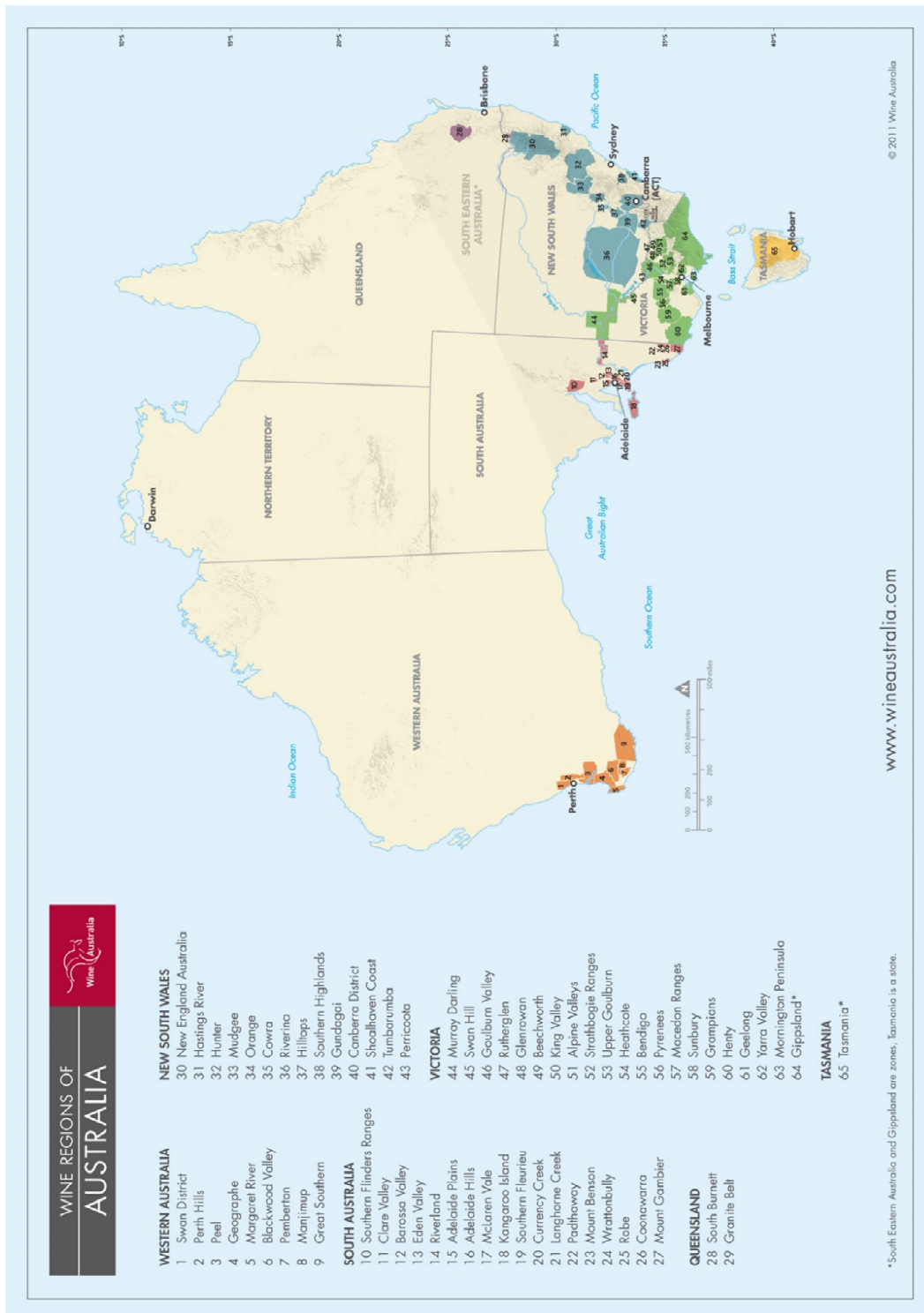


Figure 25: Map of the wine regions of Australia. The South Eastern Australia GI encompasses the shaded area at the top of the map, dwarfing all of Australia's other GIs.¹⁶

¹⁶ Source:

<http://www.wineaustralia.com/en/Production%20and%20Exporting/Register%20of%20Protected%20GIs%20and%20Other%20Terms/~media/0000Industry%20Site/Images/Production%20and%20Exporting/Register%20of%20Protected%20GIs%20and%20Other%20Terms/Wine%20Aust%20Map%20of%20Australia%20011.ashx> [Accessed 01/07/2011].

at the cost of obscuring or muddling others. In comparative tasting, materials both gain *and* lose particularity and singularity.

This point is demonstrated even more clearly by the intensified form of comparative tasting mobilised in The Company's annual classification tastings.¹⁷ During these tastings, Company winemakers finally fix their wines' attachments to specific product grades – providing a definitive description of each distinct batch of wine's quality and style which will not usually be revised again. Once The Company's wines have largely finished their primary alcoholic fermentation, the entire winemaking team will gather to taste through all the wines made from a handful of similar grape varieties during the vintage (for instance 'aromatic' white grapes such as Riesling, Sauvignon Blanc, and Pinot Gris). The winemaking team will taste through each flight of wines in a fixed sequence. Thus they will once again judge the qualities and product grade of each wine through its similarities to (and differences from) materials comparable in taste, aroma, and texture. But classification tastings differ from Joe's comparative tasting in one key detail: the winemakers will not learn the identity of each sample until after they have assessed it, discussed its qualities, and assigned it a final product grade. They are thus carefully and explicitly prevented from basing their decisions upon the wine's vineyard(s) or grower(s) of origin – or upon a tank or barrel's specific biography within the winery and the changes it has undergone during vinification. Only organoleptic qualities, supplemented by grape variety and possibly region of origin, are permitted to influence the final and indisputable assigning of these materials' new identities *as wines*. In the end, then, The Company's comparative tasting practices attach materials to new identities as marketable wines by amplifying and emphasising their flavours, aromas, and textures to the exclusion of all other forms of similarity and difference among these materials.

¹⁷ Only members of The Company's winemaking staff and senior viticultural managers are permitted to participate in classification tastings, and my description of these events is therefore based on winemakers' accounts of the process during interviews.

So comparative tasting constructs a space in which only the relations of sameness and difference in taste, of equivalence and non-equivalence, which define a wine *against other wines* remain salient to its identity and its attachments to the brands which form The Company's product range. So the relations of distance and proximity which proliferate during the comparative tasting are relations of a very specific kind; they are relations among comparable goods (Beckert & Musselin 2013; Callon et al. 2002; Callon & Muniesa 2005). The framings enacted within the tasting lab thus extricate wines from a multitude of relations with *other things* (Callon 1998a) – soils, weather, pathogens, grape growers, and perhaps even viticultural regions – which had produced, and formerly defined, their constituent grapes (Cronon 1991). Thus, as wines are assessed and reassessed within a series of comparative frames culminating in the blind classification tasting, they are being progressively stripped of their former social (but more-than-human) worlds whilst also becoming entangled in new ones. The framings of relation enacted in the tasting lab construct a domain of relations among goods that appears sealed off from the wider social world (Berndt & Boeckler 2009; Slater 2002).

Comparative tasting might therefore be seen as a case of Tsing's (2013) 'alienation assessment'; as a mode of ordering self-consciously 'blind' to, and designed to estrange goods from, the associations which produced them. This argument sees in comparative tasting the archetypal gesture of capitalist alienation; the more constitutively entangled the wines become in relations with other goods, the less they bear and convey entanglements with their many (human or nonhuman) viticultural makers (Slater 2002). Through comparative tasting, then, wines become incorporated into a social universe composed, at least superficially, entirely of differences and equivalences among comparable goods. What might the construction of such an autonomous domain of relations between things accomplish? Usually, alienation is seen as facilitating the making and exchange of commodities by constructing a system of relations which:

“establishes a relationship between the objects exchanged, whereas gift exchange establishes a relation between the exchanging subjects” (Strathern 1988: 143).

Alienation is, then, a way of preventing the exchange of things from entangling transacting parties in unwanted relationships with their producers (Appadurai 1986; Carrier 1995; Gregory 1997; Harvey 1984; Paxson 2013). There is a corollary to such accounts of alienation and commodification; that cutting things free from their makers expunges the relations which make them unique (Çalışkan & Callon 2010; Tsing 2013). Reduced, through positioning within a deliberately limited world of relations, to a cluster of qualities which satisfy a particular need, commodities may be aggregated into categories whose members appear identical and entirely substitutable for one another (Cronon 1991; Slater 2002; Tanaka & Busch 2003). Alienation is, then, about constructing a domain of commensuration; about making it possible to exchange one thing for another (Busch & Tanaka 1996; Harvey 1984; Hébert 2010; Nakassis 2013). Alienated from their producers, sealed inside a hermetic world of comparable things, and rendered identical to other representatives of a particular class of goods:

“objects in commodity relations are fungible, a legal term that means capable of replacing or being replaced by another item meeting the requisite definition. [...] each is freely substitutable within its class” (Carrier 1995: 29).

However, as the blending of wines two, five, and six illustrates, the comparative tasting’s framing-out of wines’ relations with their viticultural producers does not only estrange wines from the human workers with whom critiques of alienation are usually concerned (Carrier 1995; Gregory 1997; Harvey 1984). The classification process renders wines independent of associations with grape growers, it is true, but this also entails a dissociation from vineyard sites, viticultural regions, and their innumerable nonhuman constituents (Cronon 1991). As such, binary typologies of exchange relations – commodities proliferating relations among objects, gifts proliferating relations among subjects – do not quite do justice to this form of alienation. In the next section, I will ask what work alienation might do in a world in which relations among persons do not separate so neatly from

relations among things. More specifically, I will explore what alienation might do for winemakers charged with inducing consistency of taste in materials all too prone to entering identity-altering associations with all manner of nonhumans.

Alienation and Substitution

The packing-up of wines two, five, and six during Joe's pre-centrifuging tasting neatly illustrates the work that the enactment of homogeneity through alienation can do within The Company. As Joe groups these three Merlots together within a single product grade, sameness in taste becomes equivalence within The Company's product-based grading system; any one of these wines becomes as suitable as any another for making Founder's Reserve Cabernet-Merlot. And this sameness-making is not merely discursive; the wines' categorical homogenisation will soon be physically enacted as they are blended together within a single tank. During blending, fluids formerly held apart in separate containers will mix and intermingle until the three formerly-distinct wines can no longer be differentiated or isolated from one another. Henceforth each part of the new blend will bear the same qualities; all of the wine in the tanks will bear a strawberry taste, but none can be labelled as the produce of Padthaway or the Barossa Valley. So the practice of blending by product grade enacts an *equivalence*, for The Company's purposes, in qualities, uses, and value among these wines which can be extended to any other equivalent-grade Merlot. Once classified as suitable for Founder's Reserve Cabernet-Merlot, the wines become as good as, and interchangeable with, all equally-graded Merlots – whether they were grown in Coonawarra, the Clare Valley, or across the state border in Victoria. *All* of these wines will become as interchangeable within their class (Busch & Tanaka 1996; Carrier 1995; Cronon 1991) as they are distinct from all Merlots graded as suitable for MacLennan's Drive products.

This work of making and classifying sameness in taste does something quite remarkable: it allows The Company's products to stay organoleptically self-similar – to be consistent – even as grapes in the vineyard vary in quality from vintage to vintage. By

permitting only very similar-tasting wines to be blended together or substituted for one another within a product grade, comparative tasting minimises variation in *taste, scent, and mouth-feel* among the materials which compose each Company product. It thus ensures that the capacities of MacLennan's Drive and Founder's Reserve products to affect a human taster – a ValueFresh customer, for instance – within sensory registers remain largely constant. Comparative tasting does this by building relations of similarity between wines grown in different sites (vineyards, regions, and even states) anew each vintage – similarities which allow the source of the wines being attached to each product grade to vary from year to year. Indeed such variation in sourcing is something approaching a prerequisite for the level of organoleptic consistency that The Company requires in its commercial-segment products. The vines growing in any given vineyard site or block, all too apt to respond as conditions within the environment in which they grow change each growing season, are highly unlikely to yield grapes suitable for the same wine product every year. Even entire viticultural regions are potentially prone to extreme weather or disease events which might affect the yield and quality of the regional grape harvest enough to threaten The Company's ability to keep consistent quantities of consistent-quality wine on retailers' shelves (as chapters four and five discuss).

So the grape supply base for each of The Company's products needs to move each vintage –grapes must be sourced from different sites and regions each year – if winemakers are to find the materials that will enable their wines to stay the same, or remain consistent, in taste. And comparative tasting's framing-out of wines' attachments to the grower and vineyard which produced them is valuable to The Company precisely because it prevents products from becoming too *attached* to specific sites and regions; it keeps them mobile. Alienating wines from their viticultural producers enables the transposition of relations of incommensurability and equivalence into a space where comparisons are made among wines alone, and thus ensures that each product blend's connection to any specific vineyard can be

severed as soon as it ceases to provide suitable fruit. As Mark explains with reference to Founder's Reserve Cabernet Sauvignon in an interview:

“there's a lot of advantages the winemakers had from getting it from various regions, and risk mitigation as well. I mean, we got wiped out by frost in 2007 in Coonawarra, [...] [but] we weren't on a regional blend there, so it was OK 'cause we had good Cabernet from the Barossa, from McLaren Vale, from Langhorne Creek, Clare.”

If Cabernet grown in Clare is as good for producing Founder's Reserve wine as Cabernet grown in Coonawarra, then a poor harvest in Coonawarra need not unduly *affect* Joe, Nathan, and the other winemakers tasked with protecting the organoleptic consistency of Founder's Reserve. Company staff may not be able to control completely, or to predict consistently, the quality or yield of the grapes produced by The Company's and its growers' vineyards, just as they cannot control the weather. But if organoleptic characteristics are the only qualities that count, then grapes grown in another region will probably be similar-enough to replace the material lost in Coonawarra. This strategy may be deceptively simple – even obvious – but this makes it no less vital to the capacity of commercial-segment branded products like MacLennan's Drive to remain consistent and thus to remain on retailers' shelves. That only one of The Company's commercial-segment MacLennan's Drive-branded products experienced a significant shortfall in volume in 2011, even though The Company's crush was significantly reduced due to botrytis damage (see chapter four), perhaps testifies to the efficacy of this mode of grading and substitution in securing consistency. Indeed, Simon even contends in an interview that it is this capacity to preserve self-similarity in taste by varying the sourcing of wine that has enabled the commercial success of brands such as MacLennan's Drive in British retail settings since the 1990s:

“...in a growth business, like the UK supermarkets are, you want something that is capable of growth, um, as a category, and so Australia could do that. Because, you know, the big suppliers – like Rosemount, like Jacob's Creek, um, at the time, and our own label supplier – was able to say, you know, “This year you've done, um, half a million cases. Next year, if you want it, we'll be able to do three quarters of a million cases, and in two years' time we'll be able to do a, sort of, a 1.25 million.” [...] you needed, you know, a degree of certainty going forward and Australia, kind of uniquely, was able to do that. And I suppose, looking at it, although there is vintage to vintage variation and there are fluctuations in the size of the vintage, the fact that many of the

wines that were being exported had this South Eastern Australia GI, um, gave everyone confidence that ‘Well, if the Barossa Valley gets wiped out by... weather events and disease, you know, we’re still gonna be able to source wine from Clare and the Riverland and Coonawarra.’ So it’s not, for those big volumes it’s not really a, a risk, you can still get that volume. And that really did play into the, the hands of the big guys, um, who could assure us that they had the volume. And, you know, of course we could plausibly believe them [...] that, yes, there was security of supply.”

Just as alienating commodities from their producers protects transacting parties against unwanted interpersonal entanglements by making things interchangeable, so alienating wines from their vineyards of origin through comparative tasting and blending protects The Company’s products from becoming attached to particular vineyard environments in ways that might threaten their consistency (Carrier 1995; Gregory 1997; Strathern 1988; Tsing 2013). Because the produce of any particular vineyard must be attached to one of The Company’s product grades afresh each year, materials which might subvert a product’s organoleptic profile – whose qualities are not suitable – can be easily excluded from the blend. Indeed, this is – for wine buyers like Simon – a cardinal virtue of commercial-segment branded wines such as those produced by The Company (Osmond & Anderson 1998). Brands like MacLennan’s Drive can be quickly and thoroughly disentangled from relations with vineyards suffering from botrytis or smoke taint – they can provide ‘security of supply’ – *precisely because* the comparisons and classifications carried out in the tasting room render all similar-tasting wine identical and interchangeable, regardless of its location of origin.

Consistency and Commodification

It is easy to identify parallels between The Company’s efforts to protect its products against deleterious attachments to vineyard sites, as detailed above, and the ways of formatting its relations with grape growers described in chapter five. The Company’s hurried drive to alienate the materials which will compose its products from the affective relations which tie them to unruly vineyard environments parallels its anxiousness to disentangle them quickly from relations with growers by calculating and paying a price for contracted

grapes promptly. Perhaps, then, the near-immediate grading and pricing of, and payment for, botrytised grapes enabled by the FTOs' enumeration of botrytis infection is as much a means of neatly and unambiguously disentangling The Company's products from unsuitable materials and unreliable vineyard environments as is the re-grading and blending of materials after fermentation. If so, then this suggests that the distinctive economy of relations associated with The Company in chapter five – and specifically the paramount value which it attaches to sealing and terminating grape purchases promptly – is implicated in, informed by, and productive of The Company's pursuit of organoleptic consistency. Indeed, settling a price for each grower's grapes based on their condition as assessed in the vineyard facilitates the pursuit of consistency in at least one way. For it allows Company winemakers to blend materials supplied by different growers without having to grapple with the torturous and likely contentious process of pricing each of the new blend's components after its qualities have already been altered through amalgamation with other wines.

Perhaps, then, The Company's modes of relating to – or more pertinently of achieving detachment from – the nonhuman environments implicated in viticulture can be mobilised to shed light on the valuation practices, and the imperatives, which inform the formatting of its transactions with human grape growers. Indeed, the manner in which The Company's pursuit of organoleptic consistency interweaves the disentanglement of materials from their relations with vineyard environments with their economic alienation from grape growers evokes Busch & Tanaka's (1996: 5) observation that rites of passage simultaneously order relations among both persons and things (Saleh 2013), and that:

“by transforming nonhumans and subjecting them to multiple rites of passage, we coproduce nature, society, the capitalist market”.

Nevertheless, approaching the formatting of exchange relations between wine producer and grape grower through the re-framing of relations among wines within The Company's tasting lab is perhaps, on the face of it, a surprising analytical move, for it credits tasting practices with a hitherto unsuspected economic potency. Could it really be that, at

least within The Company's tasting lab, far from being determined by political and economic structures (Bourdieu 1984), tasting practices actively participate in *ordering* economies of relation?

I would suggest that it could, for while the notion that economies of relation among persons might be ordered specifically through tasting practices may seem unfamiliar, in one respect it simply restates a foundational contention of both political economy (Busch & Tanaka 1996; Slater 2002) and economic anthropology (Appadurai 1986; Gregory 1997; Strathern 1988). Namely, that the framing of relations among things transacts relations among persons. With this in mind, I want to flesh out the economy of relations which takes shape through The Company's alienation of wines from their viticultural producers and the enactment of consistency in order to clarify a little further what sort of market might be in the making with the tasting lab. I will begin my mapping of this economy of consistency by returning to the way that this alienation enables the substitution of wines *within homogeneous product grades*, rendering them "bundles of utilities and values that are precisely not unique" (Carrier 1995: 28). This making of substitutability, or fungibility, is among things is the archetypal gesture of commodity-making (Harvey 1984; Tsing 2013). And I am not the only one to have noticed this parallel between the grading of wines through comparative tasting and social theory's ideal-type accounts of commodification. The vocabulary of commodities and commodification is often mobilised by wine producers to articulate concerns over the modes of large-volume branded wine production practised by the likes of The Company. Thus, in an interview Matthew – a former marketing executive for one of Australia's largest wine producers and now the proprietor of a small estate winery in the Clare Valley – states that:

"The reality was, you know, 20 years ago, the wine industry in Australia, as it was and still is in lots of Old World countries, was made up of people and personalities that were passionate about an agri-product. And they didn't ever use terms like 'product', it was a bottle of wine, it was a glass of, you know, expression of hard work, and there was a lot of romantic, um, and aesthetics, you know, associated with making wine. [...] But what's certainly happened in the last 20 years and even more recently is, in the last

10 years in Australia, is the industry's become more and more about commodity, more and more about... um, FMCG processes or CRM processes, more about a supermarket approach to the commodity, or commoditisation if you like, if there's such a word, of wine as another supermarket shelf item. [...] and I'm not really saying it's good or bad, I'm just saying the reality is, wine's now a commodity. And for 80% of the market, it's, it is about price, about style, and about, almost, a generic approach to, to, it being treated as a beverage, as any other – both alcohol and non-alcohol.”

In this quote Matthew speaks of ‘commodities’ in a very specific sense. He is not deploying the more expansive social-theoretic meaning of the term commodity as a thing transacted through a mode of exchange: “in which a transfer of ownership ends all claims of the previous owner” (Slater 2002: 237). Matthew is articulating an objection to the reduction of wine to a combination of *style* and *price*, rather than to the sale of wine as alienable property as such (Callon 1998b; Carrier 1995; Gregory 1997; Strathern 1988). In his usage, the term ‘commodity’ emphasises fungibility and the sense that wine has (at least in some settings) become a product substitutable for any other product of its class and therefore priced according to the quantity of standardised items bought rather than the unique qualities of a particular thing or material (Appadurai 1986; Hébert 2010; Paxson 2013).

So Matthew, by contending that wine has become a commodity, is suggesting that it has become homogeneous and standardised, and that the wine trade (or at least some sections of it) has come to resemble what economists would recognise as a ‘commodity market’ (Busch & Tanaka 1996; Cronon 1991; Tanaka & Busch 2003). Such assertions are commonplace in both popular and academic accounts critical of the rise of large-volume, commercial-segment Australian wine brands such as MacLennan’s Drive, which often describe this process as the commodification of Australian wine (Croser 2010; Goode 2002; Jefford 2010a). Such critical narratives often re-appropriate the language of consistency current among large-volume wine producers and chain retailers to depict commercial-segment wine products sourced from across South Eastern Australia as ‘bland’, ‘placeless’, ‘dull’, and ‘all alike’ (Aylward 2007; Jefford 2010b). Thus Aylward (2008: 77) stridently claims that:

“Just as soft drink companies use large-scale assembly lines and tested formulas to produce rigidly uniform drink products, so does Australia’s wine production increasingly depend upon standardised methods that create highly similar wine styles. Coca-colourisation of wine reduces the product to a commodity status in which the emphasis is on volume sales [...] at the volume end of the market ‘Brand Australia’ remains a selling point and the best way to maintain such branding is to ensure multi-state geographic regions stay in place.”

Importantly, the stakes of this argument are not simply aesthetic, for the charge is often made that this process of commodification lies at the root of many of the Australian wine industry’s current economic difficulties, as described in chapter one. Critics allege that while large producers’ use of cross-regional blending to stabilise and standardise the tastes of their mass-market blends may have helped to create the wine styles and products which propelled Australian wine exports during the 1990s and 2000s, it has also rendered the Australian wines found in the commercial market segment increasingly identical and interchangeable. Differentiated only by price and packaging, the argument runs, such products can be easily substituted for one another and for wines produced overseas, enabling and encouraging both retailers and consumers to buy wines on the basis of price alone. Critics suggest that the economies of scale and stabilisation of crop quality and yield afforded by large wine companies’ use of the multi-state South Eastern Australia Geographical Indication offer them an amplified competitive advantage over other Australian producers – although not over overseas competitors deploying similar techniques – in such price-driven markets (Overton et al. 2012; Walton 2006). In so doing, it ensures that Australian wine exports remain heavily concentrated in – and Australian wine industry organisations’ market development programmes remain focused on – the commercial market segment (see table 1) within which such producers’ most successful brands are positioned, impeding the emergence and growth of markets for premium Australian wines in which smaller Australian wine companies might thrive (Aylward 2007; Croser 2010). Chain retailers’ focus upon product consistency is thus seen as combining with the grading and blending practices carried out in settings such as The Company’s tasting labs to create and reinforce patterns of

price competition and deep discounting which now threaten the livelihoods of many wine producers and grape growers (Aylward 2008; Goode 2002; Jefford 2010a).

Such critiques may, perhaps, be intended more as polemics than as empirical descriptions of the everyday workings of the trade in Australian wine. Yet in some respects these accounts nevertheless bear a startlingly close resemblance to sociological and anthropological understandings of the roles of product grades such as those into which The Company's wines are sorted through comparative tasting. For Busch & Tanaka (1996: 21), the purpose of sorting materials into quality grades seems to be to prevent uncertainties about their quality – and therefore their worth – from impeding exchange by standardising product quality and subsuming it into price:

“The process of standardization of a commodity creates the capitalist market, a market in which transaction costs are relatively low. Standards allow human actors to engage in exchange with other distant human actors while transforming nonhuman actors (and sometimes "labor") into immutable mobiles, known as commodities, that can be exchanged in the market.”

The ordering of difference and similarity among materials – of fungibility and incommensurability – that quality grades and standards perform is, then, typically presented as a prelude to commodification in its strict economic sense (as outlined above). There are two main components to this argument. First, that sorting materials into standardised product grades eradicates variation in quality, and thus uncertainty about the value of materials. And second, that the point of constructing such standardised product grades is, by settling the question of quality, to render things stable and homogeneous enough to be traded on the market in the abstract without requiring physical inspection (Busch & Tanaka 1996; Deaton et al. 2010; Espeland & Stevens 1998). The kind of market being envisaged here is an arrangement akin to the commodity exchanges in which wheat (Cronon 1991; Head et al. 2012), canola (Tanaka & Busch 2003), or cotton (Çalışkan 2007; 2010) are traded – a setting where the qualities of materials are fully subsumed into their price per unit (Carrier 1995; Stark 2009; Vatin 2013).

These two contentions – that grading materials reduces uncertainties about their qualities and that the point of this standardisation is to enable them to be more easily traded – are not usually separated. And yet my argument is that they will *have* to be teased apart if the economies of relation in which The Company’s comparative tasting practices are implicated are to be understood. For while these practices do sort materials into homogeneous product grades, their aim is *not* to facilitate the exchange of wine as an undifferentiated quantity within a commodity market. The point can be illustrated by attending to the practice – common not only among large wine producers such as The Company but also among small wineries such as Bartoli’s – of selling unwanted wine either to other wineries or to distributors ‘in bulk’. ‘Bulk’ wine is sold while still in storage and bottled under the buyer’s, rather than the producer’s, brand. In both popular and scholarly representations, bulk wine is typically depicted as commodity wine; an undifferentiated liquid priced by volume (Banks & Overton 2010; Murray & Overton 2011; Overton et al. 2012; PIRSA 2005; Pritchard 1999). But bulk wine transactions – such as those in which Sam Bartoli often engaged in his capacity as a bulk wine trader – are almost never confirmed before the buyer, or at least their broker, has conducted a comparative tasting of samples of several wines offered for sale in order to test their qualities and suitability for their needs once again.

This simple observation illustrates that the product grades constructed through comparative tasting do not fix and categorise the qualities of wines owned by different individuals or companies. As such, their purpose is *not* to facilitate the transaction of bulk wines as homogeneous quantities by settling disputes among buyers and sellers about their quality. Indeed, it is precisely during the process of selling bulk wine that the uncertainties about such wine’s qualities and capacities to affect tasting human bodies, which are gradually settled within The Company through repeated comparative tastings, suddenly resurface. Before the transaction can be agreed, and the wine can move, the question of the wine’s

qualities must be settled all over again as it is laboriously requalified through further comparative tastings (Callon et al. 2002; Callon & Muniesa 2005).

Clearly, then, the purpose of grading wines through comparative tastings is not to resolve uncertainties among transacting parties over the qualities of the *materials* in which they trade, or to standardise and pacify wines as transactable objects in the way that might be expected in a commodity market (Busch & Tanaka 1996; Çalışkan & Callon 2010; Cronon 1991; Tanaka & Busch 2003). A quite different economy of relations, and a quite different kind of market, is being performed in The Company's tasting labs. In understanding what *is* at stake in comparative tasting, it is important to appreciate that each of the product grades into which Company winemakers classify their materials is defined in relation to a specific branded product manufactured only by The Company. Each of these products occupies an elaborately-defined place within The Company's portfolio of wine brands; its flavour profile, distribution network, target markets – in short its identity and purpose – are all carefully differentiated from those of The Company's *other* wines. Indeed, so specific to The Company's particular commercial concerns are the subtle distinctions in product positioning and sensory characteristics which, for instance, distinguish Founder's Reserve Merlot from MacLennan's Drive Merlot that they might make little sense outside its corporate structure.

So the product grades according to which The Company's comparative tastings order contrasts and resemblances – and thus blending and substitution – among wines are inextricably linked with the specific characteristics and requirements of its own wine blends. Since its competitors' product ranges, while often similar (especially within the commercial segment), are not *exactly* the same as The Company's, it is likely that some of the variations in organoleptic characteristics which matter within The Company's grading system will be immaterial to its competitors. Likewise, it is entirely possible that The Company's system of product classifications will overlook some of the qualitative and stylistic distinctions among wines that are relevant to other wine companies' needs. While Company employees often

refer to broad hierarchies of product quality – commercial versus semi-premium, for instance – which their competitors would recognise, the finer differences in wine style which constitute their main product grading system remain somewhat incommensurable with those of other producers.

It is this subtle incommensurability between different wine producers' quality standards – and the resultant dissonances in their ordering of homogeneity and substitutability among wines – that differentiates the grading work done in the tasting lab from market-wide quality standards for, for instance, wheat and canola (Busch & Tanaka 1996; Cronon 1991; Tanaka & Busch 2003). It is because The Company's comparative tastings (like those of its competitors) produce distinctions among materials which do not travel well beyond its own corporate structure that the complex edifice of qualification that they establish is prone to collapse when wine must be transacted between companies.¹⁸ But then enabling this sort of movement – rendering The Company's products commensurable with those of its competitors – is precisely the *opposite* of what The Company's winemakers intend to accomplish. As the notion of consistency suggests, the equivalences (and the fungibility) constructed among similar-tasting materials through comparative tasting is intended precisely to ensure that the flavour-profile of each of The Company's products remains *unique*. By ensuring that only the wines attached to a single product can be treated as interchangeable, The Company's product grades also render each of its branded wine blends incommensurable with and non-equivalent to other products – whether these are made by The Company or its competitors. So while the work of producing consistency is an investment in resolving uncertainty, the uncertainty being exorcised does not concern the qualities of wine *per se* but focuses on those of the wines bottled as MacLennan's Drive or Founder's Reserve specifically.

¹⁸ Navigating the complex and fractured landscape of incommensurable tests and classifications of quality deployed by clients and potential suppliers – and rendering them mutually intelligible – is precisely the task delegated to bulk wine brokers like Sam by their clients.

This is an important distinction. As Foster (2007; 2013) and Lury (2004) note, the purpose of a brand is precisely to reintroduce *incommensurability* into markets; to ensure that products sold under a particular brand cannot be substituted with identical materials which do not bear that brand (Bryant 2013). In this respect, brands can actually be seen as devices for *preventing* the formation of commodity markets, and specifically for preventing price from becoming the sole criterion used to assess products (Nakassis 2013; Pike 2009). So within The Company, where quality grades are bound up inextricably with the identities of specific branded products, the act of making materials homogeneous within a specific product grade takes on a very particular significance. Comparative tasting is not about making The Company's wines the same as others that are on the market. Rather, it is an investment in ensuring that wines sold under The Company's brands always differ from their competitors in the same way; that they are *consistently* different.

So the economy of relations enacted when The Company's winemakers group wines into homogenous quality grades based on branded products is very different from that which grades and standards enact in a commodity market (Busch & Tanaka 1996; Cronon 1991; Tanaka & Busch 2003). The effort being made here to ensure that each bottle of wine sold under one of The Company's commercial or semi-premium brands tastes effectively the same as, and is perfectly substitutable for, any other is *also* an attempt to prevent substitution (Foster 2007; 2013). It is an attempt to make sure that The Company's products always taste exactly like themselves *and* that they always differ from their competitors in their own unique way. The labour of producing consistency in which Company winemakers engage during comparative tastings is, then, an investment in making The Company's brands into guarantors of quality (Bryant 2013; Fernández 2010; Nakassis 2013); in making them markers of a specificity in taste that is unique, yet reliable (Overton et al. 2012).

The goal of this exercise is to foster a particular kind of attachment between The Company's brands and its customers. One part of this consists in reassuring retail wine

buyers like Simon that the 2013 vintage of MacLennan's Drive will bear the same taste as – and is therefore worth buying at the same price as – the 2012 vintage. That retailers like ValueFresh will not have to bear the cost of purchasing and stocking a 'bad' bottling run or vintage which does not satisfy their customers and fails to sell. But it is also a matter of reassuring consumers that they can rely upon the quality of the MacLennan's Drive or Founder's Reserve wines on the shelf; that if they liked them before then they can be certain of liking them again. It is, then, an investment in building a bond of trust – borne of certainty about the quality and style of the wine – which promotes repeat purchases by attaching both retail customers and consumers to The Company's commercial segment wine brands *in particular* (Akerlof 1970; Lury 2004). In this way, the act of making wine substitutable within product categories actually constitutes an attempt to secure sales of The Company's products by cultivating 'customer loyalty' (Fernández 2010; Freidberg 2004; Overton et al. 2012; Pike 2009).

Fungible Growers

When seeking to make their branded products consistently different from other wines, Company winemakers, managers, and marketers valorise and pursue a very different way of formatting transactions than is evident within The Company's dealings with its grape suppliers. When relating to retail wine buyers and consumers, Company employees attempt to format products and modes of transaction in ways which proliferate attachments to brands which will overflow the boundaries of a single transaction. Here, the aim is to ensure that the exchange does *not* leave the transacting parties as aliens unencumbered by entanglements and obligations. Yet this endeavour still depends upon the making of equivalences among materials – and thus upon a mode of qualification which also alienates wines both from their sites of origin and from grape growers. So if qualification's rites of passage simultaneously re-qualify persons and things (Busch & Tanaka 1996; Saleh 2013) – if

commodification is inescapably co-modification – then it is *also* important to ask what these practices make of grape growers, and of vineyards.

To enquire into these worlds of winery-grower relations is to delve into the ‘collateral realities’ (Law 2011) being quietly and for the most part unreflexively enacted as individual wines cease to bear unique qualities and become identical with brand-based product grades. It is to delve into economies of relations which are a necessary, if perhaps unintended, by-product of the making of consistency. What is important here is the way in which comparative tasting practices’ enactment of organoleptic homogeneity within product grades enables Company winemakers to substitute wine grown by one grower, in one particular vineyard, for any other wine attached to the same product grade. This equivalence-making does important work; it enables The Company to impart to its products the sensory consistency which allows it to continue producing commercial-segment wines (and buying MacLennan’s Drive-grade grapes). But it *also* affects what wine is, and what each specific vineyard’s and grower’s crop becomes, within The Company. Because in ceasing to be unique, in becoming fungible within its grade, each vineyard’s crop emerges from the comparative tasting process as a quantitative contribution towards the volume of a specific wine product that The Company needs to produce if it is to satisfy its sales targets. Perhaps as ‘40 tonnes of MacLennan’s Drive Merlot’ – or perhaps later, during blending, as ‘40,000 litres of MacLennan’s Drive Merlot’.

Redefining wine in this way also redefines the growers who supply the grapes which compose it; it imbricates *them* within a very particular economy of relations with The Company (Busch & Tanaka 1996; Carrier 1995; Tanaka & Busch 2003). Vineyards, and suppliers, come to be assessed and qualified in terms of their crop’s contribution The Company’s volumetric requirements for wine at certain product grades. Grape growers, in short, become reconstituted within The Company’s wine supply management regime as sources of a largely-undifferentiated, homogeneous material – almost of a commodity. The

product grading system's reconstitution and redefinition of wine thus renders vineyards and growers themselves equivalent and interchangeable, to some extent, within their crop's quality grade – in short, it makes them fungible. If all MacLennan's Drive Chardonnay is alike then The Company might as well buy grapes from one *supplier* of MacLennan's Drive Chardonnay as another; their fruit is, for The Company's purposes, largely equivalent. This way of qualifying, classifying, and rendering-equivalent growers and vineyards has far-reaching consequences. For if the volume of MacLennan's Drive Chardonnay that The Company is purchasing exceeds its sales requirements then it would make good financial sense for The Company to stop buying a certain volume of that fruit as soon as its contractual commitments permit it to do so. And, all things being equal, this reduction in tonnage might as well come at the expense of one grower of MacLennan's Drive Chardonnay as another – as Mark explains in an interview:

“heading into the winter, it's certainly getting out and about with the growers and discussing pruning, the season coming, those sorts of things. [...] I'll sit down and we'll talk about their contract, and their Chardonnay might be finishing next year. And, you know, we wanna give them a really honest summary of where we're at: 'We're oversupplied with Chardonnay, you've got one year left on your contract [...] so don't pin any hopes on us buying your Chardonnay. Look, obviously there's a year to go, we'll still purchase it and honour our contract, um, but going forward there's probably not a future for your Chardonnay. Now your Shiraz has got two years to go, we like your Shiraz, it's good quality, you're a good grower-' [sigh] Unfortunately we don't have many *bad* growers, that's the sad thing, Jeremy. You know, we probably got rid of some of the good growers going – over the last ten years, you know, the ones that... but unfortunately now, it's just, they're pretty much all good growers, it's purely a timing thing.

And that's really difficult when, you know, we've got some thirty growers. And they signed their latest contract, the contract that's rolled on – I mean, they might have sold on a handshake for 20 years, but the last time they signed a contract might have been, let's say, 1997. A ten year contract to 2007, they might've got a 2 year extension for putting that contract tonnage in, they finished in 2009. Their neighbour who planted grapes in 2000 got a ten year contract – well, hang on, where's the loyalty there? Well [sigh] there *is* loyalty, uh, to a certain degree, that we'll certainly go with them rather than their neighbour if, if there's opportunities, but if we're buying too many grapes, it's just a reality. We can't just go and buy excess grapes because we're nice people, or loyal people, it's just that, that's just, you know, that's just business. We've got some fantastic growers who finish this year, but they're... I can't – I have to be able to justify it. [My boss] will question me, if he says 'hang on, well Joe Bloggs with his Riesling, Shiraz, and...' I'm trying to think of all the varieties we don't want at the moment... 'Sultana!' [laughter] 'How is he strategic?' Well, I can't say 'cause he's a good bloke' – that doesn't cut it anymore.”

So when the focus is shifted to The Company's relations with its grape suppliers, the product grades instantiated through comparative tastings appear more akin to Tsing's (2013) 'alienation assessments' than to practices for fostering loyalty. Their effect, whether by accident or design, is to enact something like the social theorist's idealised model of commodity exchange relations – that is, to prevent the transaction of materials from entangling The Company in social obligations to its grape suppliers which overflow the duration of their contracts (Callon 1998b; Carrier 1995; Gregory 1997; Strathern 1988). It ensures that grape transactions remain 'just business'. But even if it *is* just business, terminating contracts is not a task that Mark enjoys, despite his usual enthusiasm for his job. Even though Mark's position within a company which has been trying to reduce its intake of grapes for much of the last decade places him under great pressure not to renew grape supply contracts, he seems to be troubled by the business of termination. So perhaps there are other forms of relation in play here which are significant to Mark – his use of the word loyalty seems significant in this regard – to which the supply contract system is constitutively blind. Certainly the manner in which he describes his approach to the end of a supply contract in a later interview suggests an attempt to acknowledge other forms of attachment:

“you try and do it amicably as well, you know, whenever a grower finishes up with me I go round and drop a – big deal, some might say – drop a bottle of wine over, just thank them you know? A lot of them have been growing for [The Company] for 10 or 20 years, hell of a lot longer than I've been with the company, and you just thank 'em and leave on good terms.”

Perhaps Mark's discomfort with the termination of grape supply contracts can serve to make visible a startling contrast between two economies of relations upon whose simultaneous enactment the production of consistency depends. On the one hand, the comparative tasting's painstaking framing-out of all relations other than those of difference and similarity in taste is designed to enable winemakers like Nathan to produce wine products both distinct- and consistent-enough in taste to inspire in trust the quality of The Company's brands, and therefore repeat purchases (Akerlof 1970; Fernández 2010; Freidberg 2004; Lury 2004). Whether successful or not, this is an investment in building

'brand loyalty' among Company customers (Nakassis 2013; Overton et al. 2012). Yet this same grading process, in alienating grapes from their source, renders grape growers' crops homogeneous and interchangeable. Thus the production of consistent wines which foster brand loyalty depends upon a system of qualification which frees The Company from any responsibility to repeat its purchases – and to renew its relations with grape growers – beyond the duration of its contractual obligations. The proliferation of durable attachments between wine brand and customer is, in short, underpinned by alienation's severing of such entanglements between wine producer (and wine brand) and grape supplier. Perhaps it is because Mark's work requires that he confront this dissonance so directly that he cannot help but ask (at least rhetorically), of both himself and his employer, 'where's the loyalty?'

Conclusions

This chapter has begun to articulate an answer to Mark's question – albeit a necessarily partial and selective one – by describing how imperatives towards 'consistency' in wine within the mass wine retail sector give rise to particular economies of relations among materials and their producers. In particular, it emphasises that the production of consistent wines requires that the grape supply base of commercial segment wine brands be able to shift as environmental conditions change. Through these observations, I have begun to address the questions introduced in chapter five about *why* the rapid calculation of prices and unambiguous delimitation of market transactions are so highly valued within the economies of relations enacted through The Company's qualification and valuation practices. For this chapter illustrates that the capacities of The Company's commercial segment wine brands to entangle customers in relations of trust and loyalty through providing consistent organoleptic quality are premised upon several disentanglements or alienations. Wines must be disentangled from their vineyards of origin in order to become classified into product grades through comparative tasting practices which construct a closed space of relations of organoleptic similarity and difference among wines – relations later enacted through

blending. Through this act of alienation The Company's wines become interchangeable within their product grade, enabling vineyards and grape suppliers to be easily substituted for one another. The Company's efforts to cultivate an economy of lasting attachments – of trust and loyalty – around its wine brands are thus premised upon the performance of an economy of alienation and substitution in its relations with growers, which inculcates an explicit antipathy towards such durable, binding, and incalculable attachments.

This chapter initially attempted to respond to a question implicitly posed by the preceding chapters: that of how a material as prone to qualitative variation, ever-changing, uncertain, and unreliable as winegrapes could ever become a stable, marketable product. But it has gone further, examining how the making of consistent-quality wine is interwoven with the alienation of materials from their producers and the delimitation of social and economic obligations in both content and in duration within grower-winery relations. Specifying the contradictory economies of relations which underpin The Company's way of producing consistent-quality wine – in which entanglements grow from alienation – raises further questions. At what cost to growers is consistent wine achieved? And might there be other ways of transforming wine into a marketable product – ways which value qualities other than organoleptic consistency and which enact economies of relations which differ from The Company's contradictory combination of viticultural alienation and customer loyalty, and of entanglement and indifference? I engage with such questions in the following chapter, which examines contemporary entanglements of quality and provenance within the Australian wine industry. What practices of valuation and what economies of relations, I ask, might arise when entanglements with specific viticultural sites and regions are positioned not as a threat to wine quality but as its guarantors? And how might such modes of qualification alter the ordering of value – and of economic relations – within the Australian wine industry?

Chapter 7

‘Wines from Somewhere’: Valuing provenance, reassembling geographies.

Neil: “I hope the wine industry – well, I think the wine industry still has a future. But it just has to turn around a little bit. If we can get an extra couple of hundred dollars a tonne then I think we can still survive it. Like, \$150 a tonne, you go broke, \$200 a tonne, you go broke, \$250 a tonne you’re just about sitting on the fence, \$300 a tonne it’s not quite enough, and you need about \$400.”

JB: “Right. And if it’s not a rude question, where are you at the moment?”

Neil: “Er, we’re getting... this year we got paid *around about*, um, probably I’d say... 300 and a bit. I could actually tell you if we go through to the office... [...] So, base price figures – and we’ve got a few bonuses [for quality] coming, but without the bonuses – \$268 a tonne, average. Which is not, not enough. And that is... *barely*, probably a bit behind, break-even. That’s virtually our running costs for a year. [...] So, yeah, we need that 268 to lift to 400, or if it lifted to 350. If we had an average of 350, actually, we’d do OK. I’d even be tempted to go out and buy some new gear at that. If we could get 400, we’d actually be doing *reasonably* quite well.”

Neil’s 14 hectare vineyard hadn’t turned a clear profit since 2005. He and his son Thomas, with whom he tended his vines, were foregoing drawing a regular salary from the vineyard’s revenues. And, having dismissed their sole vineyard hand the previous year to cut labour costs, Neil himself (now in his sixties) was obliged to work extra hours in the vineyard instead of retiring as he had planned. Yet even after six loss-making vintages, Neil still considered himself better off than many other grape growers in the Riverland. Because he had no mortgage or business debts to service, the price of his grapes still just about equalled the cost of operating the vineyard. Unlike many other growers in his area, therefore, Neil at least hadn’t been obliged to take a second job or to finance his loss-making vineyard using credit. He had even avoided losing too much fruit to botrytis this year. And he was optimistic that if he could secure a price of just A\$350-A\$400 per tonne of grapes then his vineyard would become profitable once more. But a price of A\$400, or even A\$460, per tonne doesn’t

look so attractive when viewed from the office in the Clare Valley where Rachel, a wine company viticulturist and grape growers' association board member, works:

Rachel: "...I'd like to see people stop supplying them at \$460 a tonne. Then there'd be a bit more strife... It's an awkward part of the market at the moment, it's self-generating. You supply grapes at that price, it just artificially keeps the price down you know?"

JB: "And then you've got to keep supplying grapes at that price?"

Rachel: "Yeah, but you can't, because you'd be struggling to. I know growers say they can, but you'd be struggling at anything less than \$850 a tonne a year. \$850, \$900 a tonne a year. No one's making money out of that. And the farmers who say they are, they're not counting their own wages, and they're not counting their own superannuation and things like that. Mind you, when you crop at 11 or 12 tonne a hectare, that you can take at a *slightly* lower price [...] And that's part of, you know, winemakers won't get Clare-quality fruit. Because you're paying Riverland prices, so they're going to try and grow like Riverland growers. You know, you need to be able to pay more to keep the crops down."

Rachel's office and Neil's vineyard are situated on opposite sides of a divide between warm- and cool climate regions which bifurcates Australian viticulture (Banks et al. 2007; Moore 2006; PIRSA 2005; SAWIC 2006). Unlike the Riverland, the Clare Valley is a cool climate viticultural region whose best vineyards can yield grapes with enough richness, intensity, and subtlety of flavour to produce even the finest of wines. Grape prices of A\$460 per tonne are not to be desired here; instead, they are dismissed as 'Riverland prices,' paid for a 'Riverland product.' Selling at 'Riverland prices' thus places Clare Valley growers in direct competition with Riverland producers like Neil – and Rachel believes that they are at a fatal disadvantage against such competitors. For the same cool climate which enables Clare Valley vineyards to produce slow-ripening, mature, flavourful grapes also leaves growers able to ripen a maximum of just 10-12 tonnes of fruit per hectare of vineyard – too small a yield to turn a profit at the prices offered for anything less than premium-quality fruit (CRWGA & CVWI 2011). So it is better, in Rachel's and her fellow board members' opinions, to leave supplying commercial and bulk wines to Riverland growers capable of producing 20-25 tonnes of grapes per hectare, and of turning a profit at prices of just A\$400 per tonne.

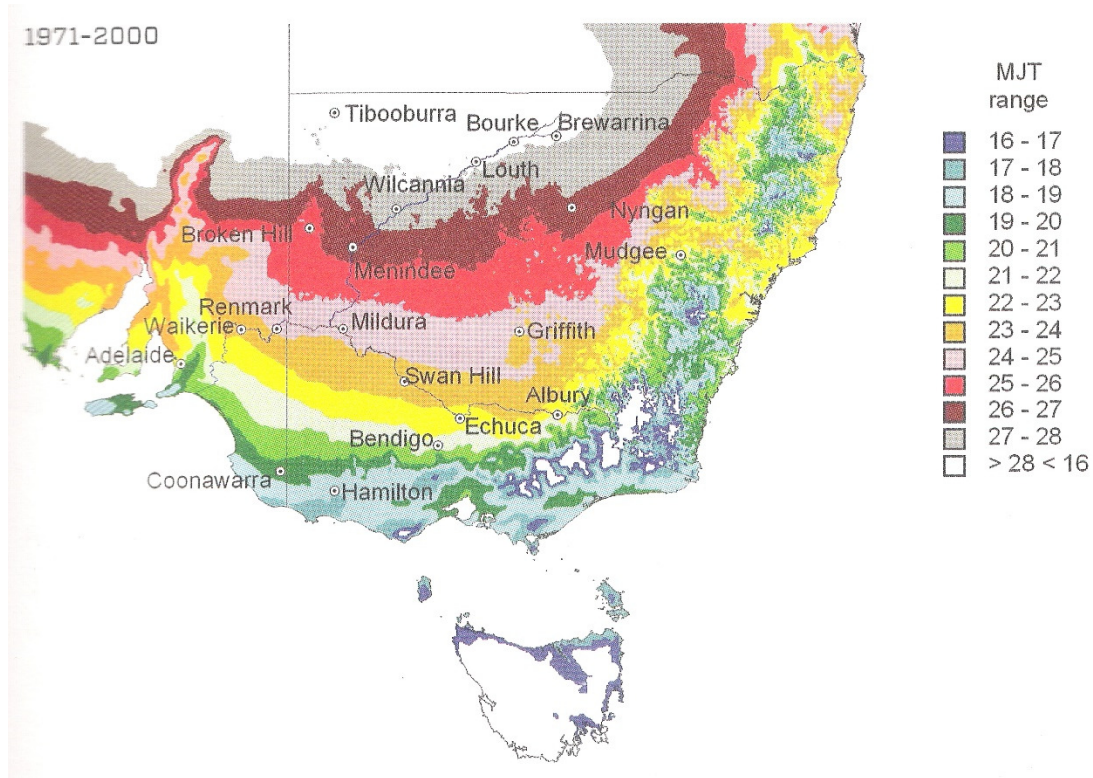


Figure 26: Map showing Mean January Temperature (MJT) across South Eastern Australia during the years 1971-2000. The MJT of the Riverland, which stretches approximately from Renmark to Waikerie, is several degrees higher than those of cool climate GIs located in the coastal areas surrounding Adelaide and Coonawarra.¹⁹

Juxtaposing Neil's and Rachel's respective concerns about grape pricing illustrates that the contrast between warm and cool climate viticulture is as much economic as environmental, for Riverland grapes are plainly being valued – and priced – quite differently than are Clare Valley grapes. This starkly uneven economic geography is typically said to reflect the contrasting biochemical composition and organoleptic qualities exhibited by grapes grown in different climatic zones. Grapes attain sugar-ripeness so quickly amid the high temperatures and steady sunshine characteristic of warm climate growing seasons (see table 3), it is commonly argued, that there is little opportunity for the phenolic developments which impart complex flavours to more mature grapes to occur. So Riverland grapes cannot match the subtlety and intensity of flavour that fruit from cooler regions can achieve, are

¹⁹ Source: Allen (2010: 13).

used to produce wines which are targeted at less prestigious market segments, and therefore command lower prices (Moore 2006; SAWIC 2006). The differentiation and valuation of grapes on the basis of their taste thus broadly aligns differences in grape pricing with climate-driven geographical variations in production costs, with cool climate growers whose lower yields increase their cost of production per tonne receiving higher prices than their counterparts in warmer inland regions (PIRSA 2005).

It is initially tempting to construe this convening of environmental diversity into economic difference as a mystification of inter-regional inequality, and to attempt – as might Demossier (2011), Fourcade (2012), or Ulin (1996; 2007; 2013) – to denaturalise this climatic divide by critically unveiling the historically-contingent cultural discourses and practices through which it was constructed. However, Rachel’s talk of Clare Valley growers supplying Riverland products invites a rather different form of analytical engagement, for it suggests that this climatic polarisation of Australian viticulture’s economic geographies is no longer (if ever it was) stable or taken for granted. Indeed, its contingency upon particular



Figure 27: Defoliated vines photographed in the Riverland. Unlike the cool climate region vines shown in earlier photographs, these vines are trained with two rows of fruit-bearing cordons to maximise their yield of grapes.

market conditions, conventions, and practices had become all too apparent to Rachel during the later 2000s. Intensifying competition for grape supply contracts (see chapter one) had left many Clare Valley growers unable sell their grapes at premium prices, obliging them to supply commercial and bulk wine products at 'Riverland prices'. And some of her members were complaining that competition within these market segments from warm climate growers with lower production costs was driving down the price of their grapes still further.

Rachel's members were not alone in expressing dissatisfaction with this erosion of the particular association between regional environmental differences and distinctions among market segments that is encoded in the divide between warm and cool climate regions. Riverland growers like Neil – and indeed wine industry organisations – were equally likely to implicate the 'dumping' of uncontracted cool climate grapes into commercial- and bulk segment grape markets in a precipitous decline in the price of warm climate fruit which began around 2004 (Moore 2006). This phenomenon is thus sometimes blamed for triggering a local collapse in grape prices so severe that the number of Riverland growers fell from 1515 to 1100 between 2005 and 2011 (Hathaway 2005; Inness & Purtle 2011), and in 2011 an estimated 80% of Riverland winegrapes were sold at prices below their growers' cost of production (Hackworth 2011). Because Riverland grapes primarily compete on price rather than quality (Banks et al. 2007; Sheales et al. 2006), it was argued, even bulk wine producers prefer fruit from cool climate regions over Riverland grapes if it can be bought at prices like A\$460 per tonne. As a result:

“given little or no difference in price to the wineries, cool climate grapes can, and currently are, displacing warm climate grapes on the basis of quality. In other words, the current over-supply is resolving itself in cool climate grapes being supplied at a loss to wineries which, if there were no over-supply, would use warm climate grapes” (SAWIC 2006: 20-21).

Neil's and Rachel's respective accounts thus highlight a pernicious pattern of inter-regional competition in which the particular commercial advantages enjoyed by each climatic zone's vineyards undermine the value of fruit produced by the other zone's growers. Just as

cool climate growers complain that competition from warm climate vineyards with far lower production costs depresses their prices, so Riverland growers protest that superior-quality cool climate material ‘dumped’ into markets for commercial- and bulk-grade grapes lures buyers away from their fruit. These opposite, yet symmetrical, complaints diagnose different aspects of a single valuation problem. In an oversupplied grape market, wine producers sourcing material for bulk- and commercial segment wines have little incentive to distinguish cool climate material from warm climate fruit, for either climatic zone can provide grapes which taste (at least) good enough for such products. Purchasers operating within important segments of the Australian grape market therefore regularly overlook subtler quality distinctions which are bound up with climatic differences between regions when calculating the worth of grapes – rendering grape prices insensitive to differences in geographical origin which are economically consequential for growers.²⁰ As such, where grapes from different climatic zones might formerly have supplied different kinds of wine, targeted at different markets – commercial and cask wines for the Riverland, premium wines for cool climate regions – both are increasingly being treated as broadly equivalent (and thus interchangeable) raw materials for commercial-segment and bulk wine production (Croser 2010; Sheales et al. 2006). In effect, then, viticultural regions whose products were formerly qualified and valued differently are increasingly being treated as though they were identical.

Framing the problem in this way suggests that declining grape prices are a consequence not only of an ‘oversupply’ of grapes, which has flooded Australian winegrape markets with large quantities of uncontracted fruit (Hackworth 2011; SAWIC 2006; WFA et al. 2009), but also of the specific qualification and valuation practices deployed within economies of consistency. For, as chapter six describes, it is through the comparison and

²⁰ Average prices for Australian winegrapes do still vary significantly by region and climatic zone. Indeed, in 2011 the weighted average price of cool climate fruit was A\$874/tonne, while that of warm climate fruit was A\$285/tonne. However, in recent years a growing proportion of cool climate grapes (32% in 2011) have been sold for less than A\$600/tonne – making their price comparable to that of some warm climate fruit (Wine Australia 2011).

grading of materials based upon their organoleptic qualities alone in locations like The Company's tasting laboratories that wines become qualified solely in terms of their taste's and scent's conformity with that required of a particular product. It is thus these practices that render Chardonnay grown in the Clare Valley (only) about as good for producing commercial-segment wines as similar-tasting (and similarly-priced) Chardonnay grown in the Riverland, and which make grape growers in the Clare Valley interchangeable with their counterparts in the Riverland. Perhaps in sympathy with this line of thought, Easingwood et al. (2011: 19) argue that:

“Australia is now seeking to establish itself as a country known for its pronounced regional wine styles, in other words known for its regionality” in an attempt to create “a buffer against the commoditisation of wine” (ibid: 20).

Their assertion suggests that if the process of rendering materials sourced from different regions and grape suppliers equivalent may intensify competition among growers, and thus drive grape prices into decline, then implementing modes of qualification which distinguish grapes and wines produced in different regions from one another might help to reverse this process. It thus implies that if the geographical origins of these materials could be made to matter to their quality, and to count within wine producers' valuations of grapes, then the economic difficulties of both warm- and cool climate grape growers might be ameliorated. Seeking to engage with this intriguing possibility, this chapter explores recent efforts within certain sections of the Australian wine industry (introduced in chapter one) to differentiate wines in quality – and by extension in value – according to their place of origin (Wine Australia 2007; Banks et al. 2007; Easingwood et al. 2011; Swinburn 2013; WOWA 2014). Through these engagements, I return to chapter one's third question. What, I ask, might be the consequences for those economically implicated in the Australian wine industry of the recent shift towards entangling grape and wine quality with the provenance of materials identified by Easingwood et al.? More specifically, might the formation of such associations be capable of impeding or disrupting patterns of qualification and valuation which pit cool and warm climate growers against one another, driving the price of their

grapes into decline? This chapter will address these questions through examining how the provenance of materials is made to matter to their quality and worth within two very different wine companies: The Company and Bartoli Wines. First, however, the following section will introduce the Australian wine industry's wider turn towards the production of 'wines from somewhere' in greater detail and situate the present discussion within broader social science literatures on *terroir* and GI systems.

A Turn to *Terroir*?

Easingwood et al.'s (2011) comments refer specifically to Wine Australia's 'Regional Heroes' campaign, a marketing initiative introduced in 2009 as part of a broader industrial strategy of encouraging overseas consumers to 'trade up' from basic- and commercial-segment Australian wines to products located in more prestigious and profitable market segments (Hackworth 2011; WFA 2013). The Regional Heroes programme – launched under the slogan "Wines from somewhere rather than wines from anywhere" (Wine Australia 2007: 13) – is, as noted in chapter one, one of numerous recent attempts by various wine industry organisations to differentiate and promote Australian wines on the basis of their particular region or subregion of origin (see Allen 2010; BGWA n.d.; Mercer 2014; MVGWTA 2014; WOWA 2014). Yet it is perhaps the most widely-discussed such intervention, and its key terms and phrases have become emblematic of a growing investment among certain sections of the Australian grape and wine industries in the proposition that a wine's place of origin can, and should, make a difference to its quality (Banks & Overton 2010; Banks et al. 2007). The Regional Heroes programme's aspirations are encapsulated in wine industry strategy document *Directions to 2025's* assertion that:

"Underpinning the sector's intentions to encourage consumers to 'trade up' is the recognition that Australia's success as a maker of multi-regional brands of high quality and affordable price has over-shadowed Australia's place as a producer of top-end wines: wines that reflect their individual sites, their vintages and the philosophies of their makers and growers. Until it is broadly recognised around the world that the imperatives of *terroir*, *typicité*, site and vintage are today as much a foundation of Australia's regionally distinct and fine wine dimension as they are in traditional

Europe, there is no room for complacency. Today, Australian wine is rightly best known for its *Brand Champions*. We will be able to consider the job near-done when we can say the same for our *Regional Heroes* – wines which reflect the remarkable number of successful combinations of classic grape varieties with Australian wine regions. Importantly, with these *Regional Heroes* there exists a healthier return-on-investment for those who grow the grapes and make the wines.” (Wine Australia 2007: 14).

This proposed shift in emphasis from ‘brand champions’ to ‘regional heroes’ has been widely interpreted by media commentators as evidence that the Australian wine industry is abandoning its traditional championing of the consistency of taste provided by multi-regional wine blends in order to embrace the French logic of *terroir* (see for instance Blanning 2009; Easton 2009; Lyons 2009; Phillips 2009). This interpretation casts Wine Australia’s plans as demanding a radical, and for some a troubling (Siddle 2010), reversal of large-volume Australian wine producers’ established approaches to quality. For both academic analysts (Allen 2010; Aylward 2007; 2008; Karpik 2010; Murray & Overton 2011; Swinburn 2013) and popular critics of Australian wine production’s economies of consistency (Croser 2010; Goode 2002; Jefford 2010a) have often positioned *terroir* as both the antithesis of, and a privileged alternative to, the economic imperatives of what they term ‘commodity’ wine production.

This opposition centres upon claims by *terroir*’s proponents (outlined in chapter three) that the qualities which make wines excellent or inferior, and interchangeable or incomparable, cannot be isolated from those of the place where their constituent grapes were grown and vinified (Barham 2003; Moran 1993; Teil 2010; 2012; Trubek 2008). In “attributing quality in taste to the material, environmental characteristics of a place” (Paxson 2013: 189), advocates of *terroir* implicitly propose that altering the sourcing of grapes will inevitably change the taste and character of the wine produced from them (Daynes 2013; Overton et al. 2012; Ulin 1996; 2007). This intimate entanglement between differences in taste and differences in geographical origin inverts the assumption that a wine’s geographical origin must necessarily *shift* each year in order for its taste to remain invariant which underpins economies of consistency (see chapter six). For it implies that different places can

never produce quite the same grapes or wines, with quite the same qualities, and therefore that grapes grown in different places cannot be substituted for one another without altering a wine's taste, character, and perhaps value (Banks & Sharpe 2006; Ponte 2009; Swinburn 2013). *Terroir* is therefore often depicted as a distinctive principle of quality assessment and attribution, from which unfolds a "system of geographically based qualifications that is characteristic of the *terroir* logic" (Fourcade 2012: 526).

The logic of *terroir* thus promises to make contrasts in geographical origin matter by enabling these distinctions to differentiate grapes and wines which might be classified as interchangeable within economies of consistency due to their organoleptic similarity. By this argument embracing *terroir* seems to offer growers in, for instance, the Clare Valley a means of differentiating their grapes from far cheaper Riverland fruit – preventing producers from one region from competing directly against, and potentially supplanting, those from the other. Due to this promised capacity to transform grapes and wines grown in different places into *different goods*, bearing different qualities which render them suitable for different markets (Moran 1993; Overton 2010; Sternsdorff Cisterna 2013), academic analyses sometimes contend that the logic of *terroir* defends producers against the commodification of their wine (Barham 2003; Easingwood et al. 2011; Ulin 2013). Such arguments therefore imply that embracing *terroir* might enable Australian wine producers to overturn the relationship between provenance and quality which underlies economies of consistency, and thus to reverse the rendering-equivalent and -fungible of growers and vineyards in climatically- and economically-dissimilar Australian viticultural regions (Aylward 2008). As Swinburn (2013: 35) explains:

"By claiming *terroir*, winegrowers are implying that their wines will be unique. [...] if you have a bit of dirt and it consistently produces a quality wine, [...] then you won't have any competition."

It is easy to see why not only economically strained grape growers but also Australian wine producers confronting fierce competition in international wine markets (see chapter

one) might – like many agro-food producers beyond the wine sector (see Besky 2013; Bowen 2011; Bowen & Zapata 2009; Moragues-Faus & Sonnino 2012; Paxson 2013; Rangnekar 2011; Tregear et al. 2007) – wish to cultivate such a claim to uniqueness. For as Moran (1993: 704) notes of the French AOC system’s legal codification of *terroir*:

“By [...] limiting the production of any wine to a particular area, the appellation laws act as a type of supply control. If this is the only region or locality in which a wine of this type is made [...] the price is likely to be higher. The appellation laws establish a type of monopoly rent for those regions that receive the seal of approval”

Moran’s argument is echoed throughout a voluminous social science literature which presents *terroir* – and the GI and *appellation* systems developed to enforce its recognition – as devices for protecting wine (and other agro-food) producers against the intense price competition which characterises contemporary global markets (Barham 2003; Bowen & Zapata 2009; Moragues-Faus & Sonnino 2012). The attribution to foodstuffs of unique qualities derived from their place of origin, agro-food scholars argue, renders them distinct from competitor goods produced elsewhere and therefore sufficiently scarce to command higher prices (Easingwood et al. 2011; Paxson 2013). It thus supports agro-food production within protected areas (Besky 2013; Gade 2004; Tregear et al. 2007) by helping producers to capture additional economic value – or, in different terms, to extract monopoly rents (Bowen 2011; Guthman 2007; Harvey 2001; Josling 2006; Parrott et al. 2002). Several studies (Murray & Overton 2011; Overton 2010; Overton & Heitger 2008) therefore argue that in endowing goods produced in particular places with unique reputations for quality, and perhaps thereby increasing their price, the establishment of new GIs can generate and amplify economic differences between regions, so that:

“formalised geographic indicators [...] create highly differentiated geographies of wine production” (Hayward & Lewis 2008:129).

Due to this potential for the demarcation of GIs to produce geographical difference and to create and sharpen distinctions between clearly-demarcated economic territories, previous analyses of agro-food producers’ engagements with provenance have paid copious

attention to the legal formalisation of *terroir* within *appellation* or GI regulations (Banks & Sharpe 2006; Moran 1993; Murray & Overton 2011; Rangnekar 2004; 2011; Teil 2010), and to its discursive deployment to achieve political and economic ends (Demossier 2011; Fourcade 2012; Jung 2014; Ulin 1996; 2007; 2013). However, few studies have directly examined the *practices* through which the qualities and value of a wine might become attached and attributed to a place of origin (although see Teil 2012).

Nevertheless, there is reason to think that examining *how* relationships between the quality of wine and its provenance might be enacted and transacted in practice might help me to understand what the Australian wine industry's recent turn to provenance might be capable of achieving, and how these developments might affect the economic position of grape growers. As chapter six describes, it takes painstaking work for practitioners of consistency to *disentangle* wines' organoleptic qualities from their places of origin and, in so doing, to render regions and grape growers interchangeable. This suggests that processes of qualification mediate relationships between provenance and quality – and therefore that the *fabrication* of entanglements between these terms might be just as thoroughly bound up with particular qualification practices as their erasure. In the following sections, therefore, I will explore some of the practices through which materials become 'wines from somewhere.' Just how, I will ask, might producers go about making a wine's provenance matter to its quality? And how might the entanglements between wine quality and the geographical origins of materials enacted through such practices alter the modes of valuation, and affect the economies of relations, in which participants in the Australian wine industry are caught up? What in short, might be the consequences of making wines that are 'from somewhere' – and of making them at Bartoli Wines in particular?

Tasting Places

Bartoli Winery, Late March 2011

Following the enactment of provenance in winemaking practice can be difficult. Many of the gestures through which it is effected are mundane and easily overlooked. At least, they are easily missed during grape intake at the Bartoli winery as berries split, must flows, pumps growl, and the winery team yell instructions to one another. Surrounded by this commotion – and absorbed in helping Callum, Bartoli Wines’ sole full-time cellar hand, to ‘chase’ a final few litres of recently-crushed Shiraz must through a hose and into its destination fermenter – I barely notice when Ken, the winemaker, brushes past me. I pay little attention as he quickly chalks something onto a blackboard attached to our fermenter – tank 31 – before walking swiftly away again. Only later do I bother to read what Ken has written.

“[Don] Back Block Shiraz 24.03.11.” The blackboard merely states which grower and block supplied the material within the tank, along with its grape variety and date of harvesting. Yet for all its banality, this simple label makes a difference – as do the similar descriptions chalked onto blackboards or scrawled on stickers above the main valves of almost every other tank in the winery. In visibly attesting to this Shiraz must’s place of origin, this inscription shows that the provenance of materials-becoming-wine *matters* at Bartoli’s. And, moreover, that in the Bartoli winery materials continue to be defined by their places of origin. Because in refusing to mingle the material in this, or most other, tanks with must sourced from other sites, Ken is ensuring that it remains a product of the particular confluence of soils, weather conditions, microbial ecologies, and viticultural practices which constitutes the vineyard environment in which its parent vines grew (see chapter four). As the label baldly states, tank 31 is for Don’s Shiraz *alone*.



Figure 28: Two fermentation tanks within the Bartoli winery, both of which are labelled as containing free-run Riesling juice.

At Bartoli's, it seems, Shiraz grown in Don's vineyard is different from other Shiraz. But ensuring that the picking and crushing process, and materials' passage across the weighbridge, does not completely estrange them from the vineyard environments in which they were grown – that the must in tank 31 remains *Don's* Shiraz – requires work, and sometimes even sacrifices. With much of Don's back block succumbing rapidly to botrytis, these vines will probably yield far too little fruit to fill tank 31 completely. So Ken can only preserve the distinction between Don's Shiraz and must sourced from other vineyards by leaving tank 31 partially unfilled at a time when fermenter space is scarce, potentially impeding the harvesting of other grapes. This sacrifice nevertheless remains worthwhile for the Bartoli's team because it ensures that the must in tank 31 will remain *Don's* Shiraz rather

than becoming a blend of materials and sites 'streamed' together into the same fermenter on arrival at the winery. It thus enables Bartoli's to forego some of the rites of separation (Turner 1967; van Gennepe 1977) which attend materials' entry into The Company's winery (see chapter four). This in turn ensures that even after being physically separated from the vine and legally disentangled from their growers' ownership (see chapter five), the materials which populate the Bartoli winery do not become alienated from the environments in which they grew but instead remain freighted with constitutive relationships to their home vineyards.

As a result, when (at somewhat irregular intervals) Ken gathers and arranges tank samples on the Bartoli winery's small, cramped lab bench in order to conduct a comparative tasting, these materials drag still-potent material and semiotic attachments to particular vineyard sites into the lab along with them. Ken's comparative tastings resemble those conducted in The Company's tasting lab (see chapter six) in many respects, for they too bring materials formerly scattered across different vineyard sites together within a common spatio-temporal frame (Çalışkan & Callon 2010; Callon 1998a; Callon & Muniesa 2005). Like Nathan, Joe, and Harvey, Ken lines up and juxtaposes ferment and wine samples in order to amplify and elaborate differences and similarities in visual appearance, taste, scent, and mouth-feel among them (Méadel & Rabeharisoa 2001). But Ken's tastings are different in one crucial respect. The biochemical composition of the fluids that Ken sniffs or swirls in his mouth, and the taste of the wines that they are becoming, remains informed (at least in part) by the pedological, meteorological, viticultural, and biological processes which have occurred in one particular vineyard in the preceding months. As such, the samples' very presence permits associations with these materials' growers and home vineyards to leak into the winery lab, meaning that Ken cannot compare ferments or wines *alone* in his somewhat makeshift tasting room. When Ken concludes during a tasting that Don's Shiraz tastes underripe, his Grenache smells mouldy, or his Riesling is surprisingly intensely flavoured, he cannot help but implicitly assess not only these materials' suitability for use in particular

products but *also* how Don's vineyard has performed this year. The subtle differences in scent, flavour, and texture which emerge during Ken's sensory assessments therefore also inescapably express contrasts between or resemblances among individual vineyards and blocks.

Relations other than those of organoleptic similarity and dissimilarity among wines in-the-making thus seep into the Bartoli winery's laboratory, and "[r]elationships are potential vectors of transformation" (Tsing 2012a: 507). In this case, the persistence of constitutive associations between materials and vineyard sites transforms the Bartoli winery lab into a comparative device somewhat different from The Company's tasting room. Their presence prevents Ken's comparative tastings from establishing a space in which materials' identities, affective capacities, and uses can become exclusively a matter of their difference or similitude in scent and taste in relation to other goods (Callon et al. 2002; Callon & Muniesa 2005). *This* lab, and this mode of tasting, is not (or not only) an instrument for isolating, purifying, and rendering perceptible the organoleptic qualities of alienated goods (Çalışkan & Callon 2010). Instead, Ken's tastings also sensitise him to the character and capabilities of *vineyard sites*, rendering his palate capable of registering contrasts between the productive capacities of the vines which compose particular vineyards and blocks (Latour 2004a; Méadel & Rabeharisoa 2001). They thus qualify these vines' capacities to translate the specific environmental conditions and events to which they have been exposed over the preceding months into materials which affect a human taster in enjoyable, exciting, or unpleasant ways.

For Ken, and for Sam Bartoli, the additional sensitivity to the qualities of particular viticultural sites which this mode of tasting imparts can offer distinct – and consequential – advantages. Ken feels that through tasting the wine derived from each block individually, throughout the fermentation process, year after year, he has built up a detailed knowledge of the particular traits of each vineyard from which Bartoli's sources grapes – and therefore of



Figure 29: The Bartoli winery's laboratory bench.

what each site can *do*. Of which blocks, for example, produce a certain style of fruit fairly reliably despite annual differences in weather conditions and which yield material whose flavour and scent varies greatly from vintage to vintage. Or which sites' grapes can produce outstanding single-vineyard wines and which tend to taste better as part of a blend of wines sourced from different vineyards. So through this tasting practice, Ken acquires a winemaking palate whose capacities to be affected differ subtly from the precise sensitivity to materials' organoleptic characteristics conferred upon Nathan and his colleagues within The Company's tasting lab (Despret 2004; Latour 2004a; Méadel & Rabeharisoa 2001; Muniesa & Trébuchet-Breitwiller 2010). He learns to be affected by tastes which belong not just to wines but also, in a sense, to places (Paxson 2013; Swinburn 2013; Teil 2012; Trubek 2008).

This means that Ken's comparative tastings do not simply specify each parcel of material's suitability for particular wine products. His repeated assessments of materials have also gradually profiled and qualified (Callon et al. 2002; Callon & Muniesa 2005) the relationship between vineyard site and wine producer by progressively specifying the products for which the fruit produced by each particular site tends to be most suitable. In the process, differences among sites have gradually impressed themselves upon – and become aligned with – the differences which distinguish the products sold by Bartoli's. The organoleptic contrasts which set particular products apart from one another have thus become inextricably interwoven with differences between the productive capacities of vineyards, to the extent that some Bartoli-branded wines are now made using only fruit sourced from a single exceptional vineyard. As Sam Bartoli explained in an interview:

“we've got our *Estate* range, you know, and in that we've got a Riesling, we've got a Shiraz, we've got a Cabernet blend, a Merlot, and we have a Grenache-Shiraz. And then we have our *top-tier* wines, sort of, we've got our Reserve wines. And we have three wines in that range. We have another Shiraz, another Merlot, and another Riesling. [...] Our Reserve Shiraz is a single-vineyard wine, but *not... not specifically*. If we had a parcel that would improve the wine from another vineyard we, er, there'd be no hesitation about blending it, but the last three or four vintages, the wine has come from that vineyard. And we always expect that the wine will come from that vineyard, because... yeah, up 'til now – who knows what this vintage will bring? – but up 'til now it's *definitely* been the best parcel of fruit, you know? There's been no doubt, it hasn't even been a *close* thing, it's head and shoulders above everything else. So yes, unless something happened to the vineyard, I imagine that's what will continue to happen. And the Merlot? Will always be a single-vineyard wine, because it's the only vineyard we get that quality of Merlot from. And the Riesling, as I say, the Riesling's a blend [...] when our Riesling's about to finish fermenting, we have a very close look at 'em and we select parcels from different tanks. And, um, yeah, it's a nice thing – it sort of encompasses Riesling from throughout the [Clare] Valley.”

The attachment of the Bartoli Reserve Shiraz and Merlot to individual vineyards signifies that comparative tasting *does* something very different within this body of winemaking and qualification practices than within The Company's tasting laboratory. There, comparative tasting disentangles the qualities which make materials the same as, or different from, one another from the characteristics of the vineyards where they were grown. It sensitises winemakers to organoleptic similarities among wines sourced from across South Eastern Australia, enabling materials sourced from different regions to become

interchangeable (see chapter six). At Bartoli's, meanwhile, comparative tasting amplifies the perceptibility and the potency of those characteristics which distinguish the grapes and wines sourced from each vineyard against all other materials. It renders materials sourced from different sites – and, because at Bartoli's the qualities of materials remain entangled with those of their vineyards of origin, the sites themselves – more distinct from one another. Sometimes, it even enables one vineyard's wines to become sufficiently unique to merit the development of a single-vineyard product.

Bartoli's qualification practices thus appear to reverse the operations performed by The Company's comparative tastings – elaborating differences where Company tastings discern sameness, and making sites and materials unique where Company practices render them fungible. And it appears to be their abstinence from expunging the connection between wines' qualities and their vineyards of origin which enables them to do so. Bartoli's might, therefore, easily be characterised as practitioners of *terroir*, which is so often positioned in opposition to the pursuit of consistency (Allen 2010; Aylward 2008; Croser 2010; Goode 2002; Jefford 2010a; 2010b). Intriguingly, however, Sam and Ken do not use the word *terroir* to describe their way of making wine.²¹ They prefer to speak of 'winemaking by the palate,' a body of practices akin in some respects to the 'synesthetic reason' which Paxson (2013) identifies among artisan cheesemakers. This term (of Sam's and Ken's own invention) describes their commitment to prioritising sensory assessments of the tastes and textures of materials above quantitative tests of their biochemical composition in both guiding their handling and processing of materials during vinification and influencing the style of the wines that they produce. The aim of winemaking by the palate, as Ken usually explains it, is to make each parcel of grapes that Bartoli's picks – and each wine that they make – *taste* as exciting as possible in a consumer's mouth rather than making it *look* technically flawless on a laboratory analysis report. So Bartoli's will, for example, wait (at least in botrytis-free

²¹ However, other Australian wine producers may well – as Swinburn (2013) argues – have adopted the vocabulary of *terroir*.

years) for as long as each block of grapes takes to achieve the maximum complexity of flavour of which it is capable before harvesting it. Even if, in the meantime, the sugar concentration of those grapes reaches 15, 16, or even 17 degrees Baume – and even if this results in Bartoli's producing a wine whose alcohol content is a somewhat outlandish 17% ABV.

Sam's and Ken's efforts to attend closely to the particular nuances of scent or mouth-feel which arise in each batch of materials-becoming-wine instead of pursuing pre-defined specifications and indicators of wine quality thus amplify differences between wines sourced from different vineyard sites in ways that are reminiscent of *terroir* (Daynes 2013; Swinburn 2013; Trubek 2008). Yet they nevertheless interweave wine quality with provenance in a subtly different manner. Practitioners of *terroir* are often presented as taking a wine's faithfulness to or expressiveness of the unique character of a favoured site or region – its *typicité* – as the primary measure of its quality (Barham 2003; Paxson 2013; Teil 2012), sometimes to the extent that a wine's sensory palatability ceases to be a matter of great concern to them (Demossier 2011). For Sam and Ken, by contrast, quality is less a matter of the fidelity with which grapes and wines convey the characteristic local style, identity, or ecology of a particular GI region or subregion than of their capacities to generate unique – and uniquely enthralling – aromas, flavours, and textures on the nose and palate. This is why Sam would willingly blend material from other vineyards into his Reserve Shiraz if he could only find another source of grapes which tasted good enough to improve it. So Bartoli's modes of qualification are, in their way, as relentlessly and narrowly focused within organoleptic registers as are The Company's – perhaps, indeed, more so given their tendency to emphasise sensory appraisals above measurements of sugar concentration or organic acid assays.

Winemaking by the palate may, then, not be so radically different in principle from the logics of quality around which economies of consistency accrete. It shares – and in some ways intensifies – their privileging of taste, scent, and texture as the most important

measures of wine quality. Yet although winemaking by the palate is, in these respects, not quite *terroir* these two ways of assessing and attributing quality nevertheless exhibit one overarching similarity which makes them easy to confuse with one another. Both *terroir* and winemaking by the palate implicitly judge the qualities of materials and those of their parent vineyards in relation to one another, meaning that Ken cannot elaborate Bartoli Wines' relationship with a parcel of material without *also* transforming their relationship with that material's place of origin (and vice versa). Winemaking by the palate thus renders qualifications communicable, or even contagious. Evaluations of quality traverse carefully-preserved relationships between materials and vineyard sites so readily that the characteristics of one seemingly cannot change without also altering those of the other. Just as grapes and wines gain their textures and flavours from their place of origin, so Ken's and Sam's tasting of these materials renders vineyards equal to the other sites which provide grapes for blending into Bartoli Estate products or singularises them as the sole source of the qualities which distinguish a single-vineyard Reserve wine (Callon et al. 2002; Callon & Muniesa 2005; Hébert 2010).

Practitioners of *terroir* may judge the quality of materials with reference to their place of origin while those of winemaking by the palate evaluate viticultural sites' capabilities and worth according to the organoleptic qualities of the materials that they yield, but both nevertheless appraise the qualities of one of these entities through those of the other. Both bodies of practice thus inextricably entangle the qualities of materials with those of the vineyard environments in which they grew. The Bartoli team's methods of segregating materials and labelling fermenters thus appear, perhaps somewhat unintentionally, to have rendered a winemaking approach more interested in fostering organoleptic than geographical distinctiveness productive of enduring attachments between the qualities of wine products and those of specific viticultural sites. Attachments so firm that the qualities which make Bartoli Reserve Shiraz and Merlot unique have become inextricably lodged

within the soils, aspects, and microclimates of individual vineyards. Attachments which have, perhaps, made Bartoli's producers of 'wines from somewhere' (Wine Australia 2007).

Valuing by the Palate

How might winemaking by the palate's singularisation and specification of the characteristics of vineyards, and of the materials that they produce, have affected the economy of relations enacted through Sam and Ken's assessment, pricing, and purchasing of grapes? The question may be worth asking, for Fourcade (2012: 534) argues that the prestige attributed to renowned regions and vineyards through the logic of *terroir* in France infects not only the grapes grown within them but also their proprietors, generating an: "equivalence between the distinction of people and the distinction of lands". Her work, like that of Busch & Tanaka (1996; Tanaka & Busch 2003), implies that because a good grower is someone who provides good grapes, good grapes – or a good vineyard – also make a good grower (Saleh 2013). Certainly Sam's comments during an interview indicate that such an exchange of qualities (Hébert 2010) may have occurred at Bartoli's:

"when we did start, as I say, it was the start of that, the boom, it was really hard to get fruit, you know, and really to... there just weren't grapes available. It was all, it was pretty well tied up and contracted and we had to pay a lot of money to, to secure fruit. [...] we had to offer 'em well above market value to, um, to get the grapes. And, um we, interestingly – foolishly – we've made no adjustments since, um, since the industry has experienced this downturn. We're still paying the same money we were for these grapes. In some cases more. [chuckle] So we have good relationships with our growers as a result and, yeah, we've had the same growers since we began. Since '92/'93. [...] And, you know, since the, um, the oversupply, I mean I get people ringing up all the time, trying to offload fruit. There's thousands of opportunities... to, to get fruit at the moment. And really, we could get fruit for half the price we're paying at the moment, but um... it wouldn't be the same. I mean the fruit, the quality, probably wouldn't be the same. And a deal's a deal, isn't it? I mean, I dunno, I suppose over the years you get to know people and understand how, you know, how each other works... Yeah, we've become quite good friends with some growers and it's quite a good relationship. [...] I probably could go back to these growers and put some pressure on 'em to put their prices down. And really they wouldn't have a choice, you know? They either take our price or walk away. But that's not... it's not how we work."

Sam's words suggest that the sensitivity to each vineyard's unique character and capacities imparted through winemaking by the palate carries a rather important

implication. In entangling the qualities of wines with those of vineyards, this winemaking technique has rendered a shift in grape sourcing inseparable from a change in the taste of Sam's wines – leaving Bartoli Wines, as a business and a brand, heavily reliant upon a handful of grape suppliers. Were Bartoli's to lose access to the vineyards which currently supply their Reserve Shiraz and Merlot, for example, the qualities of those wines would probably change in ways that would compromise the specific style which makes these products distinctive – and which distinguishes them as being *Bartoli* products. So although Sam now has 'thousands of opportunities' to buy fruit more cheaply, grapes sourced from elsewhere just 'wouldn't be the same.' Moreover, because sourcing grapes from alternative growers necessarily also implies sourcing them from alternative sites, this interdependence between the qualities of grapes and those of vineyards also means that Sam cannot simply or straightforwardly replace his established grape suppliers with cheaper competitors. The uniqueness which winemaking by the palate identifies in the vineyards which supply Bartoli's, and those vineyards' concomitant resistance to substitution or replacement, thus appears to have attached itself to Bartoli's *growers* as well.

Bartoli Wines' relationship with Don, a grower previously encountered in chapters one and five, perhaps exemplifies this point. Sam counts Don's fruit as being among the best, and perhaps *the* best, to which he has access and Don's vineyard is the sole source of grapes for Bartoli Reserve Shiraz. It would therefore be extremely difficult for Sam Bartoli to replace Don; few, if any, other growers and vineyards would be capable of providing him with equivalent grapes at a lower price. Access to Don's fruit is therefore worth a lot to Bartoli's – and this makes a good working relationship with Don extremely valuable to Sam (Busch & Tanaka 1996; Tanaka & Busch 2003). So valuable is this relationship that Don could, by his own estimate, expect to be paid A\$1500 to A\$2000 per tonne for his grapes in an average year (depending, of course, upon the crop's quality as assessed by Bartoli's through comparative tasting) – approximately double the average price (A\$828 per tonne) of Clare Valley grapes in 2011 (Wine Australia 2011). The environmental specificities which

distinguish Don's vineyard against other sites thus appear to be making a difference not just to the Bartoli team's assessments of the qualities of the grapes and wines that it yields, but also to Sam's valuation of these materials and of his relationships with their growers. Moreover, this difference appears to be translated into Sam's calculation of a price per tonne for Don's grapes, so that the exceptional quality of his vineyard counts for enough to justify Sam's paying Don double the local average price per tonne for his grapes.

As a result, Don's economic situation differed drastically from those of most other grape growers in South Australia. While 40% of South Australian grape growers had not made a profit since 2007 (WGCSA 2011), Don was – very unusually among small vineyard owners (Bryant & Garnham 2013; Swinburn 2013) – able to derive what he considered a sufficient and sustainable income from working his five hectare vineyard. Moreover, Don was – unlike Neil – in a sufficiently comfortable financial situation that he planned to retire from grape growing within the next two to three years. The Bartoli team's gradual, and perhaps inadvertent, singularisation of Don's grapes and his vineyard through winemaking by the palate thus appears to have transformed their commercial arrangements with Don himself (Busch & Tanaka 1996; Callon & Muniesa 2005; Hébert 2010; Tanaka & Busch 2003). Because Don's fruit has become distinguished – at least to Sam Bartoli and to Ken – as being 'head and shoulders above' other grapes, no potential competitor seems capable of seriously challenging his (or indeed any other Bartoli grower's) relationship with Bartoli's. Don was therefore able to rely on Bartoli's not only to purchase his fruit in the absence of a formal grape supply contract but also to pay prices for it which considerably exceeded his cost of production even during a period that was, for many other growers in the Clare Valley, characterised by declining grape prices (CRWGA & CVWI 2011).

Don's case stands in extremely sharp counterpoint to the accounts of intense competition between growers located in different regions, and even different climatic zones, with which this chapter opened. Bartoli Wines' treatment of Don's vineyard as a unique and

irreplaceable asset, the comfortable prices which his grapes command, and the stability of Don's relationship with this winery all suggest that winemaking by the palate generates effects entirely opposite to the rendering-fungible of materials sourced from different growers, sites, and even climatic zones which occurs within economies of consistency. Winemaking by the palate thus appears to distinguish and valorise grapes – along with their growers and home vineyards – in just the manner which Australian wine industry organisations seek to encourage through their championing of wines from somewhere (Wine Australia 2007; WOWA 2014), and which agro-food scholars often associate with the logic of *terroir* (Barham 2003; Bowen & Zapata 2009; Hayward & Lewis 2008; Parrott et al. 2002; Ulin 2013). It would therefore be tempting to conclude that the Bartoli's case vindicates critical commentators' arguments that a wider embrace of *terroir* among Australian wine producers would alleviate the economic pressures faced by growers like Neil (Aylward 2007; 2008; Croser 2010; Jefford 2010a), were it not for the fact that the *logic* of *terroir* is just what is absent at Bartoli's. As noted above, at Bartoli Wines judgments of quality remain as single-mindedly focused upon how wines and grapes taste as are those of Company winemakers. As such, although the Bartoli team's pursuit of quality through winemaking by the palate seems to have inverted the modes of qualification and economies of relations associated with economies of consistency, this does not appear to be because their approach is guided by radically different principles of quality assessment. It seems instead that a few subtle adjustments to the Bartoli team's methods of segregating materials and labelling fermenters have – perhaps accidentally – reversed the effects of qualification practices that served, in chapter six, to render the qualities of wines independent of those of their vineyards of origin and to alienate them from their growers.

As such, the case of Bartoli's illustrates that the mundane details of *how* wine producers go about recording and attending to materials' places of origin can influence the character of the modes of valuation – and of the commercial relationships – which condense around entanglements between quality and provenance. It thus suggests that

transformations in the economies of relations convened through qualification practices may come about through processes both rather less coherent and rather more contingent than a shift from one overarching principle of quality attribution to another of the kind suggested by theoretical accounts which figure entanglements between provenance and quality as unfolding from a distinct logic of *terroir* (Demossier 2011; Fourcade 2012; Jung 2014; Ulin 2007; 2013). But in what terms might such context-specific rearticulations of qualification, valuation, and commercial relations be described? One such supplier theoretical vocabulary for addressing such changes in relationships between quality distinction and geographical difference might be found in Mansfield's (2003b: 5) description of 'geographies of quality,' which argues that:

“quality is [...] about how an ingredient fits into (“performs” in) production systems, whether [...] an ingredient is functional within given practices and techniques. Thus, the quality of an individual product will have to be defined somewhat differently, depending on how that product fits into the larger industry.”

Mansfield's argument is that particular characteristics of materials – for instance their colour, texture, or place of origin – become constitutive of their quality within a given firm, market, or commodity network through the interplay of specific technologies, sourcing and processing practices, inter-firm associations, product categorisations, and situated consumer desires. As such, any relationships which may form between the provenance of materials and their quality need not necessarily be specified within a single logic of quality assessment which guides the operations of a regional or national industry, a company, or a production network. Instead, the differential (e)valuations of goods and uneven patternings of market transactions through which materials produced in different places – and their places of origin – become associated with excellent or poor quality, and thus perhaps acquire unequal worth, emerge from particular interactions among the heterogeneous entities, processes, and locations drawn together through the production, trading, and consumption of goods (Braun 2006). Any particular geography of quality is thus likely to be the product of an encounter among varied constituents driven by multifarious aims, desires, and

compulsions which may not coalesce into shared goals, rationales, or principles of evaluation.

Mansfield (2003a: 12) terms these provisional aggregations ‘quality assemblages,’ arguing that:

“By using the term assemblage [...] I treat constructions of quality as interactions among sets of elements and activities within commodity chains. What emerges in these interactions is not just some new element (i.e. quality), but rather, in interaction, the elements themselves change.”

Mansfield’s use of the word ‘assemblage’ is significant, because this term connotes a particular kind of collective formation – a temporary conjunction of multiple trajectories or forces whose constituents may produce emergent effects by virtue of a practical compatibility or co-functioning without necessarily conforming to any common logic, design, or principle of organisation (Anderson & McFarlane 2011; Bennett 2010; Law 2004; Ong & Collier 2005). Describing geographies of quality as emerging from assemblages thus implies that the forms which quality assumes and the spatialities precipitated through its enactment are shaped obliquely by, and remain immanent to, unique constellations of commercial associations which are forged, mobilised, and broken as materials, money, meanings, and personnel circulate among various organisations and places (Braun 2006). It therefore suggests that both the spatial formations denoted by the phrase geographies of quality and the particular versions of quality which both precipitate and inhabit such geographies will persist only for as long as the specific amalgam of socio-material entanglements from which they arose endures, and that both may mutate into new forms as the relationships which generated them shift and realign (Anderson et al. 2012; Li 2007; Swanton 2013). The combination of mutability and contextual particularity²² denoted by the assemblage component (Allen 2011; Bennett 2010; Marcus & Saka 2006) within the compound ‘quality assemblage’ thus implies that neither the character of quality itself nor the tenor of its

²² By my reading, Mansfield’s (2003a; 2003b) quality assemblages have more in common with this sense of assemblage as a particular mode of non-coherent composition than with efforts by, for instance, DeLanda (2006) and Anderson *et al* (2012) to develop a general social ontology centred upon a specifically Deleuzian characterisation of assemblage.

relationship to provenance is likely to be the same for different grape and wine producers. Rather, the nature and effects of such entanglements are likely to shift depending on how they relate to each particular producer's grape sourcing strategies, products, qualification practices, key customers, and target markets.

This latter point may bear further exploration, for the attention to provenance denoted by the notion of wines from somewhere might well need to be integrated into 'quality assemblages' (Braun 2006; Mansfield 2003a; 2003b) quite different from that which characterises Bartoli Wines if it is to achieve the aspirations articulated by initiatives such as Wine Australia's Regional Heroes programme. The quote from *Directions to 2025* (Wine Australia 2007) presented above, for instance, positions the interlinking of the qualities of wines with those of their places of origin as a means not of pursuing excellence in taste but of securing more profitable prices for Australian wines amid intensifying competition from overseas wine producers and declining wine export earnings. This is not a goal to which Sam and Ken's performance of winemaking by the palate is likely to contribute directly, for Bartoli's is a small wine company which sells most of its wine within South Australia – largely through the winery's cellar door, or through local pubs and restaurants. Little of their wine is exported, and because Bartoli's obtains its entire grape supply from just ten local growers it does not engage in cross-regional sourcing of commercial-grade grapes. As such, it appears that if the notion of wines from somewhere is either to advance wider industrial strategies of 'premiumisation' (introduced in chapter one; see WFA 2013; WOWA 2014) or to affect the fortunes of grape growers less fortunate than Don then it will have to be adopted by larger wine producers participating in mainstream export markets. It may, therefore, need to be taken up by the same wine producers whose production practices have hitherto been geared towards the pursuit of consistency. But how might the process of becoming integrated into the practices, classifications, exchange relations, and commercial imperatives which propel such organisations alter, translate, or transform the notion of wines from somewhere? Moreover, how might the attention to provenance denoted by the notion of wines from

somewhere affect the quality assemblages encountered in such settings – and what enactments of quality might emerge from such an encounter? The next section will explore these questions by following the notion of wines from somewhere into a quality assemblage very different from that within which the practices of sensitivity to provenance deployed at Bartoli's have developed, and by asking what effects it might engender there.

(Re)assembling a Regional Hero

Perhaps surprisingly, this attempt to follow the notion of wines from somewhere as it travels will lead this chapter back to The Company's offices and winery facilities. Because as grower relations manager Mark explains in an interview, his employer is among the Australian wine producers which have heeded Wine Australia's call to pursue quality through provenance and regional distinctiveness and it has, as a result, recently invested heavily in reinventing one high-profile product range precisely *as* wines from somewhere:

Mark: "So the [MacLennan's Drive Prestige] range has historically been from South Australia, from very good fruit, and it's all of [Prestige] quality, um, but it's previously been [sourced] from [across] the cooler regions. So the Shiraz might have been, you know, a combination of Padthaway, Barossa and McLaren Vale, maybe a sprinkling of Langhorne Creek. Um... we've moved to a regionalised product, so that Coonawarra is Cabernet, the Shiraz is from the Barossa, Riesling's from the Barossa. [Adelaide] Hills [provides the] Chardonnay, Pinot [Noir] and, um, Sauvignon Blanc."

[...]

JB: "So why has [The Company] made that shift, then?"

Mark: "Um, probably it's a bit of a call from the industry to – you know, there's been a classic quote, I dunno who came up with it, but 'Wines from somewhere, not wines from everywhere.' [...] I mean, the [Prestige] blend, I've always said it's a very good bottle and it's probably criminal that you can buy it for eleven bucks in Australia now. But I think the fact that you can probably see a cheap bottle of God knows what, of buyer's own brand, in Tesco's that says South Eastern Australia and then we say 'Well, we picked out premium parcels from South Eastern Australia.' We *have*, they're all good parcels, but where is South Eastern Australia?"

JB: "You're putting yourself in that same bracket."

Mark: "Exactly, we're lumping ourselves in with that. [...] and it's all part of that Regional Heroes idea. Yeah."

The MacLennan's Drive Prestige wines, a semi-premium product range (see table 1) marketed under the MacLennan's Drive brand and priced at approximately A\$14.00 per bottle in Australia and £10.00 per bottle in the UK, epitomise the style of product which the moniker 'Regional Heroes' was coined to describe (Wine Australia 2007). They're of somewhat higher quality – that is, more intense and complex in flavour and scent – than are commercial-segment MacLennan's Drive products (hereafter referred to as MacLennan's Drive Commercial). They are also correspondingly more expensive, and are produced and sold in significantly smaller volumes – although these are nevertheless mass-market products developed for distribution through retail chains. The Company's decision to attach each MacLennan's Drive Prestige product to an individual region of origin is, after all, still primarily concerned with maintaining these wines' distinctiveness and customer appeal in comparison to competitor products on the shelves of supermarkets such as Tesco. As such, The Company's efforts to make provenance matter within the process of qualification are doing rather different work than is performed through Bartoli's winemaking practices. For the point of 'regionalising' the Prestige range (to borrow Mark's terminology) is, in Mark's account, to signal the Prestige wines' positioning as semi-premium products to consumers, and thus to distinguish MacLennan's Drive Prestige from lower-quality competitor products (Beckert & Musselin 2013; Callon et al. 2002; Hébert 2010) – and perhaps even from MacLennan's Drive Commercial. This description casts a wine's provenance as a mark of finer quality which enables a product to maintain a place within the 'semi-premium' or 'premium' market segments, and to command a price appropriate to this positioning. This use of region of origin labelling to distinguish between products positioned in different market segments appears to be common practice within chain retail settings, as former ValueFresh wine buyer Simon explained when discussing his ex-employer's own brand wine range in an interview:

Simon: "But at the top-tier, where you're selling wines at, typically, [between] £7.99 and £10, you would, sort of, think 'Well, we want a really good Barossa Shiraz.' Or an Adelaide Hills Chardonnay, or some sort of icon product. Typically you'd, sort of, pair a variety with a region that's famous for it. You know that, sort of, helps consumers understand why they're paying £10. 'Cause otherwise they say 'This is an Australian

Chardonnay at £10, why is it different from this other one with the [ValueFresh] brand at half that?' So if you've got a good region that, you know, Adelaide Hills and Chardonnay is a good pairing, the customers can understand that. [...]"

JB: "But when you mentioned that at [top-tier own brand] level you're pairing varieties and regions, I was quite surprised because you told me earlier that overseas markets don't know or care about Australian wine regions."

Simon: "OK, I do contend that most consumers do not know or care about wine regions. And that's *anywhere in the world*. [...] But I think the reason retailers do use regional designations, and use that link of, say, Coonawarra and Cabernet Sauvignon, is because where you do have an opportunity to explain a wine to the consumer it, it helps to, er, create enough of a story to make the price proposition seem that much more plausible for someone who's, sort of, a little bit nervous about spending £8 on a bottle of wine."

Simon's talk of market segments recalls the vision laid out by Wine Australia (2007) in *Directions to 2025*, for it suggests that on the shelves of supermarkets like ValueFresh provenance can be used to effect the 'premiumisation' of a product (WFA 2013; WOWA 2014). But his words also suggest that within organisations such as ValueFresh and its retail competitors – and therefore among their major suppliers – the provenance of wines comes to matter within and through a very different mode of qualification than it does at Bartoli's. For the 'somewheres' to which ValueFresh's top-tier own brand wines are being attached are not individual vineyards but regional GIs whose names may be printed on a label as an additional reassurance to uncertain, or 'nervous,' customers that the wine inside a bottle is worth £7.99-£10. In this respect, Simon's description of the work done by the names of these Australian GIs is strikingly reminiscent of chapter six's account of the role performed by The Company's brands. He characterises GI names as serving, like brands, to settle international consumers' doubts and anxieties about the qualities and value of wines (Akerlof 1970; Bryant 2013; Foster 2007; 2013; Karpik 2010; Nakassis 2013) in retail settings where a product's price must be justified in advance of a purchase, and of any possible recourse to organoleptic assessment (see Cochoy 2007; Easingwood et al. 2011; Freidberg 2004).

Simon's account thus suggests that the concern for provenance denoted by the notion of wines from somewhere has become integrated into the quality assemblages (Mansfield 2003a; 2003b) through which The Company's products primarily circulate through the

assimilation of GI names into familiar techniques and logics of branding. As a result, one very specific type of place of origin is being made to matter through The Company's reinvention of the MacLennan's Drive Prestige range as wines from somewhere. For at root The Company's way of attaching wines to a place of origin apparently seeks to impart the qualities of GI names themselves – rather than those of individual vineyards – to products. The forging of such attachments surely still qualifies as a way of making wines from somewhere in that, just like Bartoli's winemaking by the palate, it enables the characteristics of a place of origin to become manifested in the qualities of the grapes and wines produced there. But to describe a wine as being 'from somewhere' in Simon's and Mark's sense nevertheless seems to mean something slightly different than it would at Bartoli's. For the qualities which are rendered contagious through entangling the qualities of wines with those of regional GIs rather than those of individual vineyard sites do not arise – at least not directly – through the intersection and interpenetration of soils, meteorology, microbial life, grape vine biology, and viticultural practices which defines and singularises a vineyard site. Nor are they discerned, assessed, and refracted through the organoleptic characteristics of materials within tasting practices. They are, instead, largely *reputational* in character – being primarily a matter of the recognition or notoriety enjoyed by a particular GI name. The shift in the sorts of places of origin with which the production of wines from somewhere interweaves the qualities of wines – and arguably, therefore, in the meaning of an attention to provenance itself – occasioned by the Regional Heroes initiative's encounter with The Company's branding techniques has thus partially displaced wine quality itself into new registers and practices.

The relationship between a wine's geographical origin and its quality which Simon describes therefore differs radically both from that which is performed when Company winemakers attempt to impart a consistent taste to their South Eastern Australia blends *and* from that enacted through winemaking by the palate (see chapter six). Because despite all their differences, within both winemaking by the palate and economies of consistency the production, management, or severing of relationships to locations of origin is mediated

through tasting practices focused upon the *organoleptic* qualities of wines. This observation hints that more is going on in the regionalisation of MacLennan's Drive Prestige than a straightforward absorption and appropriation of the notion of wines from somewhere by The Company's established logics of brand loyalty and practices of organoleptic consistency. For it suggests that The Company's incorporation of GI names into branded products' identities and labelling may be subtly altering the basis upon which the quality assurances provided by those brands are made. Regionalisation means that The Company's guarantees to consumers that a MacLennan's Drive Prestige wine is of semi-premium quality are no longer to be underwritten exclusively by a producer's brand which promises that the wine within a bottle will possess the same unique taste as other bottles of the same product (Bryant 2013; Foster 2007; 2013; Nakassis 2013). Another guarantee, founded upon a rather different referent – the characteristic wine style (or, more broadly, reputation for quality) of a viticultural region of origin – is now also required in order to convince consumers of a Prestige product's superiority over lower-quality competitors. Fascinatingly, then, the regionalisation process perhaps signals a tentative incorporation of a rather different regime of anxieties over – and assurances of – wine quality into The Company's grape sourcing and wine production practices. One in which organoleptic modes of assessment are partially displaced from their hitherto central role in transacting the qualification of The Company's wines as quality ceases to be evaluated and guaranteed exclusively through taste – even as signified by a producer's or retailer's brand – and also becomes partly dependent upon the reputation of a *viticultural region*. In this respect, the form of quality authentication and assessment precipitated through The Company's regionalisation initiative is far more reminiscent of Demossier's (2010), Teil's (2010), and Moran's (1993) accounts of the *terroir*-driven French AOC region of origin labelling system (see chapter three) than it is of Bartoli's practices of winemaking by the palate.

To borrow Mansfield's (2003a) terminology once again, the integration of the notion of wines from somewhere into the quality assemblages in which The Company is caught up

appears to have subtly modified the rationalities of branding with whose habits and requirements provenance itself has seemingly been refashioned to conform. In linking up the guarantees of quality provided by The Company's brands with new referents – in the form of GI names – and registers of distinction, the regionalisation process has disturbed and reconfigured existing relations among the constituents of a quality assemblage configured around the pursuit of consistency. In jolting the relations which composed this assemblage out of their previous alignment and forging new associations among products, brands, and locations it appears to have slightly altered some of these constituents' capacities and performances (Allen 2011; Anderson et al. 2012; Bennett 2010) – generating arrangements which define, assess, and distribute quality through new measures and registers. Indeed, one might say that this attempt to produce wines from somewhere has engendered a piecemeal *reassembling* of quality – altering not only its relationship with provenance but also the processes and formations through which it takes shape. The Company's attempts to regionalise the MacLennan's Drive Prestige range thus appear to have reconstituted an existing quality assemblage by altering its composition and enactments. Moreover, this process of reassembling may be transforming more than quality – for Mansfield (2003b: 7) argues that “[i]t is the spatiality of these assemblages that engender [...] a geography of quality”. Indeed, Mark's comments in an interview suggest that the regionalisation process may well be altering the geographies of quality enacted through The Company's qualification practices, for it has made reputational considerations a prominent influence upon The Company's selection of GIs for attachment to regionalised MacLennan's Drive products:

“With the [Prestige] range, um, it's probably about trying to convince the consumer. Because, let's be honest, the punter that goes to Sainsbury's to pick up a bottle of something better than [MacLennan's Drive Commercial], um, he isn't – we'll be lucky if they've heard of the Barossa, or Coonawarra, or... So obviously some of the growers were pretty upset about that in McLaren Vale, in Langhorne Creek, and – and, at the end of the day, we said to them ‘We want people to buy Shiraz, and if anyone in the US, the UK, has heard of a region associated with Shiraz, it's gonna be the Barossa.’ That's why we went with it, basically.”

Mark's words suggest that the regionalisation programme's reassembling of quality within The Company holds the potential to unsettle the economic geographies which have hitherto informed, and been enacted through, The Company's grape sourcing and blending practices quite drastically. For one notable consequence of regionalisation is that growers' eligibility to serve as MacLennan's Drive Prestige suppliers has come to be mediated less by their home region's climate or the taste of their grapes and more by the international renown of the GI within which their vineyard is situated. As a result, while MacLennan's Drive Prestige wines formerly incorporated material grown across South Australia's cool climate regions, all of the grapes used to produce the six Prestige products are now being sourced from just three GIs.²³ This dramatic spatial concentration of the MacLennan's Drive Prestige grape supply base illustrates that the regionalisation programme's partial displacement of quality from organoleptic into reputational registers has the potential to reorder relations among the locations and participants which The Company's production and qualification practices draw together. In so doing, it may well be shaking the constituents of this hitherto consistency-driven quality assemblage into new configurations, facilitating novel encounters, associations, and interactions among them which might realign them into a refashioned relational formation bearing a different identity, spatiality, and capabilities (Anderson et al. 2012; Bennett 2010) – and perhaps, therefore, productive of novel geographies of quality (Mansfield 2003a; 2003b). But what *manner* of geography might emerge from this reassembling of quality? Moreover, how might qualifying wines in reputational registers affect the valuation – and thus the pricing – of grapes, and what implications might this shift hold for The Company's growers?

²³ Although MacLennan's Drive Prestige wines are marketed under only three registered GI names, the range is sourced from four recognised viticultural regions. The Barossa zone GI which appears on bottles of MacLennan's Drive Prestige Shiraz and Riesling contains both the Barossa Valley and Eden Valley, which are both registered as GIs in their own right and are more usually treated as distinct viticultural regions.

Another Geography of Quality

My responses to these questions will necessarily be provisional, because as of 2011 the effects of the regionalisation process were only just beginning to make themselves felt. Although the first vintage of 'regionalised' MacLennan's Drive Prestige wines had recently been released, numerous grape supply contracts predating the regionalisation process remained in force. The Company's relationships and transactions with most of its growers therefore continued to be governed by agreements which transacted the grading and pricing of fruit through organoleptic registers and measures of quality. However, Mark's words in an interview provide some insight into the effects that the regionalisation initiative's partial shifting of the Prestige range's qualification into reputational registers might be expected to have upon The Company's future grape sourcing arrangements – and thus upon the economic prospects of MacLennan's Drive Prestige growers:

Mark: "there's some growers in Langhorne Creek who grow premium Chardonnay. We don't even want them to be *semi*-premium, we want commercial, because unfortunately we aren't selling enough bottles of semi-premium and premium Chardonnay plus, now, Adelaide Hills is where the appellationed product comes from. That's been a tough sell... [...] But, um, as contracts come out we'll be buying what we want. Yes, I realise it's semi-premium [-quality]. Yes, I realise it's premium [-quality]. It's gonna end up in a bottle of [MacLennan's Drive Commercial]. So here's the price"

JB: "And we've got to pay accordingly."

Mark: "Correct, yeah. And we're not trying to bloody diddle anyone, that's what we're *selling*. [...] So from regions like Padthaway, Langhorne Creek, Bordertown, that don't have that appellationed product, it's mainly gonna be commercial. And the chances of our requirement for semi-premium improve – increasing – are not that high. [...] [That] Pretty much gives a signal to McLaren Vale, we don't need your fruit, because that's an area – and Clare, same thing – because they can't really crop up to 15 tonne a hectare and grow semi-premium. Maybe they might do it one in four years, but it's not sustainable. Water, climate – it's too hard. It's, um, it's very difficult to do that. And I guess it's certainly probably put regions as non-strategic for us. [...] You know, sort of, Clare, Wrattobully and, um, McLaren Vale are of less strategic value to [The Company] now because those regions haven't got an icon grow that, you know, are product-based."

Mark's comments suggest that a new, and quite different, geography of quality is gradually emerging in the wake of The Company's regionalisation of MacLennan's Drive Prestige. After The Company's existing grape supply contracts expire, the limits of the

MacLennan's Drive Prestige grape supply base will cease to reproduce the contours of the divide between cool climate and warm climate viticultural regions introduced at the beginning of this chapter. Instead, they will mark an economic and reputational contrast between better-known and more obscure cool climate regions – translating the regionalisation programme's reassembling of quality within The Company into a re-mapping of the boundaries of the Prestige range's grape supply base.

The regionalisation programme's redefinition of the criteria through which growers are qualified as being suitable or unsuitable to supply The Company's largest-volume range of semi-premium products is thus poised to precipitate a radical realignment of the MacLennan's Drive Prestige brand's geography. This is significant because grapes graded for higher quality products command higher prices (see table 1), and so a region's inclusion within – or disqualification from – the supply base for The Company's more lucrative product grades can mediate changes in valuation of the grapes produced there – and thus the emergence or erasure of inter-regional economic differences. Localising the growing of grapes for MacLennan's Drive Prestige within a more restricted range of regions therefore implicitly also concentrates opportunities for growers to sell their grapes at the relatively lucrative prices associated with these products within a more restricted geographical area. Moreover, those cool climate regions whose international recognition is sufficiently widespread that The Company has selected them for attachment to a regionalised MacLennan's Drive Prestige product also tend (whether or not this is a direct result of their notoriety) to boast higher average grape prices. When the ten South Australian viticultural regions producing the largest volumes of cool climate winegrapes²⁴ are ranked by average grape price per tonne, all three of The Company's newly-selected MacLennan's Drive Prestige

²⁴ The Barossa Valley and Eden Valley, although subsumed into the larger Barossa GI within the MacLennan's Drive Prestige range, are treated as separate viticultural regions within the PGIBSA South Australian Winegrape Crush Surveys from which I retrieved my winegrape price data. They are therefore treated as distinct regions within the charts and graphs below.

Table 4: Differences in average grape prices between MacLennan’s Drive Prestige GIs and non-Prestige South Australian cool climate GIs with an average crush of over 10,000 tonnes per year.

Data source: *Phylloxera & Grape Industry Board of South Australia South Australian Wine Grape Crush Surveys 2001-2013.*

	Region	Average grape price per tonne (A\$) 2001-2006	Average grape price per tonne (A\$) 2007-2013	Change in average grape price per tonne (A\$): 2001-2006 vs 2007-2013
MacLennan’s Drive Prestige GIs	Adelaide Hills	1555	1313	-242
	Barossa Valley	1244	1184	-60
	Coonawarra	1396	1159	-237
	Eden Valley	1440	1248	-192
Non-MacLennan’s Drive Prestige GIs	McLaren Vale	1452	1288	-164
	Clare Valley	1365	1072	-293
	Langhorne Creek	1236	816	-421
	Limestone Coast	1102	947	-154
	Padthaway	1277	867	-410
	Wrattonbully	1395	1004	-391
	All regions	1346	1090	-256
	All MacLennan’s Drive Prestige regions	1409	1226	-183
	All major non-Prestige South Australian cool climate GIs	1304	999	-305
	Difference in average grape prices: Prestige regions versus all major non-Prestige South Australian cool climate GIs	104	227	123

regions are among the five regions which enjoyed the highest average grape prices between 2001 and 2013 (as Figure 30 and Table 4 illustrate).

The regionalisation of MacLennan’s Drive Prestige therefore promises to expand opportunities for growers in a subset of cool climate GIs, whose grapes already command a price premium, to supply relatively lucrative semi-premium wine products. However, the majority of growers in less well-known cool climate viticultural regions who have hitherto served as suppliers of semi-premium grapes for Company products such as MacLennan’s Drive Prestige or Founder’s Reserve are likely face a stark choice when their current contracts expire. The regionalisation process has left The Company with relatively few uses

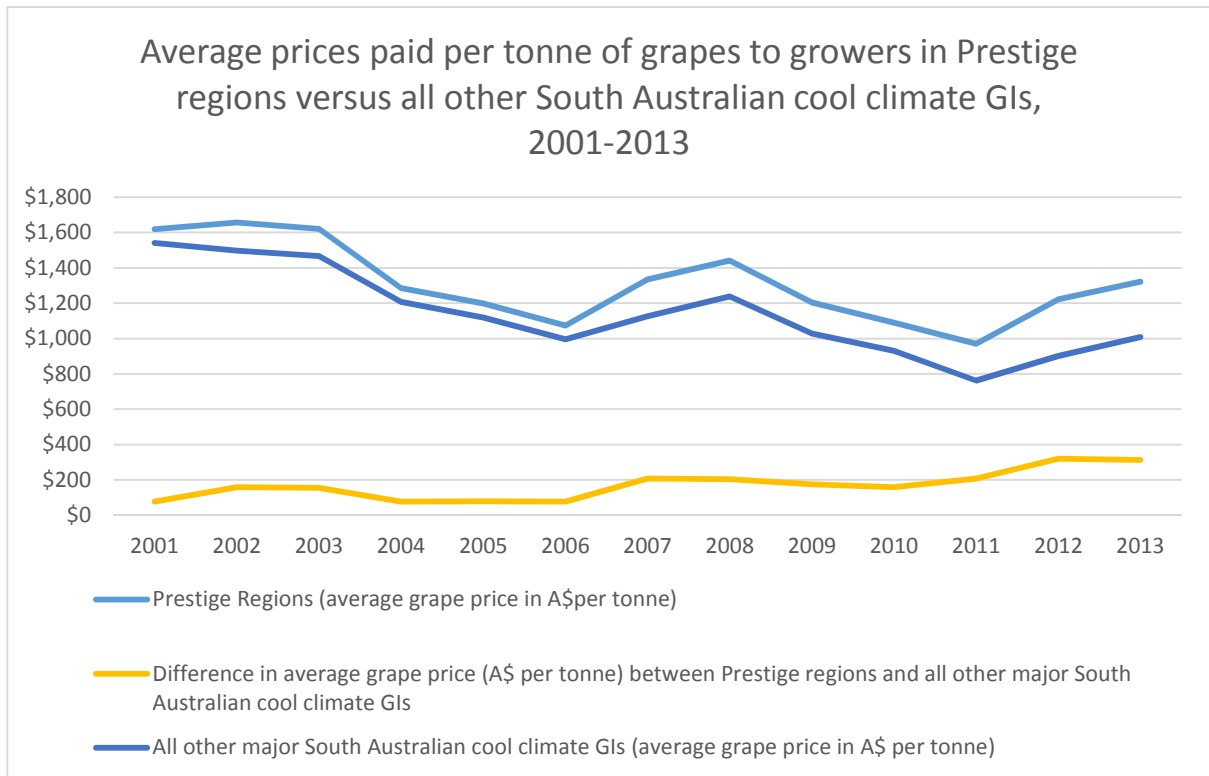


Figure 30: Average prices paid to growers in the ten South Australian cool climate GIs producing the largest volumes of grapes, 2001-2013. Data source: PGIBSA South Australian Winegrape Crush Surveys 2001-2013.

for semi-premium grapes sourced from beyond the three GIs which now comprise the Prestige supply base, meaning that former MacLennan’s Drive Prestige growers will either have to begin growing lower-priced commercial-grade fruit for The Company or seek alternative buyers for their grapes. Mark is confident that the former course of action is a viable option for growers in Langhorne Creek and Padthaway, but this is unlikely to be the case for suppliers in the Clare Valley or McLaren Vale where most growers would consider roughly 10-12 tonnes per hectare to be the highest yield of which their vineyards are realistically capable. Such growers are, it seems, unlikely to be able to maintain their relationships with The Company in the future.

As such, the regionalisation of MacLennan’s Drive Prestige seems likely to prove extremely costly for some of Rachel’s members in the Clare Valley. However, it may also hold troubling implications for Riverland growers like Neil because if erstwhile MacLennan’s Drive Prestige growers in Langhorne Creek and Padthaway are to be repositioned as

suppliers of commercial fruit then their grapes will become equivalent, within The Company's grading system, to those produced in the Riverland. Moreover, wine producers sometimes also source additional grapes for commercial-grade and bulk wines from uncontracted vineyards in the Clare Valley and McLaren Vale at low prices through 'spot purchases' conducted shortly before, or even during, vintage (Haughton & Browett 1995; Moore 2006; Sheales et al. 2006). Through both of these processes, grapes formerly accorded semi-premium status and used in making MacLennan's Drive Prestige products seem poised to become equivalent, within The Company's grading system, to those grown in vineyards like Neil's. In so doing they would become directly interchangeable with, and capable of supplanting, fruit produced by Riverland growers. Growers in cool climate regions who had hitherto produced grapes for entirely different wine products, and supplied separate market segments, from those which Neil and his neighbours occupy would thus become their direct competitors.

As such, the new geography of quality being enacted through the MacLennan's Drive Prestige regionalisation process appears to be assigning a number of cool climate regions to new locations within The Company's quality grading system – and thus to new roles within the quality assemblages convened around The Company's brands. Moreover, in so doing it seems to be altering the material and discursive positioning of growers operating within them in relation to their counterparts in other regions. For growers in the Adelaide Hills, the Barossa, and Coonawarra who have been selected as suppliers for the regionalised Prestige wines, this repositioning appears to be differentiating, singularising, and valorising their grapes in the manner with which agro-food scholars often associate modes of qualification centred upon provenance (Besky 2013; Bowen & Zapata 2009; Hayward & Lewis 2008; Overton 2010). As the regionalisation process takes hold – and The Company's semi-premium wines come to bear the new Prestige regions' names (and theirs alone) – growers in these three GIs are beginning to produce grapes for wines more distinguished, and more

lucrative, than those produced not only by Riverland growers but also by those in Langhorne Creek, or Padthaway.

However, when viewed from the Limestone Coast or the Clare Valley, The Company's regionalisation initiative appears poised to produce quite the opposite effect. In drastically restricting opportunities for growers in Wrattenbully, for example, to produce grapes for The Company's semi-premium products, it actually seems likely to render their fruit more similar to that produced by Riverland grape growers. The regionalisation of MacLennan's Drive Prestige thus also appears to be engendering both a material and a commercial repositioning of South Australia's less well-known, and less prosperous, cool climate viticultural regions – of places like the Clare Valley and Langhorne Creek. These regions are ceasing to produce fruit that is predominantly classed as being of semi-premium or premium-quality and are instead becoming sources of commercial grade grapes for South Eastern Australia blends. In so doing they are becoming more akin, for The Company's purposes, to the Riverland than to the Adelaide Hills or Coonawarra. Shiraz grown in Langhorne Creek is now more likely to be deemed interchangeable with – and blended into the same fermenters and products as – Riverland Shiraz than Barossa Shiraz. Moreover, its parent vines are increasingly likely to be cropped at (or at least closer to) 'Riverland yields' and their fruit bought at 'Riverland prices,' to borrow Rachel's phrase. The reduction in grape prices which attends this repositioning from semi-premium to commercial grading – along with Mark's comment that such displacements render cool climate regions not deemed worthy to supply Prestige products of 'less strategic value' to The Company – therefore suggest that the regionalisation process is *devaluing* regions like Padthaway and McLaren Vale (Stark 2009; Vatin 2013). For vineyards and growers located within such regions do now seem to be 'worth less' – in terms of status and importance (as measured, for instance, through the money and effort which might be justifiably expended to maintain access to their fruit) – within The Company's internal rankings of materials and suppliers than they might have been prior to regionalisation (Aspers & Beckert 2011; Graeber 2001; Heuts & Mol 2013; Lamont 2012).

What is more, in the process these regions, along with the vineyards and grape growers within them, are arguably becoming *less* distinguished both from one another and from the Riverland by virtue of location, climate, or quality – at least within The Company, and for The Company’s purposes. The regionalisation process thus threatens to render their grapes *less* scarce and therefore to subject them to *more* intense price competition. This contradictory combination of geographical valorisation and devaluation, and of geographical differentiations and homogenisations, highlights that The Company’s attempts to transform the MacLennan’s Drive Prestige range into wines from somewhere is not simply creating or amplifying distinctions in the quality and the value of grapes produced in different regions where none previously existed (Hayward & Lewis 2008; Murray & Overton 2011; Overton 2010; Overton & Heitger 2008). Nor is it unambiguously preserving and entrenching existing inter-regional economic inequalities in the manner of which critical analyses sometimes accuse food quality classifications based upon *terroir* (Besky 2013; Bowen & Zapata 2009; Demossier 2011; Fourcade 2012; Guthman 2007; Ulin 1996). Instead, the reassembling of quality precipitated within The Company through the regionalisation process has altered the basis upon which such distinctions are distributed in ways which are both generating new geographical faultlines and fractures and eroding old ones.

This ambivalent result highlights that in order to entangle quality with provenance, The Company’s regionalisation programme has had to intervene into and disturb already-differentiated viticultural geographies. For the quality assemblage centred upon organoleptic consistency which they disrupted and reconstituted was, despite pointedly cultivating a formal indifference to the provenance of materials (see chapter six), nevertheless productive of its own uneven geographies of quality. As discussed above, qualification practices configured around organoleptic characteristics of materials alone permitted a reputed difference in taste between grapes sourced from different climatic zones to map the distribution of distinctions between quality grades onto a division between ‘warm’ and ‘cool’ climate regions. In reconfiguring this quality assemblage – and especially in displacing

quality into new, reputational, registers – The Company’s encounter with the notion of wines from somewhere appears to be generating novel geographical patterns of contrast and resemblance in both the quality and the prices of materials which cross-cut this established economic divide. These novel orderings of geographical unevenness are interacting and interfering with the existing geographies of quality configured around organoleptic consistency in contradictory ways – sometimes reinforcing existing economic polarisations in some regions and sometimes undermining them. For instance, they are producing new distinctions between cool climate regions formerly considered equally suitable to supply Prestige products while simultaneously rendering regions formerly differentiated by virtue of their positioning on opposite sides of the climatic divide such as McLaren Vale and the Riverland increasingly interchangeable.

This observation that the transformation of MacLennan’s Drive Prestige products into wines from somewhere has begun to order the grading, valuation, and pricing of grapes less around a divide between warm- and cool climate viticultural regions than one between different *types* of cool climate regions suggests something important about this initiative’s likely effects upon Company growers’ livelihoods. Specifically, it highlights that the regionalisation initiative’s reordering of the quality assemblages which inform the geography of The Company’s grape supply base has interfered with the resonances between taste, climate, and economic value which become significant within qualification practices attuned to the organoleptic characteristics of materials. As a result, the process of regionalisation appears, paradoxically, in some respects to be rendering The Company’s grape sourcing, grading, and pricing practices *less* responsive – in both sensory and economic registers – to the specific environmental characteristics of different viticultural regions than does the grading and pricing of materials on purely organoleptic criteria. For through the admittedly crude and sweeping distinction between warm- and cool climate regions, even practitioners of economies of consistency do apparently transact differences between viticultural regions through the tastes of wines – albeit in a manner far less sensitive than that of winemaking by

the palate. After regionalisation, however, differences in grape prices will no longer necessarily map, more or less neatly, onto grapes' levels of phenolic maturity on achieving sugar-ripeness and by extension onto the yield of grapes that growers are capable of ripening. The very shift through which the regionalisation process makes the provenance of materials matter economically is thus also further decoupling variations in the prices which The Company pays to its growers from the specificities of regional climate and environment, and therefore from some of the main influences on their cost of production. It is making grapes from several cool climate regions in which growers' cost of production is at least A\$850 or A\$900 per tonne no better, for The Company's purposes, than those grown in warm climate GIs where production costs are around A\$400 per tonne. And in prizing apart prices from production costs, The Company's regionalisation initiative appears to be rendering the economic position of growers outside of the handful of increasingly distinguished MacLennan's Drive Prestige GIs increasingly precarious.

It is important to reiterate that these arguments are based entirely upon the regionalisation of a single product range, within a single company. The Company's reinvention of its MacLennan's Drive Prestige products as wines from somewhere is, in itself, unlikely to alter the overall economic positioning of any particular wine region significantly. Moreover, The Company makes other semi-premium product ranges (such as Founder's Reserve) whose grape supply requirements cross-cut, and may perhaps partially counterbalance, those of the regionalised MacLennan's Drive Prestige products. Other large-scale wine producers, meanwhile, may well continue to operate within quality assemblages configured around quite different principles and practices, and therefore to pursue grape sourcing strategies which precipitate other geographies of quality. Yet recent grape price surveys suggest that the economic gap between the most and least prosperous and widely-recognised cool climate South Australian viticultural regions has continued to widen in recent years (see Figure 30 and Table 4). And while this growing disparity between different cool climate regions is almost certainly not directly attributable to the regionalisation of

MacLennan's Drive Prestige, The Company's regionalisation initiative has nevertheless reassembled quality in ways which – in making provenance matter within reputational registers – appear likely to reinforce and exacerbate this trend.

The example of MacLennan's Drive Prestige may, therefore, be suggestive of the shape that the entanglement of quality with provenance could assume – and of the economic and geographical shifts which it might engender – within quality assemblages hitherto informed by the pursuit of organoleptic consistency. Or at least of the form that these entanglements may take if large-volume Australian wine producers and retail chains continue to use region of origin labelling to signal to consumers that wines are of semi-premium or premium quality. As a result, this case suggests that Australian wine industry organisations' and wine producers' recent experiments with the production of wines from somewhere are unlikely to resolve the valuation problem which Neil and Rachel helped me to identify at the outset of this chapter. For in further disrupting distinctions between warm- and cool climate regions, the regionalisation of MacLennan's Drive Prestige appears to be redistributing rather than relieving the economic insecurities created by intense competition for grape supply contracts – and specifically to be concentrating them among growers located outside the most prosperous cool climate viticultural regions. In many cases, it appears to be rendering warm- and cool climate grapes more rather than less interchangeable, and thus intensifying the competition between producers in environmentally different regions which is often blamed for depressing grape prices. It would therefore be difficult to argue that The Company's engagement with what Easingwood et al. (2011) term regionality is simply or straightforwardly creating a 'buffer' against the commodification of grapes. Yet I would suggest that in reconfiguring the quality assemblages which inform the geographies of The Company's products and quality grades, these engagements with the notion of wines from somewhere have evinced a potential to engender effects which are both more modest and more radical than the creation of such a 'buffer'. The conclusion which follows will develop this point further.

Conclusions

This chapter has addressed this thesis' third key question by exploring how Australian wine producers' recent engagements with modes of qualification centred upon provenance might affect those who are economically entangled in the Australian wine industry. However, this chapter's opening sections also built upon Rachel's and Neil's accounts of the intense competition among grape growers – and the declines in grape prices – precipitated by the treatment of grapes from regions with very different climates as being effectively interchangeable to pose a more specific question. Could interventions which sought to make associations with a place of origin constitutive of wine quality – such as Wine Australia's (2007) Regional Heroes initiative – impede or disrupt such patterns of competition through differentiating viticultural regions which had become interchangeable with one another?

My encounters with winemaking by the palate at Bartoli's and with The Company's regionalisation of MacLennan's Drive Prestige suggest that Australian wine producers' efforts to entangle provenance with grape and wine quality are unlikely simply to reverse the rendering-fungible of materials from different regions that is implicated in Rachel and Neil's valuation problem. More generally, these empirical engagements have led me to conclude that the effects of such interventions will probably be considerably more modest – and considerably less consistent – than those that are asked of them by such initiatives as the Regional Heroes programme (Wine Australia 2007). For they have highlighted that the principles and logics of quality judgment and attribution denoted by such concepts as *terroir* and wines from somewhere can only gain expression within the evaluation and pricing of grapes and wines as part of what Mansfield (2003a; 2003b) terms a quality assemblage. As such, any wine producer's attempts to pursue these ideals of wine quality will necessarily be situated within, displaced through, and possibly subverted by, a heterogeneous stew of commercial rationalities, technologies, practices, and other goings-on – different strands of

which may follow contrasting imperatives and pull in divergent directions. Thus, at Bartoli's an organoleptic logic of qualification encounters practices of segregation, labelling, and tasting which (perhaps unintentionally) render Sam's and Ken's efforts to pursue and amplify uniqueness in flavour productive of distinctions in quality which are inextricably tied to individual vineyards – rendering these sites (and their owners) unique, irreplaceable, and therefore highly valuable. Meanwhile, within The Company an attempt to produce wines from somewhere becomes refracted through techniques and rationalities of branding in ways which tease provenance – and even quality itself – apart from taste, and which instead interweave judgments of the quality (and worth) of materials, growers, and regions with the notoriety of GI names.

The very different forms of attunement to provenance which are engendered within these two contrasting quality assemblages suggest that the effects of attempts to make materials into wines 'from somewhere' will depend upon how such efforts relate to, affect, and are affected by other constituents of the arrangements through which quality is assembled within a given wine company. This argument that what the notion of wines from somewhere can do is inescapably mediated by, and therefore highly contingent upon, the relationships which it establishes with other constituents of specific quality assemblages implies that wine producers' efforts to attend to the provenance of materials cannot be relied upon to produce consistent effects. For instance, they will not necessarily amplify differences between viticultural regions or vineyard sites – or, therefore, render grapes and wines produced under different climatic and commercial conditions more distinct from one another and less interchangeable. Wine producers' attempts to make wines from somewhere therefore generate effects which are more modest than those that are sometimes asked of them in the sense that entangling the qualities of grapes and wines with their provenance will not *in itself* necessarily suffice to alleviate the economic difficulties faced by growers like Neil and by Rachel's members. Nor, perhaps, even to 'premiumise' a particular wine product.

However, this same argument that the efficacy and consequences of an attention to provenance will inevitably shift as it enters into relationships with other constituents of diverse quality assemblages also suggests that the associations between quality and the geographical origins of materials encoded in the notion of wines from somewhere may sometimes exercise another sort of potency. For it opens up the possibility that attempts to integrate the notion of wines from somewhere into quality assemblages already informed by other logics of qualification might affect, disturb, or excite their constituents sufficiently to jolt them out of their settled configurations (Anderson et al. 2012; Bennett 2010). Efforts to make wines ‘from somewhere’ might thus engender a thoroughgoing realignment of relations capable of provoking an assemblage to shake itself into a new configuration that would be productive of correspondingly different qualities and spatialities. Indeed, something of this description of ramifying and resonating displacements can be discerned within The Company’s regionalisation of MacLennan’s Drive Prestige. Here, an encounter between the notion of wines from somewhere and ingrained rationalities of branding partially dislodged quality from organoleptic into reputational registers – transforming the criteria according to which The Company assigned quality grades to grapes and wines. In so doing, the regionalisation of MacLennan’s Drive Prestige generated a new geography of quality, which – in re-mapping differences between semi-premium and commercial-grade materials onto reputational distinctions between better-known and more obscure GIs – interfered with an established economic divide between warm- and cool-climate regions.

These developments go some way beyond what is implied not only by the talk of ‘trading up’ the value of products which surrounds initiatives such as Wine Australia’s (2007) Regional Heroes programme but also by widely-used analytical vocabularies such as ‘value capture’ and ‘monopoly rents’ (Barham 2003; Bowen 2011; Hayward & Lewis 2008; Moran 1993; Overton 2010). For although these terms are perfectly capable of describing the redistribution of economic value, status, or power among various locations and agro-food producers, they do not quite capture the possibility that attempts to make materials into

wines from somewhere might unevenly redefine quality itself and thus reconstitute the very basis on which value is assessed and attributed. Indeed, the entanglement of quality with provenance is more typically presented as an essentially conservative political-economic strategy which more or less successfully preserves and entrenches established geographical variations both in the economic valuation of goods and in the social prestige of their producers (Besky 2013; Bowen & Zapata 2009; Demossier 2011; Fourcade 2012; Guthman 2007; Ulin 1996). The Company's adoption of the notion of wines from somewhere has, by contrast, radically altered the criteria according to which quality is evaluated, the dynamics of inter-regional fungibility and competition, the commercial position of many cool climate wine regions, and The Company's relationship with growers located within them. In thus reshaping an entire quality assemblage, it has generated a new geography of quality whose distinctions, disparities, and fractures cross-cut those of the economic and environmental divides which existed prior to the regionalisation process.

This chapter therefore suggests that Australian wine producers' attempts to make and market wines from somewhere may well engender effects far more radical than a more or less successful capture of price premiums. These interventions are capable of reconfiguring quality assemblages, and therefore of reshaping the very practices through which the value of grapes and wines is assessed, enacted, and distributed. Such reassemblings of quality may reshape the economic geographies of viticulture in South Australia in contradictory ways – devaluing as well as valorising particular grapes, wines, and places, and marginalising as well as distinguishing certain wine and grape producers. In so doing, such redefinitions and rearticulations of value can transform the economies of commercial relationships within which the humans involved in producing and circulating wine are situated. Indeed, in altering the practices, measures, and registers through which they relate to variations and distinctions both in the physical environments of wine regions and in the qualities of materials, wine producers' attempts to make wines from somewhere may even reshape the economic geographies of viticulture in South Australia. These

interventions thus relate environmental difference, qualification practices, and the calculation of value together in a multitude of novel and often-surprising configurations – transforming quality, value, and economic relations into intensely geographical concerns.

Chapter 8

Conclusion: The difference that pursuing quality makes.

The preceding chapter's exploration of how two different ways of entangling the provenance of materials with their quality can – in altering wine producers' sensitivities to organoleptic, environmental, and economic distinctions – precipitate contrasting economies of commercial relations, reconfigure the economic geographies of South Australian viticulture, and even alter what quality *itself* is, highlights an important point. Juxtaposing winemaking by the palate at Bartoli's against The Company's regionalisation of MacLennan's Drive Prestige illustrates with particular clarity that *how* – through which practices and registers – Australian wine producers go about pursuing quality can make a difference. In this concluding chapter, I will build upon this observation to reconsider and reappraise this thesis' opening questions about what difference contemporary Australian wine producers' pursuit of quality might make, what its consequences might be, and what might be at stake for wine industry participants in achieving (or in failing to deliver) quality.

I begin this task by revisiting each of the three key questions around which the preceding chapters' responses to these initial concerns have been focused. How do grape and wine producers go about pursuing wine quality in a world perturbed by more-than-human entities and energies, and how might their activities challenge extant theorisations of qualification, valuation, and economic agency? How are the sensory qualities of materials made to matter economically within the Australian wine industry, and what organisations of the valuable might these modes of qualification precipitate? And what is at stake in – and what might be the consequences of – Australian wine producers' recent attempts to make the

provenance of grapes and wines matter to the quality of these materials? In the following sections, I will outline a response to each of these questions which emerges from my empirical engagements with wine quality in-the-making and, in so doing, I will begin to outline this thesis' theoretical contributions to the fields of agro-food geographies and of social studies of markets. This concluding chapter's final section reflects on the limitations and achievements of the ethnography of quality in-the-making presented in this thesis, and responds to its opening questions: just what sort of difference *do* the Australian wine industry's recent engagements with the pursuit of quality make? And what might be at stake within them?

Economic Agencies

This thesis aimed to contribute to geographers' understanding of more-than-human dimensions of economic life by examining how the qualities, activities, and performances of nonhuman entities, energies, and environments affect and participate in the enactment and distribution of quality and value within grape and wine production. This interest in foregrounding the participation of nonhuman devices, materials, organisms, and processes in the making and ordering of worth was informed in particular by marketisation studies scholars' conceptualisation of economic agencies as hybrid *agencements* (Çalışkan & Callon 2010; MacKenzie 2009; Muniesa et al. 2007), whose powers to enact and apportion economic value are more-than-human achievements. Yet my empirical engagements with more-than-human facets of qualification and valuation have also unsettled this account of the hybridity of economic agency. Specifically, they challenged its tendency to describe nonhuman participation within economic life as a more or less unproblematic process of enrolment into market devices which augment the capabilities or advance the aims of human individuals and groups, or which perform their economic theories.

This depiction of nonhumans as predominantly-docile components of market devices was severely tested by chapter four's examination of the practices through which Company

vineyard managers and winemakers attempt to coax their vines to produce grapes which would be valuable in wine production. Through following Company employees' preparations for vintage, I illustrated that the task of making valuable grapes demanded that staff keep their own labours in time with the activities of a multitude of nonhumans ranging from grape vines to weather events and winery machinery. Moreover, I showed that maintaining this temporal coordination required that Company managers develop a sensitivity not just to the activities of entities such as grape vines but also to the influences – from weather events to fungal pathogens – which affected their behaviour. This latter point is crucial, for grape vines do not only respond to the actions of human cultivators. They may also be provoked to act differently by encounters with a host of nonhuman organisms, materials, and events whose movements and interventions are indifferent to – and sometimes disrupt – human attempts at economic ordering. Striving after capacities to be affected by these nonhuman familiars therefore conferred more than capacities to generate and calculate value upon The Company's viticulturists and winemakers. Indeed, it was precisely because the labours of Company workers were precisely attuned to the metabolic activities of vines that a fungal pathogen's disruption of those metabolisms could also destabilise and disturb the modes of temporal coordination which enabled grapes to develop valuable qualities – thus rendering a large proportion of The Company's grape crush worthless. Tracing the devaluation of botrytis-infected grapes thus highlighted that the same abilities to be affected by nonhumans which enabled Company employees to make materials valuable – by encouraging grape vines to produce valuable fruit – also rendered them susceptible to being affected by those agencies in a variety of unwelcome, and sometimes economically-disastrous, ways.

I therefore argued – building on Stark's (2009) work – that the process of cultivating attunements and attachments to others which generates the hybrid forms of economic agency described within marketisation studies is, at least sometimes, inseparably intertwined with a possibly-involuntary acquisition of economic vulnerabilities and exposure to impoverishment. This account imparts distinctly *unfamiliar* implications to the now-

commonplace argument that economic agencies are more-than-human aggregations of heterogeneous, precariously-related constituents rather than human individuals endowed with innate calculative capacities. It means that the assembling of economic agencies ceases to be solely a matter of astutely forging alliances which will augment an actor's capacities to bring about their goals or preferred outcomes and comes to involve a simultaneous taking-on of propensities to be diverted from one's intended goals. Qualifying an economic agency as hybrid or more-than-human thus signifies that encounters with or among nonhumans indifferent to the demands of economic ordering may be capable of tearing it loose from the relational formations which confer value upon goods and activities.

This argument casts the capacity to participate in valorising, and in assessing the value of, materials as an ambivalent achievement, and thus encourages researchers to ask questions about economic agency which are subtly different from those habitually posed by marketisation studies. It suggests that the important question is not necessarily (or rather, not entirely) how:

“an agency initially in a weak position gradually acquires tools enabling it to change the balance of power and to become more active in terms of qualification and singularization” (Callon & Muniesa 2005: 1238).

For framing one's enquiry in this way presupposes that the acquisition of tools and associations *does* in fact confer capabilities to act – and perhaps to dominate others (Çalışkan & Callon 2010) – without explicitly entertaining the possibility that it might also generate the forms of radical passivity and exposure to other-than-human forces discussed in chapter four. By contrast, the braiding-together of economic agency and economic exposure discussed above invites a question running more along the lines of ‘what capacities for active intervention, and what constitutive susceptibilities to being affected and displaced, attend the formation of particular techno-economic alliances and formations – and what specific modes of economic conduct might they generate?’

Asking *this* question, I would suggest, might help scholars to avoid simply describing how those who are economically powerful became so, and to attend to the highly specific forms of vulnerability which are interwoven with their influence. Such analyses might perhaps be less prone to the uncritical celebration of the prodigious powers of calculative action amassed by the most elaborately-equipped *agencements* of which marketisation studies accounts are sometimes accused. It might also be plausibly argued that they would be relatively unlikely to generate the despair and resultant political quietism which critical political economy's accounts of the monstrous power of a unified, coherent capitalism's or neoliberalism's protagonists are sometimes depicted as inducing (Gibson-Graham 2006; Latour 2005). This modest revision to more-than-human accounts of economic agency might thus assist scholars of economic life in opening up what Tsing (2013: 39) calls "a purchase point for both intellectual and political work" in at least two ways. First, attending to the constitutive vulnerabilities of economic agencies could serve to sensitise critical researchers to particular sites and modes of intervention which might resonate with or amplify the constitutive susceptibilities ingrained within dominant economic agencies, and thus to identify opportunities to destabilise their power in the manner advocated by Gibson-Graham (2008) among others. Second, an attention to the relationship between economic agency and vulnerability might spur researchers interested in exposure and resilience to various hazards within agro-food systems to engage in considered comparison of the forms of exposure to environmental upheavals which attend different ways of assembling economic action among those involved in the production, circulation, and distribution of food.

More broadly, arguing that the proliferation of vulnerabilities to being affected by nonhumans in hazardous ways is as fundamental to the construction of more-than-human economic agencies as is the formation of capacities to act upon others troubles the normative dimension of relational-materialist accounts of action (for instance Despret 2004; Ingold 2000; 2011; Latour 2004a). These bodies of work tend to figure the proliferation and elaboration of alliances with nonhuman materials, organisms, and devices as fostering

powers to both feel and act; as generating both sensitivity and strength. Detachment from and insensitivity to others (whether human or nonhuman) become, by extension, mere failures to achieve articulation with them – a sort of impotent intransigence. Yet if learning to be affected by nonhumans also engenders a passive exposure to the powers of capricious or unpredictable bodies and events, then this suggests that avoiding or extricating oneself from potentially costly or dangerous relations with undesirable or unpredictable materials, environments, devices, or transaction partners may be an important achievement. The ability to achieve a selective detachment from, or insensitivity to, both human and nonhuman others may, in short, be an important dimension of genuinely skilful practice. Yet as I argued in chapter five, in raising the question of how those involved in processes of production and exchange might maintain an appropriate balance of attachment to and detachment from materials – and thus of economic exposure and indifference – this account of economic agency demands a reassessment of the work done by qualification practices.

Qualifying Materials

In chapter one I asked how the sensory qualities of materials might be made to matter economically within the Australian wine industry, and what organisations of the valuable might emerge from this process. In posing this question I drew upon the argument, common to conventions theory and marketisation studies, that through identifying and enacting characteristics which differentiate goods, materials, and persons from – or render them similar to – one another, qualification practices facilitate the comparison, ranking, and valuation of different entities. My question therefore reproduced this account's assumption that qualification's contribution to economic life is to make valuation (and thus pricing and market transactions) possible through proliferating increasingly multifarious and precise attachments between the qualities of goods and the needs and desires of their purchasers (as argued by Beckert & Musselin 2013; Callon et al. 2002; Callon & Muniesa 2005; Vatin 2013).

Chapter five engaged with this process of enabling pricing and exchange through exploring how wine producers and grape growers went about qualifying botrytis-infected grapes – highly unstable materials whose valuation often demanded improvisations, compromises, and modifications to qualification techniques. In order to facilitate the exchange of botrytised grapes, wine producers' quality assessment practices often had to operate in a manner quite different from the entanglement and mutual adjustment of characteristics and desires described above. Within both Bartoli Wines and The Company, a botrytis infection transformed in-field grape quality assessments into occasions less for measuring and testing how the influence of grey rot might affect the potential uses, desirability, and value of grapes, than for deferring and displacing this question in various ways. Thus, Bartoli Wines tended to price botrytised grapes only retrospectively, after closely scrutinising the qualities of the wines produced from them over several months. Meanwhile, Company grower relations managers assigned price penalties to infected fruit based not on these materials' performance in the winery but on the severity of their infection as quantified in the vineyard by Field Technical Officers (FTOs). Neither of these practices forged and tested associations between the characteristics and capacities of botrytised grapes and the qualities demanded by wine producers; instead, both negotiated questions of valuation and pricing in ways which circumvented questions about the correspondence between the qualities of goods and the desires of their purchasers. Rather than *internalising* the powers of botrytis into the frame of calculation (Callon 1998a; 2007a; Callon et al. 2009), they *externalised* them from the valuation process.

Company FTOs' enumeration of botrytis-infected grapes – a practice which enabled The Company to reject fruit from severely diseased blocks and thus avoid being drawn into relations of ownership with materials which might leave it unduly exposed to botrytis' costly metabolic activities – illustrates this seemingly paradoxical operation's purpose and implications especially clearly. The FTOs' efforts to assess the extent and effects of botrytis infection in grapes in the field might have been a form of qualification, but they did not

primarily seek to entangle The Company with the goods corresponding most closely to its requirements. Rather, it forestalled or severed potentially costly associations – assisting one of the vulnerable and exposed economic agencies described above in achieving a selective detachment from and insensitivity to materials and transaction partners caught up in unsavoury environmental encounters.

These observations led me to argue that qualification practices are not always simply valuation devices which generate similarities and differences among goods, enabling them to be ordered into hierarchies of value and priced. Wine producers also mobilise qualification practices in distinguishing materials they should become economically entangled with from those which they should avoid, and qualification processes therefore also mediate their exposure to unruly materials, and to more-than-human events and environments. Moreover, my observations of the elaborate comparative tasting practices to which the materials populating The Company's winery are subjected during vinification, detailed in chapter six, illustrated that such qualification practices' generation of externalisation, insensitivity, and detachment is neither opposed to nor separate from the production of attention and attunement to the qualities of materials. Rather, it underpins the cultivation of certain forms of sensitivity to distinctions in wine quality, and it is integral to the enactment of organoleptic consistency – the principal form of quality pursued within The Company. Indeed, The Company's branded wine products can only be made consistent in taste because its winemakers deploy practices of comparison, grading, and blending which break the connections that tie the qualities and identities of materials to any particular vineyard site – and often even to any single viticultural region. This process enables Company winemakers to discern organoleptic resemblances between materials grown far apart, and thus to blend wines in ways that enable the detachment of branded products from vineyards and materials affected by unruly environmental forces which might destabilise their wines' flavours, scents, and textures. The qualification practices which both crystallise and enact the economies of consistency which The Company inhabits thus enable winemakers to achieve a prodigious

sensitivity to the tastes of wines alone, while simultaneously detaching and insulating those tastes – and the branded products which express them – from the influence of unsavoury environments and entities.

Company qualification practices' interweaving of attunement to the organoleptic qualities of wines with those materials' detachment from the specific places and environments from which they originate illustrates that agro-food producers' differentiation of comestible materials in registers such as taste may require that variation in their geographical origins be overlooked. This observation disturbs agro-food geographers' – and popular commentators' – habitual depictions of such 'placelessness' in wine and other foodstuffs as evidence of an apathy towards or hostility to quality distinction on the part of their producers. I therefore argued that The Company's erasure of its wines' geographical origins does not indicate a reliance upon undifferentiated, homogenised wine products and 'commodity' wine markets but is instead integral to its attempts to distinguish its branded wines from competitor products. The particular forms of quality upon which The Company has hitherto relied heavily – namely purity, consistency, and stability of taste – thus depend upon the detachment of materials from the places and more-than-human environments which produced them.

This thesis therefore argued that qualification practices which render wine producers insensitive to the characteristics and activities of more-than-human environments, and which thus render materials 'placeless,' form a crucial part of the process through which wines are converted into products capable of achieving quality, and commercial success, within mainstream wine markets. It thus responds to a small literature within agro-food geographies which contends that a concern for quality is not – as is often presumed – confined to agro-food networks qualified as alternative, local, or ethical, and calls for empirical attention to 'industrial' or 'conventional' producers' efforts to pursue quality (Cidell & Alberts 2006; Harvey et al. 2004; Mansfield 2003a; 2003b). However, I have also

expanded upon these previous studies' arguments by empirically examining how the detachment of materials, and their qualities, from their places of origin affects The Company's relationships with its grape suppliers. In so doing, I went beyond simply appreciating the work that these tasks require, and began developing an open-minded but critical engagement with the socio-spatial formations generated through forms of qualification aimed at stabilising and pacifying foodstuffs into consistent products.

Specifically, I described how the disentanglement of taste from materials' places and environments of origin which facilitates the pursuit of organoleptic consistency also renders The Company's grape suppliers interchangeable. Chapter seven built upon this line of enquiry, suggesting that in recent years the rendering-equivalent of far-flung grape suppliers and vineyards through qualification practices configured around organoleptic consistency had contributed to intense competition between growers. This thesis therefore suggests not only that qualification practices mediate agro-food producers' sensitivities and vulnerabilities to often-capricious more-than-human environments, but that how these selective (in)sensitivities to materials and their provenance are configured profoundly influences the dynamics of quality distinction within agro-food markets. It therefore argues that scholars interested in the ordering of value within many agro-food sectors, and its socio-economic consequences, cannot afford to presume that the rendering-homogeneous, -consistent, and -'placeless' of foodstuffs signifies that their producers lack a quality orientation. Rather, it is necessary to study empirically *how* producers achieve an indifference to distinctions between the qualities and origins of wines and other foodstuffs.

How Provenance Matters

Arguing that an apparent indifference to the origins of materials within certain sections of the Australian wine industry does not denote a neglect of quality but instead plays a crucial part in producers' efforts to endow grapes and wines with distinctive organoleptic characteristics adds additional urgency to my final question. If achieving quality through

organoleptic consistency demands that wine be rendered 'placeless' then what might be the consequences of, and what might be at stake for wine and grape producers in, the Australian wine industry's recent attempts to pursue quality through producing wines that are 'from somewhere'?

Australian wine industry organisations frequently present a renewed attention to provenance as a means both of elevating wines into more valuable market segments and of alleviating intense competition among growers and declining grape prices partially caused (as discussed in chapter seven) by certain wine producers' treatment of climatically different viticultural regions as being effectively interchangeable. In so doing, these organisations echo agro-food scholars' arguments that when provenance is successfully made to matter to wine quality, it can serve to differentiate grapes and wines grown in different places and, in salient respects, to transform them into different goods (for instance Moran 1993; Hayward & Lewis 2008; Overton 2010; Ulin 2013). Such arguments suggest that in distinguishing materials grown in wine regions whose produce had become increasingly interchangeable against one another, entangling wine quality with provenance in Australia might protect grape and wine producers against competition – rendering their goods sufficiently scarce to create local monopoly rents. In so doing, they cast the entanglement of quality with provenance as making geography matter where it would otherwise be immaterial by generating or amplifying inter-regional economic contrasts within a hitherto homogeneous viticultural landscape.

However, chapter six's engagement with The Company's pursuit of quality through organoleptic consistency subtly complicates such depictions of wine producers' attempts to produce wines that are 'from somewhere' as creating relationships between wine quality and geographical difference where none previously existed. For it highlights that while practices of consistency may produce wines whose qualities and identities are alienated from the specific sites, growers, and even regions which supplied their component grapes, this does

not mean that they are devoid of any engagement with geographical difference. Rather, a very specific relationship between quality and provenance emerges within economies of consistency; any attachment between a product and a place of origin becomes a vulnerability which might enable environmental events to damage its quality and value by destabilising its taste. As such, this mode of qualification renders associating a wine with, or allowing its taste to express, the characteristics of a specific place of origin *inimical* to the pursuit of quality. Its practitioners therefore take great pains to erase the geographical origins of materials.

The pointed indifference to the provenance of materials cultivated by practitioners of consistency therefore signifies an antipathy between wine quality and the expression of provenance, rather than the absence of a relationship between these terms, within this mode of qualification. As such, contemporary Australian wine producers' efforts to make 'wines from somewhere' do not simply generate relationships between quality and provenance where none previously existed. They instead modify, disturb, and sometimes interfere with, a host of existing arrangements – which might, following Mansfield (2003a; 2003b), be termed 'quality assemblages' – which mediate the influence of frequently-unpredictable local and regional viticultural environments on the characteristics and worth of wines. The Company's 'regionalisation' of its MacLennan's Drive Prestige wines illustrates this point clearly. This initiative attached products formerly defined by their distinctive and consistent taste to just three well-known GI regions – the Adelaide Hills, the Barossa, and Coonawarra – in order to differentiate them more clearly against commercial-segment competitor wines, position them more firmly within the higher-quality (and higher-value) semi-premium market segment, and thus cement their claim to a price premium. In the process, wine quality became bound up less with the consistent provision of specific tastes and scents than with the renown and recognition of GI *names* – disrupting existing grape sourcing arrangements designed to limit MacLennan's Drive Prestige products' exposure to the influence of regional environments through sourcing materials from across the cool climate regions of South Australia.

In thus altering the relations and references through which quality was identified and assessed – and transacting qualification through new registers – the regionalisation of MacLennan’s Drive Prestige arguably generated a new quality assemblage within The Company. Moreover, this shift not only reassembled and redefined quality itself but also disrupted the particular *geographies* of quality convened through the pursuit of organoleptic consistency. For after regionalisation, whether or not grapes were of MacLennan’s Drive Prestige quality no longer depended simply upon how they tasted but also upon which GI name they bore – and not all of the vineyards from which semi-premium grapes had hitherto been sourced were located within widely-recognised GIs. The Company’s efforts to produce wines from somewhere therefore distributed distinctions in the quality and price of grapes along quite different geographical lines than had the logics and practices associated with economies of consistency. Prior to The Company’s regionalisation initiative, the distinction between regions supplying semi-premium and commercial-grade grapes had broadly mirrored the differences in taste and yield which marked the divide between so-called ‘warm climate’ and ‘cool climate’ regions. After regionalisation, however, this difference in quality and price became mapped onto a divide between better-known and more obscure cool climate regions. The regionalisation process thus repositioned several cool climate GIs as being suitable only for supplying commercial-grade products in a move which simultaneously both devalued their grapes and vineyards, and rendered them equivalent in quality and worth to those of growers in the warm-climate Riverland.

The Company’s regionalisation of MacLennan’s Drive Prestige therefore both created new distinctions in quality and value between grapes sourced from different regions *and* interfered with an existing geographical and economic divide between warm and cool climate regions, which had emerged around modes of qualification centred upon organoleptic consistency. It thus induced a contradictory combination of geographical differentiations and homogenisations which destabilised existing Australian viticulture’s already-uneven geographies in ways that seemed likely to *devalue* most South Australian

wine regions. In so doing, it showed that Australian wine producers' efforts to interweave provenance with wine quality are likely not simply to generate new geographical and economic distinctions, but also to disrupt existing quality assemblages and the uneven economic geographies that they enact. The regionalisation of MacLennan's Drive Prestige thus suggests that the effects – and the consequences for producers – of binding up wine quality with the provenance of materials will be contingent upon how this mode of qualification disturbs, articulates with, and reassembles (and is itself reassembled by) constituents of existing quality assemblages. Entangling quality with provenance cannot, therefore, necessarily be relied upon to add value to products or to capture it within particular places and regions.

The point is reinforced by the case of winemaking by the palate at Bartoli's, through which the provenance of materials came to affect their quality via comparative tasting practices rather than logics of branding – and was therefore transacted through organoleptic rather than reputational registers. Here, entangling quality with provenance produced markedly different results – rendering individual growers and vineyards unique, irreplaceable, and therefore highly valuable over time instead of inducing the contradictory disruptions and reconfigurations of existing patterns of distinction and singularisation experienced within The Company. One might therefore say that how the production of wines from somewhere will interact, clash, or articulate with other modes of qualification – and therefore its economic implications for wine producers – is contingent on how (that is, through what registers and practices, and within which specific assemblages), provenance *itself* is assembled, enacted, and made to matter. As such, the economic consequences of this mode of qualification's encounters with existing quality assemblages within particular wine sectors and companies – and with the geographies which condense around them – cannot be read off from general principles.

The broader implication of this argument is that neither agro-food scholars nor Australian wine industry organisations are justified in inferring or presuming, on the basis of either macro-theoretical reasoning or examples from other sectors and countries, that configuring wine quality through provenance will necessarily bring about the particular economic or geographical consequences which they desire. For chapter seven's analysis of Australian wine producers' efforts to produce wines from somewhere illustrates that the effects of such engagements have a tendency to overspill and perhaps confound the outcomes intended by their originators – especially if these are (as so often) confined to the capture of price premiums. For in reassembling quality and its geographies, Australian wine producers' engagements with provenance have evinced a propensity not simply to redistribute value among locations and actors, but to transform the manner in which the value of wines, growers, and places is assessed and enacted in ambivalent, contradictory, and sometimes quite radical ways. As a result, not only is simply encouraging producers to embrace provenance unlikely, in itself, to suffice either to elevate Australian wines into more prestigious market segments or to protect growers against competition, but it may well also engender unexpectedly profound reorganisations of the Australian wine industry – with unpredictable results. A more cautious engagement with provenance, proceeding through investigation of the effects engendered by particular practices of attention to the geographical origins of grapes and wines within specific quality assemblages under various circumstances, might therefore perhaps be more effective in delivering the outcomes which are asked of it by Australian wine producers and their industrial representatives.

This point may be of interest to a wider audience of agro-food scholars – and perhaps even of policy-makers – because (as is often observed) provenance-based qualification arrangements such as GIs and the discourse of *terroir* are increasingly employed beyond the wine sector (Paxson 2013; Tregear et al. 2007; Trubek & Bowen 2008). Moreover, my underlying contention that it is not only *whether* provenance becomes entwined with quality that matters but also *how* such entanglements are woven might – as I argue in the next and

final section – also be of relevance to my more general questions about the how the pursuit of quality might be affecting the Australian wine industry. As such, the next and final section reflects upon, and outlines my response to, this thesis’ opening questions. What might be at stake for Australian wine and grape producers in the pursuit of quality? More broadly, what difference does pursuing quality make within the Australian wine industry?

Changing the Question

How am I to respond to these opening questions? The answer is far from self-evident, for the questions from which this thesis began are broad in scope and are amenable to multiple interpretations and modes of address. For instance, the quotes, texts, and statements by wine industry organisations and media commentators upon which I drew in developing this thesis’ overarching interests in the stakes and effects of Australian wine producers’ pursuit of quality during chapter one might easily have encouraged me to adopt one particular way of engaging with these concerns. These sources typically present the pursuit of quality as a means of repositioning Australian wines within more prestigious, and lucrative, market segments – and thus of (re)valorising Australian grapes and wines, and capturing a price premium for their producers. This characterisation of the purpose of pursuing quality suggests that my opening questions are, at root, questions about *how effective* Australian grape and wine producers’ attempts to refine and reposition the materials with which they work into higher-quality products might be in elevating the status of their produce, and ultimately in increasing its price.

Posing the question of what difference pursuing quality might make in this way highlights one of the present work’s key limitations, for the empirical research upon which this thesis is based provides relatively little insight into how the pursuit of quality affects the prices of Australian wines, or indeed their producers’ sales volumes and market share. In undertaking an ethnographic study of quality in-the-making – that is, of the processes, practices, associations, and socio-material transformations through which grapes and wines

come to bear valuable qualities – I focused my empirical attention upon wine and grape *producers* based in Australia. This approach imposed certain spatial and organisational constraints which often made it difficult for me to ‘follow’ the goods produced by my participants as they passed into markets for finished wines. For producers’ sale of wines was often attended by a twofold displacement, which would have been both costly and challenging for an ethnographer to replicate, during which products simultaneously both passed into the ownership of distributors, retailers, and even consumers and were physically transported to distant continents. As a result, this thesis has relatively little to say about the practices through which finished wines are qualified, valued, circulated, transacted, and consumed – or about the international circulations of money and goods in which Australian wine producers are caught up. It is therefore ill-equipped to specify which ways of pursuing quality do, and which do not, succeed in ‘making a difference to’ the sales volumes, market positioning, and pricing of Australian wines.

The findings of this thesis might therefore be expanded productively, and rendered more interesting to wine industry audiences, if augmented by further research into the practices through which distributors, retailers, and consumers in major export markets for Australian wine (most notably the USA and the UK) assess and value wines. Indeed, because there is currently little social science literature dedicated to the Australian wine industry and there are many topics that this thesis does not explore, this is just one among many worthwhile directions which future research might take. An exploration of grape and wine producers’ tentative experiments in adapting to the anticipated future impacts of climate change on grape quality and viticulture in Australia (as described by Allen 2010; Gladstones 2011; Hayman & Thomas 2013) might, for instance, fruitfully complement this thesis’ engagements with quality in-the-making. Meanwhile, examination of the knowledges and practices mobilised within the numerous attempts to delineate subregions within existing South Australian wine GIs which have emerged since 2011 – including the McLaren Vale Scarce Earth, Barossa Grounds, and Clare Valley Rocks projects – would expand the present

work's discussion of Australian wine producers' engagements with provenance in useful ways. However, the relative neglect of market processes discussed above arguably represents the most glaring – and perhaps the most fundamental – limitation of the ethnography of quality in-the-making presented in this thesis. The remainder of this section therefore examines what an ethnography of quality in-the-making focused upon the qualification and valuation practices deployed during wine and grape production might be able to tell its readers about the stakes of pursuing quality, and the difference that it makes within the Australian wine industry, that a study of market processes cannot. More specifically, it asks: if an ethnography of quality in-the-making cannot tell readers how successful Australian grape and wine producers' pursuit of quality has been in capturing price premiums, then to what questions *does* such an approach respond?

Exploring the varied modes of quality assessment, classification, and control invoked during grape and wine production has rendered this thesis attentive to the innumerable operations of attunement, assessment, coordination, articulation, categorisation, entanglement, and detachment upon which the production of grapes and wines endowed with desirable qualities depends. Through tracing the metabolic and economic subversions engendered by botrytis, fermentation's sometimes-surprising displacement of materials across product grades, and the reassembling of quality itself through the making of wines from somewhere, I investigated how a multitude of knowledges, devices, practitioners, locations, organisms, and materials become interwoven through – and contribute actively to – the making (and sometimes *unmaking*) of wine quality. Following the meticulous work that grape and wine producers must perform in order to assemble these multifarious entities and energies into felicitous combinations assisted me in perceiving and foregrounding some of the associations which implicate the materials, practices, and sites which participate in producing quality within currents of activity that also produce many other things. Studying quality in-the-making thus helped me to develop an awareness that the practices through which Australian grape and wine producers pursue quality are caught up in relations and

processes which assemble not only grapes and wines, but botrytis mycelia (and economic exposure to their depredations), economies of relations between grape growers and wine producers, and uneven geographies.

Studying quality in-the-making thus attuned me to the associations through which other processes and agencies intervene into and affect the enactment and assessment of quality – as, for instance, when unusual weather patterns and rampant disease outbreaks severely damage the quality of grapes. However, it also highlighted entanglements through which producers' efforts to pursue quality sometimes influence and alter the way that other things are assembled. The Company's partial shifting of qualification from organoleptic into reputational registers, for example, appears to be poised to reconfigure the geographies of South Australian viticulture. Attending to quality in-the-making can thus make it clear that the arrangements and practices through which qualification is effected do not simply assemble and assess qualities, that valuation techniques value more than economic goods, and that marketisation processes contribute to the construction and formatting of much more than the autonomous market spaces whose construction has frequently preoccupied marketisation studies (see Çalışkan & Callon 2010; Callon 1998b; Garcia-Parpet 2007; MacKenzie 2009). Precisely because these endeavours embrace multifarious participants entangled in relations – and thus sensitive to influences – which exceed economising agencies' designs (and sometimes escape human control), the effects and (re)valuations which they engender overspill and reverberate beyond market spaces.

As a result, this thesis argues that the techniques and practices through which Australian grape and wine producers pursue quality do far more than simply reposition their products in more lucrative market segments or capture price premiums. They are more than devices for instrumentally 'trading up' the positioning, prices, and prestige of products within a stratified wine market. Whether by accident or design, different ways of enacting and assessing quality overspill market spaces and engender divergent evaluations and

organisations of the worth of producers, commercial relationships, vineyards, and viticultural regions – generating what I have termed contrasting economies of relations and geographies of quality. In short, Australian grape and wine producers’ pursuit and evaluation of quality plays an important part in assembling and reassembling the Australian wine industry itself. What is more, contrasting ways of pursuing quality assemble it into differing configurations. As such, this thesis argues that *how* participants in the Australian wine industry go about pursuing grape and wine quality can make very a important difference to the shape of that industry, and to the livelihoods of the people who work within it. Moreover, it therefore maintains that the various practices through which quality is pursued make a difference through processes and registers reaching far beyond the pricing of grapes and wines. As a result, understanding what is at stake in the pursuit of quality requires more than an attempt to ascertain *how successful* particular practices and initiatives might be in capturing a price premium for producers. It is equally important to investigate *in what fashion* producers go about assessing and making quality. For the Australian wine industry that is assembled through the measures, enactments, and distributions of quality and value which emerge from any one particular way of pursuing quality is likely to differ from that which might be composed through alternative modes of qualification.

Such matters do not presently appear to be much discussed by Australian wine industry organisations and practitioners. As noted in chapter one, while the pursuit of quality is frequently presented as being central to sector-wide initiatives and strategies – and even vital to the future of the Australian wine industry itself (Wine Australia 2007; WFA 2013; WOWA 2014) – what is meant by quality and how producers are to deliver it is rarely specified or interrogated. However, I would argue that a commitment to pursuing quality, in itself and in general, cannot be relied upon to realise the hopes presently invested in it by Australian grape and wine producers, and by their industrial representatives. For if the effects of pursuing quality depend upon how quality *itself* is defined, assessed, and enacted, then pursuing quality in the abstract and through unspecified means cannot be relied upon to

produce any particular effects. As such, if the pursuit of quality is to succeed in revalorising Australian grapes and wines in the manner that wine industry participants appear to desire, then producers and their industrial representatives may need to discuss and define *how* quality is to be pursued. It may be necessary to identify, adopt, and support particular qualification and valuation practices which might bring about the enactments and distributions of value that they seek to realise – and perhaps, in so doing, help to reassemble the Australian wine industry into a form that is more hospitable to grape and wine producers. The conclusion of this thesis is, then, that if Australian wine producers' efforts to pursue quality are to achieve the ends that are asked of them then these producers and their industrial representatives will have to consider and investigate what differing material, commercial, and geographical formations might be assembled through contrasting modes of qualification. That is to say, they will need to take the question 'what difference might the pursuit of quality make?' as an invitation to consider what might be *made different*(ly) through various ways of pursuing quality. Perhaps, then, the true contribution of this study of quality in-the-making has been to open up this latter question by demonstrating that *how* quality is pursued makes a difference. For this move perhaps creates a possibility that the terms of debate over what is at stake in the pursuit of quality within, and maybe even beyond, the Australian industry wine might be modestly shifted.

Bibliography

- Abolafia, M., 1998. Markets as cultures: an ethnographic approach. In M. Callon, ed. *The Laws of the Markets*. Oxford: Blackwell Publishers, pp. 69–85.
- ABS, 2008. *AUSTRALIAN WINE AND GRAPE INDUSTRY 2007*, Canberra: Australian Bureau of Statistics. Available at: [http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/3D8D6735F914EAB4CA2573DB0011DBC9/\\$File/13290_2007.pdf](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/3D8D6735F914EAB4CA2573DB0011DBC9/$File/13290_2007.pdf) [Accessed December 07, 2010].
- ABS, 2012. *AUSTRALIAN WINE AND GRAPE INDUSTRY 2010-2011*, Canberra: Australian Bureau of Statistics. Available at: [http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/BD359423C26FED75CA2579AE000D6385/\\$File/13290_2010-2011.pdf](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/BD359423C26FED75CA2579AE000D6385/$File/13290_2010-2011.pdf) [Accessed December 07, 2010].
- Adam, B., 1990. *Time and social theory*, Cambridge: Polity.
- Adam, B., 1998. *Timescapes of modernity: the environment and invisible hazards*, London: Routledge.
- Adam, B., 2006. Time. *Theory, Culture & Society*, 23(2-3), pp.119–126.
- Agricola Crop Insurance, *Viticulture Crop Insurance Policy*. Available at: http://www.agricola.com.au/files/files/236_FTVAUPW-2014-V1.0_WEB.pdf [Accessed April 10, 2013].
- Akerlof, G., 1970. The market for “lemons”: Quality uncertainty and the market mechanism. *The quarterly journal of economics*, 84(3), pp.488–501.
- Allaire, G., 2004. Quality in economics: a cognitive perspective. In M. Harvey, A. McMeekin, & A. Warde, eds. *Qualities of food*. Manchester: Manchester University Press, pp. 61–93.
- Allen, J., 2011. Powerful assemblages? *Area*, 43(2), pp.154–157.
- Allen, M., 2010. *The future makers: Australian wines for the 21st century*, Melbourne: Hardie Grant.
- Allen, M., 2012. *The History of Australian Wine: stories from the vineyard to the cellar door*, Carlton: Victory Books.
- Amin, A., 2009. cultural economy. In D. Gregory et al., eds. *The Dictionary of Human Geography*. Oxford: Blackwell Publishing Ltd, pp. 128–129.
- Amin, A. & Thrift, N.J., 2004. Introduction. In A. Amin & N. Thrift, eds. *The Blackwell cultural economy reader*. Malden, MA: Blackwell, pp. x–xxx.
- Amin, A. & Thrift, N., 2007. Cultural-economy and cities. *Progress in Human Geography*, 31(2), pp.143–161.

- Amit, V., 2000. Introduction: constructing the field. In V. Amit, ed. *Constructing the Field: Ethnographic Fieldwork in the Contemporary World*. London: Routledge, pp. 1–18.
- Anderson, B. et al., 2012. On assemblages and geography. *Dialogues in Human Geography*, 2(2), pp.171–189.
- Anderson, B. & Harrison, P., 2010. The Promise of Non-Representational Theories. In B. Anderson & P. Harrison, eds. *Taking-Place: Non-Representational Theories and Geography*. Farnham: Ashgate, pp. 1–34.
- Anderson, B. & McFarlane, C., 2011. Assemblage and geography. *Area*, 43(2), pp.124–127.
- Anderson, K., 2004. Australia. In K. Anderson, ed. *The World's Wine Markets: Globalization at Work*. Cheltenham: Edward Elgar Pub., pp. 252–286.
- Anderson, K., Norman, D. & Wittwer, G., 2003. Globalisation of the World's Wine Markets. *The World Economy*, 26(5), pp.659–687.
- Appadurai, A., 1986. Commodities and the politics of value. In A. Appadurai, ed. *The social life of things: commodities in cultural perspective*. Cambridge: Cambridge University Press, pp. 3–63.
- Appadurai, A., 2011. The Ghost in the Financial Machine. *Public Culture*, 23(3), pp.517–539.
- Appadurai, A., 2012. The Spirit of Calculation. *Cambridge Anthropology*, 30(1), pp.3–17.
- Arce, A. & Marsden, T., 1993. The social construction of international food: a new research agenda. *Economic Geography*, 69(3), pp.293–311.
- Aspers, P., 2009. Knowledge and valuation in markets. *Theory and Society*, 38(2), pp.111–131.
- Aspers, P. & Beckert, J., 2011. Introduction: Value in Markets. In J. Beckert & P. Aspers, eds. *The Worth of Goods: Valuation and Pricing in the Economy*. Oxford: Oxford University Press, pp. 3–38.
- Aylward, D., 2007. Differentiation or path dependency: a critical look at the Australian wine industry. *Strategic Change*, 16(8), pp.385–398.
- Aylward, D., 2008. Towards a Cultural Economy Paradigm for the Australian Wine Industry. *Prometheus*, 26(4), pp.373–385.
- Baker, K., 2009. *Species of Time: sows, stockmen and labour*, London: Goldsmiths, University of London. Available at: http://www.gold.ac.uk/anthropology/garp/GARP16_web.pdf [Accessed January 29, 2012].
- Bakker, K. & Bridge, G., 2006. Material worlds? Resource geographies and the “matter of nature.” *Progress in Human Geography*, 30(1), pp.5–27.
- Banks, G. et al., 2007. Place “From One Glance”: the use of place in the marketing of New Zealand and Australian wines. *Australian Geographer*, 38(1), pp.15–35.
- Banks, G. & Overton, J., 2010. Old World, New World, Third World? Reconceptualising the Worlds of Wine. *Journal of Wine Research*, 21(1), pp.57–75.

- Banks, G. & Sharpe, S., 2006. Wine, regions and the geographic imperative: The Coonawarra example. *New Zealand Geographer*, 62(3), pp.173–184.
- Barbera, F. & Audifredi, S., 2012. In Pursuit of Quality. The Institutional Change of Wine Production Market in Piedmont. *Sociologia Ruralis*, 52(3), pp.311–331.
- Barham, E., 2002. Towards a theory of values-based labeling. *Agriculture and Human Values*, 19(4), pp.349–360.
- Barham, E., 2003. Translating terroir: the global challenge of French AOC labeling. *Journal of Rural Studies*, 19(1), pp.127–138.
- Barry, A., 2001. *Political machines: governing a technological society*, London: Athlone Press.
- Barry, A., 2010. Materialist Politics: Metallurgy. In B. Braun & S. J. Whatmore, eds. *Political Matter: Technoscience, Democracy, and Public Life*. London: University of Minnesota Press, pp. 89–118.
- Barry, A., 2013a. *Material politics: disputes along the pipeline*, Chichester: John Wiley & Sons.
- Barry, A., 2013b. The Translation Zone: Between Actor-Network Theory and International Relations. *Millennium - Journal of International Studies*, 41(3), pp.413–429.
- Barth, J., 2009. *TASTE, ETHICS, AND THE MARKET IN GUATEMALAN COFFEE. AN ETHNOGRAPHIC STUDY*. D.Phil. thesis, University of Oxford.
- Beckert, J. & Musselin, C., 2013. Introduction. In J. Beckert & C. Musselin, eds. *Constructing Quality: The Classification of Goods in Markets*. Oxford: Oxford University Press, pp. 1–28.
- Beeston, J., 2001. *A concise history of Australian wine*, St. Leonards, NSW: Allen & Unwin.
- Bennett, J., 2001. *The enchantment of modern life : attachments, crossings, and ethics*, Princeton, N.J. ; Oxford: Princeton University Press.
- Bennett, J., 2007. Edible matter. *New Left Review*, 45(May-June), pp.133–145.
- Bennett, J., 2010. *Vibrant Matter: a political ecology of things*, Durham, N.C.: Duke University Press.
- Bernard, H.R., 2006. *Research methods in anthropology: qualitative and quantitative approaches*, Walnut Creek, CA: AltaMira Press.
- Berndt, C. & Boeckler, M., 2009. Geographies of circulation and exchange: constructions of markets. *Progress in Human Geography*, 33(4), pp.535–551.
- Berndt, C. & Boeckler, M., 2012. Geographies of Marketization. In T. J. Barnes, J. Peck, & E. Sheppard, eds. *The Wiley-Blackwell Companion to Economic Geography*. Oxford: Blackwell Publishing Ltd, pp. 199–212.
- Berndt, C. & Boeckler, M., 2011. Geographies of markets: Materials, morals and monsters in motion. *Progress in Human Geography*, 35(4), pp.559–567.

- Besky, S., 2013. The labor of terroir and the terroir of labor: Geographical Indication and Darjeeling tea plantations. *Agriculture and Human Values*, 31(1), pp.83-96.
- Beunza, D. & Garud, R., 2007. Calculators, lemmings or frame-makers? The intermediary role of securities analysts. *The Sociological Review*, 55(s2), pp.13-39.
- BGWA, *The Barossa: Barossa Grounds*. Available at: <http://www.barossa.com/8378ABB0-AEB6-11E1-A3440050568A4164> [Accessed May 22, 2013].
- Biggart, N.W. & Beamish, T.D., 2003. The Economic Sociology of Conventions: Habit, Custom, Practice, and Routine in Market Order. *Annual Review of Sociology*, 29(1), pp.443-464.
- Bingham, N., 2006. Bees, butterflies, and bacteria: biotechnology and the politics of nonhuman friendship. *Environment and Planning A*, 38(3), pp.483-498.
- Blanning, B., 2009. Australia and Regionality - genuine terroir or a marketing spin ? *Decanter.com*. Available at: <http://www.decanter.com/people-and-places/wine-articles/485156/australia-and-regionality-genuine-terroir-or-a-marketing-spin> [Accessed May 22, 2013].
- Boeckler, M. & Berndt, C., 2012. Geographies of circulation and exchange III: The great crisis and marketization "after markets." *Progress in Human Geography*, 37(3), pp.424-432.
- Bokulich, N. a et al., 2013. Microbial biogeography of wine grapes is conditioned by cultivar, vintage, and climate. *Proceedings of the National Academy of Sciences of the United States of America*, 111(1), pp.E139-48.
- Boland, T., 2013. Towards an anthropology of critique: The modern experience of liminality and crisis. *Anthropological Theory*, 13(3), pp.222-239.
- Boltanski, L. & Thévenot, L., 2006. *On justification: economies of worth*, Princeton: Princeton University Press.
- BOM, 2011. *Monthly Weather Review - South Australia March 2011*, Adelaide: Australian Bureau of Meteorology. Available at: <http://www.bom.gov.au/climate/mwr/sa/mwr-sa-201103.pdf> [Accessed February 07, 2012].
- BOM, 2012. *Annual Australian Climate Statement 2011*, Adelaide: Australian Bureau of Meteorology. Available at: http://www.bom.gov.au/announcements/media_releases/climate/change/20120104.shtml [Accessed November 21, 2012].
- Bourdieu, P., 1984. *Distinction: a social critique of the judgement of taste*, London: Routledge & Kegan Paul.
- Bowen, S., 2011. The Importance of Place: Re-territorialising Embeddedness. *Sociologia Ruralis*, 51(4), pp.325-348.
- Bowen, S. & Zapata, A.V., 2009. Geographical indications, terroir, and socioeconomic and ecological sustainability: The case of tequila. *Journal of Rural Studies*, 25(1), pp.108-119.
- Boyd, W., Prudham, S. & Schurman, R., 2001. Industrial Dynamics and the Problem of Nature. *Society & Natural Resources*, 14(7), pp.555-570.

- Boyer, D., 2008. Thinking through the Anthropology of Experts. *Anthropology in Action*, 15(2), pp.38–46.
- Braun, B., 2006. Environmental issues: global natures in the space of assemblage. *Progress in Human Geography*, 30(5), pp.644–654.
- Braun, B., 2008. Environmental issues: inventive life. *Progress in Human Geography*, 32(5), pp.667–679.
- Braun, B. & Whatmore, S.J., 2010. The Stuff of Politics: An Introduction. In B. Braun & S. J. Whatmore, eds. *Political Matter: Technoscience, Democracy, and Public Life*. London: University of Minnesota Press, pp. ix–xxxix.
- Brennan, T., 1997. Economy for the Earth: The labour theory of value without the subject/object distinction. *Ecological Economics*, 20(2), pp.175–185.
- Brice, J., 2014a. Attending to grape vines: perceptual practices, planty agencies and multiple temporalities in Australian viticulture. *Social & Cultural Geography*, 15(8), pp.942–965.
- Brice, J., 2014b. Killing in More-than-human Spaces: Pasteurisation, Fungi, and the Metabolic Lives of Wine. *Environmental Humanities*, 4, pp.171–194.
- Bridge, G. & Smith, A., 2003. Intimate encounters: culture - economy - commodity. *Environment and Planning D: Society and Space*, 21(3), pp.257–268.
- Browett, J., 1989. Supply imbalances and readjustment in the South Australian grape-growing sector. *Journal of Rural Studies*, 5(3), pp.279–293.
- Brown, S.D. & Capdevila, R., 1999. Perpetuum mobile: substance, force and the sociology of translation. In J. Law & J. Hassard, eds. *Actor network theory and after*. Oxford: Blackwell Publishers, pp. 26–50.
- Bryant, L. & Garnham, B., 2013. Beyond discourses of drought: The micro-politics of the wine industry and farmer distress. *Journal of Rural Studies*, 32, pp.1–9.
- Bryant, R.L., 2013. Branding natural resources: science, violence and marketing in the making of teak. *Transactions of the Institute of British Geographers*, 38(4), pp.517–530.
- Bryant, R.L. & Goodman, M.K., 2004. Consuming narratives: the political ecology of “alternative” consumption. *Transactions of the Institute of British Geographers*, 29(3), pp.344–366.
- Busch, L. & Juska, A., 1997. Beyond political economy : actor networks and the globalization of agriculture. *Review of International Political Economy*, 4(4), pp.688–708.
- Busch, L. & Tanaka, K., 1996. Rites of passage: Constructing quality in a commodity subsector. *Science, Technology & Human Values*, 21(1), pp.3–27.
- Buttel, F., 2001. Some reflections on late twentieth century agrarian political economy. *Sociologia Ruralis*, 41(2), pp.165–181.
- Çalışkan, K., 2010. *Market threads: how cotton farmers and traders create a global commodity*, Princeton, N.J.: Princeton University Press.

- Çalışkan, K., 2007. Price as a market device: cotton trading in Izmir Mercantile Exchange. *The sociological review*, 55(2), pp.241–260.
- Çalışkan, K. & Callon, M., 2009. Economization, part 1: shifting attention from the economy towards processes of economization. *Economy and Society*, 38(3), pp.369–398.
- Çalışkan, K. & Callon, M., 2010. Economization, part 2: a research programme for the study of markets. *Economy and Society*, 39(1), pp.1–32.
- Callon, M., 1991. Techno-economic networks and irreversibility. In J. Law, ed. *A Sociology of Monsters: Essays on Power, Technology and Domination*. London: Routledge, pp. 132–171.
- Callon, M., 1998a. An essay on framing and overflowing: economic externalities revisited by sociology. In M. Callon, ed. *The Laws of the Markets*. Oxford: Blackwell Publishers, pp. 244–269.
- Callon, M., 1998b. Introduction: The embeddedness of economic markets in economics. In M. Callon, ed. *The Laws of the Markets*. Oxford: Blackwell Publishers, pp. 1–57.
- Callon, M., 1999. Actor-network theory – the market test. In J. Law & J. Hassard, eds. *Actor network theory and after*. Oxford: Blackwell Publishers, pp. 181–195.
- Callon, M., 2005. Let's Put an End on Uncertainties. *Sociologie du travail*, 47(s1), pp.S94–S100.
- Callon, M., 2007a. An Essay on the Growing Contribution of Economic Markets to the Proliferation of the Social. *Theory, Culture & Society*, 24(7-8), pp.139–163.
- Callon, M., 2007b. What Does It Mean to Say That Economics Is Performative? In D. A. MacKenzie, F. Muniesa, & L. Siu, eds. *Do economists make markets? On the performativity of economics*. Princeton, N.J.: Princeton University Press, pp. 311–357.
- Callon, M., Lascoumes, P. & Barthe, Y., 2009. *Acting in an uncertain world: an essay on technical democracy*, Cambridge, Mass.: MIT Press.
- Callon, M. & Law, J., 2005. On qualculation, agency, and otherness. *Environment and Planning D: Society and Space*, 23(5), pp.717–733.
- Callon, M., Meadel, C. & Rabeharisoa, V., 2002. The economy of qualities. *Economy and Society*, 31(2), pp.194–217.
- Callon, M. & Muniesa, F., 2005. Economic markets as calculative collective devices. *Organization Studies*, 26(8), pp.1229–1250.
- Callon, M. & Rabeharisoa, V., 2004. Gino's lesson on humanity: genetics, mutual entanglements and the sociologist's role. *Economy and Society*, 33(1), pp.1–27.
- Campbell, H. & Liepins, R., 2001. Naming Organics: Understanding Organic Standards in New Zealand as a Discursive Field. *Sociologia Ruralis*, 41(1), pp.21–39.
- Candea, M., 2009. Arbitrary Locations: In Defence of the Bounded Field-site. In M.-A. Falzon, ed. *Multi-sited ethnography: theory, praxis and locality in contemporary research*. Farnham: Ashgate, pp. 24–47.

- Carmalt, P., Hathaway, S. & Inness, R., 2010. *2010 South Australian Winegrape Utilisation & Pricing Survey*. Stepney, SA: Phylloxera and Grape Industry Board of South Australia. Available at: http://www.phylloxera.com.au/media/SA_report_2010.pdf [Accessed December 24, 2013].
- Carolan, M.S., 2013. The Wild Side of Agro-food Studies: On Co-experimentation, Politics, Change, and Hope. *Sociologia Ruralis*, 53(4), pp.413–431.
- Carrier, J.G., 1995. *Gifts and commodities: exchange and western capitalism since 1700*, London: Routledge.
- Castree, N., 2004. Economy and culture are dead! Long live economy and culture! *Progress in Human Geography*, 28(2), pp.204–226.
- Castree, N., 2009. The Spatio-temporality of Capitalism. *Time & Society*, 18(1), pp.26–61.
- CGU Insurance Limited, n.d. *wine grape growers insurance policy*. Available at: <http://www.cgu.com.au/insurance/cgu/files/55/558ed6b1-5637-4903-8aad-47ec57594516.pdf> [Accessed April 10, 2013].
- Charters, S., 2006. *Wine and Society: The Social and Cultural Context of a Drink*, Oxford: Elsevier Butterworth-Heinemann.
- Choy, T.K., 2011. *Ecologies of comparison: an ethnography of endangerment in Hong Kong*, Durham [NC]: Duke University Press.
- Cidell, J.L. & Alberts, H.C., 2006. Constructing quality: The multinational histories of chocolate. *Geoforum*, 37(6), pp.999–1007.
- Clark, N., 2011. *Inhuman nature: sociable life on a dynamic planet*, London: SAGE.
- Clifford, J., 2010. Introduction: Partial Truths. In J. Clifford & G. Marcus, eds. *Writing Culture: The Poetics And Politics of Ethnography*. London: University of California Press, pp. 1–26.
- Climent-López, E. et al., 2014. Measuring quality conventions in the food industry: Applications to the wine sector in Spain. *Geoforum*, 56, pp.148–160.
- Cochoy, F., 2007. A sociology of market-things: on tending the garden of choices in mass retailing. *The Sociological Review*, 55(s2), pp.109–129.
- Cochoy, F., 2008. Calculation, qualculation, calculation: shopping cart arithmetic, equipped cognition and the clustered consumer. *Marketing Theory*, 8(1), pp.15–44.
- Colman, T., 2008. *Wine politics: how governments, environmentalists, mobsters, and critics influence the wines we drink*, Berkeley: University of California Press.
- Cook et al., I., 2006. Geographies of food: following. *Progress in Human Geography*, 30(5), pp.655–666.
- Cook, I., 2004. Follow the Thing: Papaya. *Antipode*, 36(4), pp.642–664.

- Cook, J., Laidlaw, J. & Mair, J., 2009. What if There is No Elephant? Towards a Conception of an Un-sited Field. In M.-A. Falzon, ed. *Multi-sited ethnography: theory, praxis and locality in contemporary research*. Farnham: Ashgate, pp. 47–73.
- Cormode, L. & Hughes, A., 1999. The economic geographer as a situated researcher of elites. *Geoforum*, 30(4), pp.299–300.
- Crang, M., 2003. Qualitative methods: touchy, feely, look-see? *Progress in Human Geography*, 27(4), pp.494–504.
- Crang, M. & Cook, I., 2007. *Doing ethnographies*, London: SAGE.
- Creed, M., 2012. *Economic report: Rural Commodities Wrap, February 2012*. Available at: http://www.nab.com.au/wps/wcm/connect/51f095804a5cad66996afb89011d4f3f/NABRuralCommoditiesWrap_Feb2012.pdf [Accessed March 09, 2013].
- Cronon, W., 1991. *Nature's metropolis: Chicago and the Great West*, New York: W.W. Norton.
- Croser, B., 2010. Prospects for Australian Smaller “Fine Wine” Producers. In *The World's Wine Markets by 2030: Terroir, Climate Change, R&D and Globalization*. Adelaide: Centre for International Economic Studies, University of Adelaide.
- CRWGA & CVWI, 2011. *Clare Valley Demand Evaluation: Vintage 2011*. Clare, SA: Clare Valley Grape and Wine.
- Dalitz, R., 2009. The Multiple Roles of the Australian Wine Show System. *Journal of Wine Research*, 20(3), pp.231–251.
- Daynes, S., 2013. The Social Life of Terroir among Bordeaux Winemakers. In R. E. Black & R. C. Ulin, eds. *Wine and Culture: Vineyard to glass*. London: Bloomsbury Academic, pp. 15–32.
- Deaton, B.J., Busch, L. & Samuels, W.J., 2010. A note on the economy of qualities: attributing production practices to agricultural practices. *Journal of Rural Social Sciences*, 25(3), pp.99–110.
- DeLanda, M., 2006. *A new philosophy of society: assemblage theory and social complexity*, London: Continuum.
- Deleuze, G. & Guattari, F., 2004. *A thousand plateaus: capitalism and schizophrenia*, London: Continuum.
- Demossier, M., 2010. *Wine drinking culture in France: a national myth or a modern passion?*, Cardiff: University of Wales Press.
- Demossier, M., 2011. Beyond terroir: territorial construction, hegemonic discourses, and French wine culture. *Journal of the Royal Anthropological Institute*, 17(4), pp.685–705.
- Despret, V., 2004. The Body We Care for: Figures of Anthro-zoo-genesis. *Body & Society*, 10(2-3), pp.111–134.
- Despret, V., 2013a. From secret agents to interagency. *History and theory*, 52(4), pp.29–44.

- Despret, V., 2013b. Responding Bodies and Partial Affinities in Human-Animal Worlds. *Theory, Culture & Society*, 30(7-8), pp.51–76.
- Dewey, J., 1939. *Theory of valuation*, Chicago, Ill.: The University of Chicago Press.
- Dolan, C. & Humphrey, J., 2000. Governance and trade in fresh vegetables: The impact of UK supermarkets on the African horticulture industry. *Journal of Development Studies*, 37(2), pp.147–176.
- Donaldson, A., Lowe, P. & Ward, N., 2002. Virus-crisis-institutional change: The foot and mouth actor network and the governance of rural affairs in the UK. *Sociologia Ruralis*, 42(3), pp.201–214.
- Dunphy, R. & Lockshin, L., 1998. A history of the Australian wine show system. *Journal of Wine Research*, 9(2), pp.87–105.
- Easingwood, C., Lockshin, L. & Spawton, A., 2011. The Drivers of Wine Regionality. *Journal of Wine Research*, 22(1), pp.19–33.
- Easton, S., 2009. Terroir in Australia - regionality by any other name? *WineWisdom.com*. Available at: <http://www.winewisdom.com/articles/regional-profiles/terroir-in-australia-regionality-by-any-other-name/> [Accessed May 22, 2013].
- Edwards, E., 2007. AN ETHICS FOR WORKING UP? Japanese Corporate Scandals and Rethinking Lessons about Fieldwork. *Critical Asian Studies*, 39(4), pp.561–582.
- Elders Insurance, 2012. *Viticulture Crop Insurance Policy*. Sydney: Elders Insurance. Available at: <http://www.eldersinsurance.com.au/upload/Viticulture-Crop-Insurance-Policy-06-10.pdf> [Accessed April 10, 2013].
- Englund, H. & Yarrow, T., 2013. The Place of Theory: Rights, Networks, and Ethnographic Comparison. *Social Analysis*, 57(3), pp.132–149.
- Entwistle, J., 2006. The Cultural Economy of Fashion Buying. *Current Sociology*, 54(5), pp.704–724.
- Entwistle, J. & Rocamora, A., 2006. The Field of Fashion Materialized: A Study of London Fashion Week. *Sociology*, 40(4), pp.735–751.
- Espeland, W. & Stevens, M., 1998. Commensuration as a social process. *Annual review of sociology*, 24, pp.313–343.
- Evans-Pritchard, E.E., 1939. Nuer Time-Reckoning. *Journal of the International African Institute*, 12(2), pp.189–216.
- Evans-Pritchard, E.E., 1969. *The Nuer: a description of the modes of livelihood and political institutions of a Nilotic people*, Oxford: Oxford University Press.
- Faier, L., 2011. Fungi, trees, people, nematodes, beetles, and weather: ecologies of vulnerability and ecologies of negotiation in matsutake commodity exchange. *Environment and Planning A*, 43(5), pp.1079–1097.
- Faith, N., 2003. *Australia's liquid gold*, London: Mitchell Beazley.

- Falzon, M.-A., 2009. Introduction: Multi-sited Ethnography: Theory, Praxis and Locality in Contemporary Research. In M.-A. Falzon, ed. *Multi-sited ethnography: theory, praxis and locality in contemporary research*. Farnham: Ashgate, pp. 1–24.
- Fernández, E., 2010. Unsuccessful responses to quality uncertainty: Brands in Spain's sherry industry, 1920–1990. *Business History*, 52(1), pp.100–119.
- Fischer, M., 2007. Culture and cultural analysis as experimental systems. *Cultural Anthropology*, 22(1), pp.1–65.
- FitzSimmons, M. & Goodman, D., 1998. INCORPORATING NATURE: Environmental narratives and the reproduction of food. In B. Braun & N. Castree, eds. *REMAKING REALITY: Nature at the millenium*. London: Routledge, pp. 193–219.
- Foley, M., 2009. For Australian Winemakers , More Turns Out to Be Less. *The New York Times*, 4 July, pp.1–4.
- Fortun, K., 2010. Foreword to the Twenty-fifth Anniversary Edition. In J. Clifford & G. Marcus, eds. *Writing Culture: The Poetics And Politics of Ethnography*. London: University of California Press, pp. vii–xxii.
- Fortun, K., 2012. Ethnography in Late Industrialism. *Cultural Anthropology*, 27(3), pp.446–464.
- Foster, R., 2007. The work of the new economy: Consumers, brands, and value creation. *Cultural Anthropology*, 22(4), pp.707–731.
- Foster, R., 2013. Things to do with brands: Creating and calculating value. *HAU: Journal of Ethnographic Theory*, 3(1), pp.44–63.
- Fourcade, M., 2012. THE VILE AND THE NOBLE: On the Relation between Natural and Social Classifications in the French Wine World. *The Sociological Quarterly*, 53(4), pp.524–545.
- Franklin, A., 2008. A Choreography of Fire: A Posthumanist Account of Australians and Eucalypts. In A. Pickering & K. Guzik, eds. *The mangle in practice: science, society, and becoming*. Durham, N.C.: Duke University Press, pp. 17–45.
- Freidberg, S., 2001. On the trail of the global green bean: methodological considerations in multi-site ethnography. *Global Networks*, 1(4), pp.353–368.
- Freidberg, S., 2003. Culture, conventions and colonial constructs of rurality in south–north horticultural trades. *Journal of Rural Studies*, 19(1), pp.97–109.
- Freidberg, S., 2004. *French beans and food scares: culture and commerce in an anxious age*, Oxford: Oxford University Press.
- Freidberg, S., 2007. Supermarkets and imperial knowledge. *Cultural Geographies*, 14(3), pp.321–342.
- Freidberg, S., 2013. Calculating sustainability in supply chain capitalism. *Economy and Society*, 42(4), pp.571–596.

- Friedland, W., 2001. Reprise on Commodity Systems Methodology. *International Journal of Sociology of Agriculture and Food*, 9(1), pp.82–103.
- Friedland, W.H., Barton, A.E. & Thomas, R.J., 1981. *Manufacturing green gold: capital, labor, and technology in the lettuce industry*, Cambridge: Cambridge University Press.
- Gad, C., 2013. A Postplural Attitude: Reflections on subjectivity and ontology. *NatureCulture*, 2(1), pp.50–79.
- Gade, D.W., 2004. Tradition, territory, and terroir in French viticulture: Cassis, France, and appellation controlee. *Annals of the Association of American Geographers*, 94(4), pp.848–867.
- Garcia-Parpet, M.-F., 2007. The Social Construction of a Perfect Market: The Strawberry Auction at Fontaines-en-Sologne. In D. A. MacKenzie, F. Muniesa, & L. Sui, eds. *Do economists make markets? On the performativity of economics*. Princeton, N.J.: Princeton University Press, pp. 20–53.
- Garcia-Parpet, M.-F., 2008. Markets, prices and symbolic value: grands crus and the challenges of global markets. *International Review of Sociology*, 18(2), pp.237–252.
- Du Gay, P. & Pryke, M., 2002. Cultural economy: An introduction. In P. du Gay & M. Pryke, eds. *Cultural Economy: Cultural Analysis and Commercial Life*. London: SAGE, pp. 1–20.
- Gell, A., 1992. *The anthropology of time: cultural constructions of temporal maps and images*, Oxford: Berg.
- van Gennep, A., 1977. *The rites of passage*, London: Routledge.
- Gibson-Graham, J.K., 2006. *The end of capitalism (as we knew it): a feminist critique of political economy*, Minneapolis: University of Minnesota Press.
- Gibson-Graham, J.K., 2008. Diverse economies: performative practices for 'other worlds'. *Progress in Human Geography*, 32(5), pp.613–632.
- Gilbert, J. a, van der Lelie, D. & Zarraonaindia, I., 2014. Microbial terroir for wine grapes. *Proceedings of the National Academy of Sciences of the United States of America*, 111(1), pp.5–6.
- Gladstones, J., 2011. *Wine, terroir and climate change*, Kent Town: Wakefield Press.
- Glennie, P. & Thrift, N.J., 2009. *Shaping the day: a history of timekeeping in England and Wales 1300-1800*, Oxford: Oxford University Press.
- Gomart, E., 2004. Surprised by Methadone: in Praise of Drug Substitution Treatment in a French Clinic. *Body & Society*, 10(2-3), pp.85–110.
- Goode, J., 2002. The two cultures: how the rise of the brands is changing the face of wine. *WineAnorak blog*. Available at: <http://www.wineanorak.com/twocultures.htm> [Accessed June 17, 2013].
- Goodman, D., 1999. Agro-Food Studies in the "Age of Ecology": Nature, Corporeality, Bio-Politics. *Sociologia Ruralis*, 39(1), pp.17–38.

- Goodman, D., 2001. Ontology matters: The relational materiality of nature and agro-food studies. *Sociologia Ruralis*, 41(2), pp.182–200.
- Goodman, D., 2003. The quality “turn” and alternative food practices: reflections and agenda. *Journal of rural studies*, 19, pp.1–7.
- Goodman, D., Sorj, B. & Wilkinson, J., 1987. *From farming to biotechnology: a theory of agro-industrial development*, Oxford: Basil Blackwell.
- Gordon, W., 2004. *A Survey of Wine Grape Producers in the Clare and Victorian Murray Valley Regions, 2002-03*, Canberra: Australian Bureau of Agricultural and Resource Economics. Available at: http://data.daff.gov.au/data/warehouse/pe_abarebrs99001117/PC12849.pdf [Accessed April 10, 2013].
- Graeber, D., 2001. *Toward an anthropological theory of value: the false coin of our own dreams*, New York: Palgrave.
- Grainger, K., 2009. *Wine Quality: Tasting and Selection*, Oxford: Wiley-Blackwell.
- Granovetter, M., 1985. Economic Action and Social Structure: The Problem of Embeddedness. *American journal of sociology*, 91(3), pp.481–510.
- Green, G. & Fairweather, J., 1984. AGRICULTURAL PRODUCTION AND CAPITALISM: THE STRUCTURED AND EXPRESSIVE ORIENTATIONS. *Sociologia Ruralis*, XXIV(2), pp.149–156.
- Greenhough, B., 2010. Vitalist Geographies: Life and the More-Than-Human. In B. Anderson & P. Harrison, eds. *Taking-Place: Non-Representational Theories and Geography*. Farnham: Ashgate, pp. 37–54.
- Gregory, C.A., 1982. *Gifts and commodities*, New York: Academic Press.
- Gregory, C.A., 1997. *Savage money: the anthropology and politics of commodity exchange*, London: Routledge.
- Grossberg, L., 2010. Modernity and Commensuration. *Cultural Studies*, 24(3), pp.295–332.
- Grossberg, L., Hardin, C. & Palm, M., 2014. Contributions to a Conjunctural Theory of Valuation. *Rethinking Marxism*, 26(3), pp.306–335.
- Gunning-Trant, C. & Shafron, W., 2012. *Australian wine grape production projections to 2013 – 14*, Canberra: Australian Bureau of Resource Economics and Sciences. Available at: <http://data.daff.gov.au/data/warehouse/awgppd9abcc005/awgppd9abcc0052012/RR12.03WineGrapeProjections.pdf> [Accessed April 11, 2013].
- Gusterson, H., 1997. Studying up revisited. *PoLAR: Political and Legal Anthropology Review*, 20(1), pp.114–119.
- Guthey, G.T., 2008. Agro-industrial conventions: some evidence from northern California’s wine industry. *The Geographical Journal*, 174(2), pp.138–148.
- Guthman, J., 2002. Commodified Meanings, Meaningful Commodities: Links through the Organic System of Provision. *Sociologia Ruralis*, 42(4), pp.295–311.

- Guthman, J., 2007. The Polanyian Way? Voluntary Food Labels as Neoliberal Governance. *Antipode*, 39(3), pp.456–478.
- Guyer, J.I., 2004. *Marginal gains: monetary transactions in Atlantic Africa*, Chicago: University of Chicago Press.
- Gwynne, R.N., 2008. UK retail concentration, Chilean wine producers and value chains. *The Geographical Journal*, 174(2), pp.97–108.
- Hackworth, P., 2011. *Background Paper: The Oversupply of Winegrapes in South Australia*, Glandore, SA: Winegrape Council of South Australia. Available at: <http://wgcsa.com.au/wp-content/uploads/Background-Paper-SA-Wine-Industry-Review-November-2011-Update.pdf> [Accessed December 24, 2013].
- Hadders, H., 2009. Enacting death in the intensive care unit: medical technology and the multiple ontologies of death. *Health*, 13(6), pp.571–87.
- Halliday, J., 1985. *Clare Valley: the history, the vignerons & the wines*, South Yarra, Vic., Australia: Vin Publications.
- Halliday, J., 2009. *The Australian wine encyclopedia*, London: Hardie Grant.
- Halliday, J.C., 2012. *James Halliday Australian Wine Companion 2013*, London: Hardie Grant Books.
- Hann, C.M., 1998. Introduction: the embeddedness of property. In C. M. Hann, ed. *Property relations: renewing the anthropological tradition*. Cambridge: Cambridge University Press, pp. 1–47.
- Hannerz, U., 2003. Being there... and there... and there! Reflections on Multi-Site Ethnography. *Ethnography*, 4(2), pp.201–216.
- Haraway, D., 1988. SITUATED KNOWLEDGES: THE SCIENCE QUESTION IN FEMINISM AND THE PRIVILEGE OF PARTIAL PERSPECTIVE. *Feminist Studies*, 14(3), pp.575–599.
- Haraway, D.J., 1997. *ModestWitness@SecondMillennium.FemaleManMeetsOncoMouse: feminism and technoscience*, New York: Routledge.
- Hardie, W., 2000. Grapevine biology and adaptation to viticulture. *Australian Journal of Grape and Wine Research*, 6(2), pp.74–81.
- Harris, M., 1998. The rhythm of life on the Amazon floodplain: seasonality and sociality in a riverine village. *Journal of the Royal Anthropological Institute*, 4(1), pp.65–82.
- Harrison, P., 2008. Corporeal remains: Vulnerability, proximity, and living on after the end of the world. *Environment and Planning A*, 40(2), pp.423–445.
- Harrison, P., 2009. In the absence of practice. *Environment and Planning D: Society and Space*, 27(6), pp.987–1009.
- Harvey, D., 1984. *The Limits to capital.*, Oxford: Blackwell.

- Harvey, D., 2001. *Spaces of capital: Towards a Critical Geography*, Edinburgh: Edinburgh University Press.
- Harvey, M., McMeekin, A. & Warde, A., 2004. Introduction. In M. Harvey, A. McMeekin, & A. Warde, eds. *Qualities of food*. Manchester: Manchester University Press, pp. 1–18.
- Hathaway, S., 2005. *2005 South Australian Winegrape Utilisation and Pricing Survey*, Adelaide: Phylloxera and Grape Industry Board of South Australia. Available at: http://www.phylloxera.com.au/media/Survey_report2005.pdf [Accessed December 24, 2013].
- Haughton, G. & Browett, J., 1995. Flexible theory and flexible regulation: collaboration and competition in the McLaren Vale wine industry in South Australia. *Environment and Planning A*, 27(1), pp.41–61.
- Hayman, P. & Thomas, D., 2013. *Assessment of vulnerability to climate change across Australia's wine regions*, Adelaide: South Australian Research and Development Institute. Available at: <http://research.agwa.net.au/wp-content/uploads/2013/09/SAR-1002.pdf> [Accessed 29 April 2013].
- Hayward, D. & Lewis, N., 2008. Regional dynamics in the globalising wine industry: the case of Marlborough, New Zealand. *The Geographical Journal*, 174(2), pp.124–137.
- Head, L. et al., 2014. Vegetal politics: belonging, practices and places. *Social & Cultural Geography*, 15(8), pp.861–870.
- Head, L., Atchison, J. & Gates, A., 2012. *Ingrained: a human bio-geography of wheat*, Farnham: Ashgate.
- Heath, D. & Meneley, A., 2007. Techne, Technoscience, and the Circulation of Comestible Commodities : An Introduction. *American Anthropologist*, 109(4), pp.593–602.
- Hébert, K., 2010. In Pursuit of Singular Salmon: Paradoxes of Sustainability and the Quality Commodity. *Science as Culture*, 19(4), pp.553–581.
- Hébert, K., 2014. The matter of market devices: Economic transformation in a southwest Alaskan salmon fishery. *Geoforum*, 53, pp.21–30.
- Helgesson, C.-F. & Muniesa, F., 2014. Valuation Is Work. *Valuation Studies*, 2(1), pp.1–4.
- Henderson, G.L., 1999. *California & the fictions of capital*, New York: Oxford University Press.
- Hendriks, R., 2012. Tackling indifference--clowning, dementia, and the articulation of a sensitive body. *Medical anthropology*, 31(6), pp.459–76.
- Hennion, A., 2005. Pragmatics of Taste. In M. D. Jacobs & N. W. Hanrahan, eds. *The Blackwell companion to the sociology of culture*. Oxford: Blackwell Publishing Ltd, pp. 131–144.
- Hennion, A., 2007. Those Things That Hold Us Together: Taste and Sociology. *Cultural Sociology*, 1(1), pp.97–114.
- Herbert, S., 2000. For ethnography. *Progress in Human Geography*, 24(4), pp.550–568.

- Hetherington, K. & Lee, N., 2000. Social order and the blank figure. *Environment and Planning D: Society and Space*, 18(2), pp.169–184.
- Heuts, F. & Mol, A., 2013. What Is a Good Tomato? A Case of Valuing in Practice. *Valuation Studies*, 1(2), pp.125–146.
- Hinchliffe, S. et al., 2007. Ecologies and economies of action—sustainability, calculations, and other things. *Environment and Planning A*, 39(2), pp.260–282.
- Hinchliffe, S., 2010. Working with Multiples: A Non-Representational Approach to Environmental Issues. In B. Anderson & P. Harrison, eds. *Taking-Place: Non-Representational Theories and Geography*. Farnham: Ashgate, pp. 303–320.
- Hird, M.J., 2009. *The origins of sociable life: evolution after science studies*, London: Palgrave.
- Hirschauer, S., 2006. Putting things into words. Ethnographic description and the silence of the social. *Human Studies*, 29(4), pp.413–441.
- Høyrup, J.F. & Munk, A., 2005. Translating Terroir - Sociomaterial Potentials in Ethnography and Wine-growing. *Ethnologica Scandinavica*, 37, pp.5–20.
- Hustak, C. & Myers, N., 2012. Involuntary Momentum: Affective Ecologies and the Sciences of Plant/Insect Encounters. *Differences: A Journal of Feminist Cultural Studies*, 23(3), pp.74–118.
- Hutchins, E., 1995. *Cognition in the wild*, Cambridge, Mass.: MIT Press.
- Hutter, M. & Stark, D., n.d. Pragmatist Perspectives on Valuation: An Introduction. In A. B. Antal, M. Hutter, & D. Stark, eds. *Moments of Valuation: Exploring Sites of Dissonance*. Oxford: Oxford University Press, pp. 1–14. Available at: [http://www.thesenseofdissonance.com/media/paper Stark Pragmatist Perspectives On Valuation.pdf](http://www.thesenseofdissonance.com/media/paper_Stark_Pragmatist_Perspectives_On_Valuation.pdf) [Accessed June 18, 2014].
- Ilbery, B. & Kneafsey, M., 2000. Producer constructions of quality in regional speciality food production: a case study from south west England. *Journal of Rural Studies*, 16(2), pp.217–230.
- Ingold, T., 2000. *The perception of the environment: essays on livelihood, dwelling and skill*, London: Routledge.
- Ingold, T., 2004. Beyond biology and culture. The meaning of evolution in a relational world. *Social Anthropology*, 12(2), pp.209–221.
- Ingold, T., 2011. *Being alive: essays on movement, knowledge and description*, London: Routledge.
- Inhetveen, H., 1994. Farming Women, Time and the 'Re-agrarianization' of Consciousness. *Time & Society*, 3(3), pp.259–276.
- Inness, R. & Purtle, C., 2011. *2011 South Australian Winegrape Utilisation and Pricing Survey*, Adelaide: Phylloxera and Grape Industry Board of South Australia. Available at: <http://www.phylloxera.com.au/media/SA-report-2011.pdf> [Accessed October 04, 2012].

- Jackson, P., 2002. Commercial cultures: transcending the cultural and the economic. *Progress in Human Geography*, 26(1), pp.3–18.
- Jefford, A., 2010a. Forging the golden handcuffs. Available at: <http://www.andrewjefford.com/node/729> [Accessed May 22, 2013].
- Jefford, A., 2010b. New World versus Old World success in global wine markets by 2030. In *The World's Wine Markets by 2030: Terroir, Climate Change, R&D and Globalization*. Adelaide: Centre for International Economic Studies, University of Adelaide.
- Jensen, C.B., 2012. Anthropology as a Following Science Humanity and Sociality in Continuous Variation. *NatureCulture*, 1(1), pp.1–24.
- Jones, O., 2011. Lunar – solar rhythm patterns: towards the material cultures of tides. *Environment and Planning A*, 43(10), pp.2285–2303.
- Jones, O., 2010. “The Breath of the Moon”: The Rhythmic and Affective Time-Spaces of UK Tides. In T. Edensor, ed. *Geographies of Rhythm: Nature, Place, Mobilities and Bodies*. Farnham: Ashgate, pp. 189–203.
- Jones, O. & Cloke, P.J., 2002. *Tree cultures: the place of trees and trees in their place*, Oxford: Berg.
- Josling, T., 2006. The war on terroir: geographical indications as a transatlantic trade conflict. *Journal of Agricultural Economics*, 57(3), pp.337–363.
- Jung, Y., 2014. Tasting and Judging the Unknown Terroir of the Bulgarian Wine: The Political Economy of Sensory Experience. *Food and Foodways*, 22(1-2), pp.24–47.
- Kansil, M. & Roberts, J., 2013. *Expert Report on the Profitability & Dynamics of the Australian Wine Industry*, Sydney: Centaurus Partners Ltd. Available at: <http://www.wfa.org.au/assets/noticeboard/Expert-Review-Report.pdf> [Accessed November 25, 2013].
- Karpik, L., 2010. *Valuing the Unique: The Economics of Singularities*, Princeton: Princeton University Press.
- Kirksey, S.E., Shapiro, N. & Brodine, M., 2013. Hope in blasted landscapes. *Social Science Information*, 52(2), pp.228–256.
- Kjellberg, H. et al., 2013. Valuation studies? Our collective two cents. *Valuation Studies*, 1(1), pp.11–30.
- Kjellberg, H. & Helgesson, C.-F., 2006. Multiple versions of markets: Multiplicity and performativity in market practice. *Industrial Marketing Management*, 35(7), pp.839–855.
- Kjellberg, H. & Helgesson, C.-F., 2010. POLITICAL MARKETING: Multiple values, performativities and modes of engaging. *Journal of Cultural Economy*, 3(2), pp.279–297.
- Kloppenborg, J.R., 2004. *First the seed : the political economy of plant biotechnology, 1492-2000* 2nd ed., Madison: University of Wisconsin Press.

- Knorr Cetina, K., 2004. How are Global Markets Global? The Architecture of a Flow World. In K. Knorr Cetina & A. Preda, eds. *The Sociology of Financial Markets*. Oxford: Oxford University Press, pp. 38–61.
- Knorr Cetina, K., 2006. The Market. *Theory, Culture & Society*, 23(2-3), pp.551–556.
- Knorr Cetina, K. & Preda, A., 2007. The Temporalization of Financial Markets: From Network to Flow. *Theory, Culture & Society*, 24(7-8), pp.116–138.
- Krause, F., 2013. Seasons as Rhythms on the Kemi River in Finnish Lapland. *Ethnos*, 78(1), pp.23–46.
- Krippner, G., 2001. The Elusive Market: Embeddedness and the Paradigm of Economic Sociology. *Theory and Society*, 30(6), pp.775–810.
- Krippner, G.R. & Alvarez, A.S., 2007. Embeddedness and the Intellectual Projects of Economic Sociology. *Annual Review of Sociology*, 33(1), pp.219–240.
- Kullman, K., 2013. Geographies of Experiment/Experimental Geographies: A Rough Guide. *Geography Compass*, 7(12), pp.879–894.
- Legendijk, A., 2004. Global “lifeworlds” versus local “systemworlds”: How flying winemakers produce global wines in interconnected locales. *Tijdschrift Voor Economische En Sociale Geografie*, 95(5), pp.511–526.
- Lamont, M., 2012. Toward a Comparative Sociology of Valuation and Evaluation. *Annual Review of Sociology*, 38(1), pp.201–221.
- Latour, B., 1988. *The pasteurization of France*, Cambridge, Mass.: Harvard University Press.
- Latour, B., 1993. *We have never been modern*, London: Harvester Wheatsheaf.
- Latour, B., 1997a. Foreword: Stengers’s Shibboleth. In *Power and Invention: Situating Science*. Minneapolis: University of Minnesota Press, pp. vii–xx.
- Latour, B., 1997b. Trains of thought: Piaget, formalism, and the fifth dimension. *Common knowledge*, 6, pp.170–191.
- Latour, B., 1998. TO MODERNISE OR ECOLOGISE? THAT IS THE QUESTION. In B. Braun & N. Castree, eds. *REMAKING REALITY: Nature at the millenium*. London: Routledge, pp. 220–241.
- Latour, B., 1999a. On recalling ANT. In J. Law & J. Hassard, eds. *Actor network theory and after*. Oxford: Blackwell Publishers, pp. 15–25.
- Latour, B., 1999b. *Pandora’s hope: essays on the reality of science studies*, London: Harvard University Press.
- Latour, B., 2004a. How to Talk About the Body? The Normative Dimension of Science Studies. *Body & Society*, 10(2-3), pp.205–229.
- Latour, B., 2004b. *Politics of Nature: How to Bring the Sciences into Democracy*, London: Harvard University Press.

- Latour, B., 2004c. Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern. *Critical inquiry*, 30(2), pp.225–248.
- Latour, B., 2005. *Reassembling the social: an introduction to actor-network-theory*, Oxford: Oxford University Press.
- Latour, B., 2013. *An inquiry into modes of existence: an anthropology of the moderns*, Cambridge, Mass: Harvard University Press.
- Latour, B. & Callon, M., 1997. “Thou shall not calculate!” or how to symmetricalize gift and capital,” , pp.1–22. Available at: <http://www.bruno-latour.fr/sites/default/files/downloads/P-71%20CAPITALISME-MAUSS-GB.pdf> [Accessed March 26, 2014].
- Law, J., 1999. After ANT: complexity, naming and topology. In J. Law & J. Hassard, eds. *Actor network theory and after*. Oxford: Blackwell Publishers, pp. 1–14.
- Law, J., 2002a. Objects and Spaces. *Theory, Culture & Society*, 19(5-6), pp.91–105.
- Law, J., 2002b. On Hidden heterogeneities: Complexity, Formalism, and Aircraft Design. In J. Law & A. Mol, eds. *COMPLEXITIES: Social Studies of Knowledge Practices*. Durham, N.C.: Duke University Press, pp. 116–141.
- Law, J., 2004. *After method: mess in social science research*, London: Routledge.
- Law, J., 2009. Seeing Like a Survey. *Cultural Sociology*, 3(2), pp.239–256.
- Law, J., 2011. Collateral Realities. In F. Dominguez Rubio & P. Baert, eds. *The Politics of Knowledge*. London: Routledge, pp. 156–178.
- Law, J. & Mol, A., 2008. Globalisation in practice: On the politics of boiling pigswill. *Geoforum*, 39(1), pp.133–143.
- Law, J. & Urry, J., 2004. Enacting the social. *Economy and Society*, 33(3), pp.390–410.
- Lee, N. & Brown, S., 1994. Otherness and the Actor Network: The Undiscovered Continent. *American Behavioural Scientist*, 37(6), pp.772–790.
- Lee, N. & Stenner, P., 1999. Who Pays? Can we pay them back? In J. Law & J. Hassard, eds. *Actor network theory and after*. Oxford: Blackwell Publishers, pp. 90–112.
- Li, T.M., 2007. Practices of assemblage and community forest management. *Economy and Society*, 36(2), pp.263–293.
- Lien, M.E. & Law, J., 2011. “ Emergent Aliens ”: On Salmon , Nature , and Their Enactment. *Ethnos*, 76(1), pp.65–87.
- Lockie, S. & Kitto, S., 2000. Beyond the farm gate: Production-consumption networks and agri-food research. *Sociologia Ruralis*, 40(1), pp.3–19.
- Lofts, G., 2010. *Heart & soul: Australia's First Families of Wine*, Richmond, Vic.: John Wiley & Sons Australia.

- Longbottom, M., Maschmedt, D. & Pichler, M., 2011. *Unearthing Viticulture in the Limestone Coast: The climate, geology, soils, hydrology and environment of South Australia's Limestone Coast*, Coonawarra, SA: Limestone Coast Grape & Wine Council Inc. Available at: http://limestonecoastwine.com.au/wp-content/uploads/LCGWIC_Unearthing_2011.pdf [Accessed December 22, 2014].
- Longhurst, R., Ho, E. & Johnston, L., 2008. Using "the body" as an "instrument of research": kimch'i and pavlova. *Area*, 40(2), pp.208–217.
- Lorimer, H., 2010. Forces of Nature, Forms of Life: Calibrating Ethology and Phenomenology. In B. Anderson & P. Harrison, eds. *Taking-Place: Non-Representational Theories and Geography*. Farnham: Ashgate, pp. 55–78.
- Lorimer, J., 2008. Counting Corncrakes : The Affective Science of the UK Corncrake Census. *Social Studies of Science*, 38(3), pp.377–405.
- Lorimer, J., 2012. Multinatural geographies for the Anthropocene. *Progress in Human Geography*, 36(5), pp.593–612.
- Lorimer, J. & Driessen, C., 2013. Bovine biopolitics and the promise of monsters in the rewilding of Heck cattle. *Geoforum*, 48, pp.249–259.
- Lulka, D., 2009. The residual humanism of hybridity: retaining a sense of the earth. *Transactions of the Institute of British Geographers*, 34(3), pp.378–393.
- Lury, C., 2004. *Brands: the logos of the global economy*, London: Routledge.
- Lyons, W., 2009. Australia Shifts to Terroir. *The Wall Street Journal*. Available at: <http://online.wsj.com/news/articles/SB126109706873496373> [Accessed May 25, 2013].
- MacDonald, K.I., 2013. The morality of cheese: A paradox of defensive localism in a transnational cultural economy. *Geoforum*, 44, pp.93–102.
- Macfarlane, A., 1998. The mystery of property: inheritance and industrialization in England and Japan. In C. M. Hann, ed. *Property relations: renewing the anthropological tradition*. Cambridge: Cambridge University Press, pp. 104–123.
- Mackenzie, A., 2002. *Transductions: bodies and machines at speed*, London: Continuum.
- MacKenzie, D., 2003. An Equation and its Worlds: Bricolage, Exemplars, Disunity and Performativity in Financial Economics. *Social Studies of Science*, 33(6), pp.831–868.
- MacKenzie, D.A., 2004. How a Superportfolio Emerges: Long-Term Capital Management and the Sociology of Arbitrage. In K. Knorr Cetina & A. Preda, eds. *The Sociology of Financial Markets*. Oxford: Oxford University Press, pp. 62–83.
- MacKenzie, D.A., 2009. *Material markets: how economic agents are constructed*, Oxford: Oxford University Press.
- Maclaine Pont, P.C.A., 2011. Who Grows the Grapes? The Changing Relationship of Quality in Argentine Wine Production. *Journal of Wine Research*, 22(1), pp.1–17.

- Malinowski, B., 1927. Lunar and Seasonal Calendar in the Trobriands. *The Journal of the Royal Anthropological Institute of Great Britain and Ireland*, 57, pp.203–215.
- Mann, A. et al., 2011. Mixing methods, tasting fingers: Notes on an ethnographic experiment. *HAU: Journal of Ethnographic Theory*, 1(1), pp.221–243.
- Mann, S.A., 1990. *Agrarian capitalism in theory and practice*, Chapel Hill: University of North Carolina Press.
- Mann, S.A. & Dickinson, J.M., 1978. Obstacles to the development of a capitalist agriculture. *The Journal of Peasant Studies*, 5(4), pp.466–481.
- Mansfield, B., 2003a. Fish, factory trawlers, and imitation crab: the nature of quality in the seafood industry. *Journal of Rural Studies*, 19(1), pp.9–21.
- Mansfield, B., 2003b. Spatializing Globalization: A “Geography of Quality” in the Seafood Industry. *Economic Geography*, 79(1), pp.1–16.
- Marcus, G.E., 1995. Ethnography in/of the World System: The Emergence of Multi-Sited Ethnography. *Annual Review of Anthropology*, 24(1), pp.95–117.
- Marcus, G.E. & Fischer, M.M.J., 1986. *Anthropology as cultural critique: an experimental moment in the human sciences*, Chicago: University of Chicago Press.
- Marcus, G.E. & Saka, E., 2006. Assemblage. *Theory, Culture & Society*, 23(2-3), pp.101–106.
- Marsden, T., 2000. Food Matters and the Matter of Food: Towards a New Food Governance? *Sociologia Ruralis*, 40(1), pp.20–29.
- Marsden, T., 2004. Theorising food quality: some key issues in understanding its competitive production and regulation. In M. Harvey, A. McMeekin, & A. Warde, eds. *Qualities of food*. Manchester: Manchester University Press, pp. 129–155.
- Marsden, T.K. & Arce, A., 1995. Constructing quality: emerging food networks in the rural transition. *Environment and Planning A*, 27(8), pp.1261–1279.
- Marx, K., 1979. *Capital: A Critique of Political Economy, Volume One.*, Harmondsworth: Penguin Books.
- Mason, V. & Hope, P.R., 2014. Echoes in the dark: Technological encounters with bats. *Journal of Rural Studies*, 33(1), pp.107–118.
- Massey, D., 2003. Imagining the field. In M. Pryke, G. Rose, & S. Whatmore, eds. *Using social theory: thinking through research*. London: SAGE, pp. 71–88.
- Maurer, B., 1999. Forget Locke? From proprietor to risk-bearer in new logics of finance. *Public Culture*, 11(2), pp.47–67.
- May, J. & Thrift, N., 2001. Introduction. In J. May & N. Thrift, eds. *TimeSpace: Geographies of temporality*. London: Routledge, pp. 1–46.

- McEwan, C. & Bek, D., 2009a. Placing Ethical Trade in Context: wieta and the South African wine industry. *Third World Quarterly*, 30(4), pp.723–742.
- McEwan, C. & Bek, D., 2009b. The political economy of alternative trade: Social and environmental certification in the South African wine industry. *Journal of Rural Studies*, 25(3), pp.255–266.
- McIntyre, J., 2011. RESISTING AGES-OLD FIXITY AS A FACTOR IN WINE QUALITY Colonial wine tours and Australia's early wine industry. *Locale: The Australasian-Pacific Journal of Regional Food Studies*, 1(1), pp.42–64.
- McIntyre, J., 2012. *First Vintage: Wine in colonial New South Wales*, Sydney: NewSouth Publishing.
- Méadel, C. & Rabeharisoa, V., 2001. Taste as a form of adjustment between food and consumers. In R. Coombs, ed. *Technology and the market: demand, users and innovation*. Cheltenham: Edward Elgar Publishing Limited, pp. 235–253.
- Mears, A., 2011. Pricing Looks: Circuits of Value in Fashion Modeling Markets. In J. Beckert & P. Aspers, eds. *The Worth of Goods: Valuation and Pricing in the Economy*. Oxford: Oxford University Press, pp. 155–177.
- Mears, A., 2013. Ethnography as Precarious Work. *The Sociological Quarterly*, 54(1), pp.20–34.
- Mélar, F., 1998. Chemical Experts & their roles in the Belgian Sugar Industry. *The Schloessmann Seminar : The Role of Experts in the Society*, Berlin: November 25 1998. Available at: <http://orbi.ulg.ac.be/handle/2268/62793> [Accessed September 09, 2011].
- Mercer, C., 2014. Barossa and Clare Valley split vineyards to create geological sub-regions. *Decanter.com*. Available at: <http://www.decanter.com/news/wine-news/587661/barossa-and-clare-valley-split-vineyards-to-create-geological-sub-regions> [Accessed October 29, 2014].
- Midgley, J.L., 2014. The logics of surplus food redistribution. *Journal of Environmental Planning and Management*, 57(12), pp.1872–1892.
- Miele, M. & Lever, J., 2013. Civilizing the market for welfare friendly products in Europe? The techno-ethics of the Welfare Quality® assessment. *Geoforum*, 48, pp.63–72.
- Miller, D., 2002. Turning Callon the right way up. *Economy and Society*, 31(2), pp.218–233.
- Mirowski, P. & Nik-Khah, E., 2007. Markets Made Flesh: Performativity, and a Problem in Science Studies, Augmented with Consideration of the FCC Auctions. In D. A. MacKenzie, F. Muniesa, & L. Siu, eds. *Do economists make markets? On the performativity of economics*. Princeton: Princeton University Press, pp. 190–224.
- Mitchell, T., 2002. *Rule of experts: Egypt, techno-politics, modernity*, Berkeley: University of California Press.
- Mitchell, T., 2008. Rethinking economy. *Geoforum*, 39(3), pp.1116–1121.
- Moberg, M., 2014. Certification and Neoliberal Governance: Moral Economies of Fair Trade in the Eastern Caribbean. *American Anthropologist*, 116(1), pp.8–22.

- Mol, A., 1999. Ontological politics. A word and some questions. In J. Law & J. Hassard, eds. *Actor network theory and after*. Oxford: Blackwell Publishers, pp. 74–89.
- Mol, A., 2002a. Cutting Surgeons, Walking Patients: Some Complexities Involved in Comparing. In J. Law & A. Mol, eds. *COMPLEXITIES: Social Studies of Knowledge Practices*. Durham, N.C.: Duke University Press, pp. 218–257.
- Mol, A., 2002b. *The body multiple: ontology in medical practice*, Durham: Duke University Press.
- Mol, A., 2010. Actor-network theory: sensitive terms and enduring tensions. *Kölner Zeitschrift für Soziologie und Sozialpsychologie.*, 50(1), pp.253–269.
- Mol, A., 2014. Language Trails: “Lekker” and Its Pleasures. *Theory, Culture & Society*, 31(2-3), pp.93–119.
- Mol, A. & Law, J., 2002. Complexities: An Introduction. In J. Law & A. Mol, eds. *COMPLEXITIES: Social Studies of Knowledge Practices*. Durham, N.C.: Duke University Press, pp. 1–22.
- Moore, K., 2006. *The Australian Wine Grape Industry Taking Stock and Setting Directions Final Report, December 2006*, Canberra: Kiri-ganai Research Pty. Available at: http://www.pir.sa.gov.au/_data/assets/pdf_file/0009/48447/TSSD_final_report_27Dec20061.pdf [Accessed June 22, 2010].
- Moragues-Faus, A.M. & Sonnino, R., 2012. Embedding Quality in the Agro-food System: The Dynamics and Implications of Place-Making Strategies in the Olive Oil Sector of Alto Palancia, Spain. *Sociologia Ruralis*, 52(2), pp.215–234.
- Moran, W., 1993. The wine appellation as territory in France and California. *Annals of the Association of American Geographers*, 83(4), pp.694–717.
- Morgan, K., Marsden, T. & Murdoch, J., 2006. *Worlds of food: place, power, and provenance in the food chain*, Oxford: Oxford University Press.
- Morgan, K. & Murdoch, J., 2000. Organic vs. conventional agriculture: knowledge, power and innovation in the food chain. *Geoforum*, 31(2), pp.159–173.
- Morita, A., 2014. The Ethnographic Machine: Experimenting with Context and Comparison in Strathernian Ethnography. *Science, Technology & Human Values*, 39(2), pp.214–235.
- Moser, I. & Law, J., 1999. Good passages, bad passages. In J. Law & J. Hassard, eds. *Actor network theory and after*. Oxford: Blackwell Publishers, pp. 196–219.
- Muniesa, F., 2007. Market technologies and the pragmatics of prices. *Economy and Society*, 36(3), pp.377–395.
- Muniesa, F., 2011. A flank movement in the understanding of valuation. *The Sociological Review*, 59(s2), pp.24–38.
- Muniesa, F., Millo, Y. & Callon, M., 2007. An introduction to market devices. *The Sociological Review*, 55(s2), pp.1–12.

- Muniesa, F. & Trébuchet-Breitwiler, A.-S., 2010. Becoming a Measuring Instrument. *Journal of Cultural Economy*, 3(3), pp.321–337.
- Munn, N., 1992. The Cultural Anthropology of Time: A Critical Essay. *Annual Review of Anthropology*, 21(1), pp.93–123.
- Murdoch, J., 2006. *Post-structuralist geography: a guide to relational space*, London: SAGE.
- Murdoch, J., Marsden, T. & Banks, J., 2000. Quality, Nature, and Embeddedness : Some Theoretical Considerations in the Context of the Food Sector. *Economic Geography*, 76(2), pp.107–125.
- Murdoch, J. & Miele, M., 1999. “Back to Nature”: Changing “Worlds of Production” in the Food Sector. *Sociologia Ruralis*, 39(4), pp.465–483.
- Murdoch, J. & Miele, M., 2004. Culinary Networks and Cultural Connections: A Conventions Perspective. In A. Amin & N. Thrift, eds. *The Blackwell Cultural Economy Reader*. Malden, MA: Blackwell, pp. 231–248.
- Murphy, R., 2001. Nature’s Temporalities and the Manufacture of Vulnerability: A study of a sudden disaster with implications for creeping ones. *Time & Society*, 10(2/3), pp.329–348.
- Murray, W.E. & Overton, J., 2011. Defining Regions : the making of places in the New Zealand wine industry. *Australian Geographer*, 42(4), pp.419–433.
- Musselin, C. & Paradeise, C., 2005. Quality: a debate. *Sociologie du Travail*, 47(s1), pp.s89–s94.
- MVGWTA, 2014. Seven Terranes of McLaren Vale. Available at: <http://mclarenvale.info/wine/seven-terrane-mclaren-vale/> [Accessed September 1, 2014].
- Myers, N., 2008. Molecular Embodiments and the Body-work of Modeling in Protein Crystallography. *Social Studies of Science*, 38(2), pp.163–199.
- Nader, L., 1972. Up the Anthropologist: Perspective Gained from Studying Up. In D. H. Hymes, ed. *Reinventing Anthropology*. New York: Pantheon Books, pp. 284–311.
- Nader, L., 2011. Ethnography as theory. *HAU: Journal of ethnographic theory*, 1(1), pp.211–219.
- Nakassis, C. V., 2013. Brands and Their Surfeits. *Cultural Anthropology*, 28(1), pp.111–126.
- National Climate Centre, 2010. *Australia’s wettest September on record but it is not enough to clear long-term rainfall deficits. Special Climate Statement 22.*, Melbourne: Australian Bureau of Meteorology. Available at: <http://www.bom.gov.au/climate/current/statements/scs22.pdf> [Accessed November 29, 2013].
- O’Malley, P., 2004. *Risk, uncertainty and government*, London: GlassHouse.
- O’Neill, P. & Whatmore, S., 2000. The business of place: networks of property, partnership and produce. *Geoforum*, 31(2), pp.121–136.
- Olwig, K.R., 2005. Liminality, Seasonality and Landscape. *Landscape Research*, 30(2), pp.259–271.

- Ong, A. & Collier, S.J., 2005. *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*, Oxford: Blackwell Publishing.
- Ortner, S.B., 2010. Access: Reflections on studying up in Hollywood. *Ethnography*, 11(2), pp.211–233.
- Osburg, J., 2013. Meeting the “Godfather”: Fieldwork and Ethnographic Seduction in a Chinese Nightclub. *PoLAR: Political and Legal Anthropology Review*, 36(2), pp.298–303.
- Osmond, R. & Anderson, K., 1998. *Trends and Cycles in the Australian Wine Industry, 1850 to 2000*, Adelaide: Centre for International Economic Studies, University of Adelaide. Available at: http://www.adelaide.edu.au/wine-econ/papers/Aust_Wine_Trends_and_Cycles_1998.pdf [Accessed May 27, 2013].
- Otto, T. & Willerslev, R., 2013. Introduction : “ Value as theory ”: Comparison, cultural critique, and guerilla ethnographic theory. *HAU: Journal of Ethnographic Theory*, 3(1), pp.1–20.
- Overton, J., 2010. The consumption of space: Land, capital and place in the New Zealand wine industry. *Geoforum*, 41(5), pp.752–762.
- Overton, J. & Heitger, J., 2008. Maps, markets and Merlot: The making of an antipodean wine appellation. *Journal of Rural Studies*, 24(4), pp.440–449.
- Overton, J., Murray, W. & Banks, G., 2012. The Race to the Bottom of the Glass? Wine, Geography, and Globalization. *Globalizations*, 9(2), pp.273–287.
- Page, B., 1996. Across the Great Divide: Agriculture and Industrial Geography. *Economic Geography*, 72(4), pp.376–397.
- Panelli, R., 2009. More-than-human social geographies: posthuman and other possibilities. *Progress in Human Geography*, 34(1), pp.79–87.
- Parrott, N., Wilson, N. & Murdoch, J., 2002. Spatializing Quality: Regional Protection and the Alternative Geography of Food. *European Urban and Regional Studies*, 9(3), pp.241–261.
- Paterson, M., 2009. Haptic geographies: ethnography, haptic knowledges and sensuous dispositions. *Progress in Human Geography*, 33(6), pp.766–788.
- Paul, H.W., 1996. *Science, vine, and wine in modern France*, Cambridge: Cambridge University Press.
- Paxson, H., 2008. Post-Pasteurian cultures: The microbiopolitics of raw-milk cheese in the United States. *Cultural Anthropology*, 23(1), pp.15–47.
- Paxson, H., 2013. *The life of cheese: crafting food and value in America*, Berkeley: University of California Press.
- Perkins, H.A., 2007. Ecologies of actor-networks and (non)social labor within the urban political economies of nature. *Geoforum*, 38(6), pp.1152–1162.
- Peynaud, E., 1984. *Knowing and making wine*, New York: J. Wiley.

- Phillips, G., 2009. Above cheap and cheerful Pressure on wine industry. *Hobart Mercury*, 9 September, p.27.
- Phillips, R., 2001. *A short history of wine*, London: Penguin.
- Pickering, A., 1995. *The mangle of practice: time, agency, and science*, Chicago: University of Chicago Press.
- Pike, A., 2009. Geographies of brands and branding. *Progress in Human Geography*, 33(5), pp.619–645.
- Pike, A., 2011. Placing brands and branding: a socio-spatial biography of Newcastle Brown Ale. *Transactions of the Institute of British Geographers*, 36(2), pp.206–222.
- PIRSA, 2005. *A REPORT ON THE IMPACT OF CURRENT GRAPE-PRICING TRENDS ON THE RIVERLAND REGION*, Adelaide: Primary Industries and Regions South Australia. Available at: http://www.pir.sa.gov.au/data/assets/pdf_file/0007/33568/riverland_wine_price_impact_assessment.pdf [Accessed November 28, 2013].
- PIRSA, 2010. *Wine Markets and Consumers: Opportunities and Challenges for the Langhorne Creek wine region*, Adelaide: Primary Industries and Regions South Australia. Available at: http://www.pir.sa.gov.au/data/assets/pdf_file/0011/165980/mi_langhornewine_report.pdf [Accessed May 22, 2013].
- Polanyi, K., 2001. *The great transformation: the political and economic origins of our time*, Boston, MA: Beacon Press.
- Ponte, S., 2009. Governing through Quality: Conventions and Supply Relations in the Value Chain for South African Wine. *Sociologia Ruralis*, 49(3), pp.236–257.
- Ponte, S. & Gibbon, P., 2005. Quality standards, conventions and the governance of global value chains. *Economy and Society*, 34(1), pp.1–31.
- Postone, M., 1993. *Time, labor, and social domination: a reinterpretation of Marx's critical theory*, Cambridge: Cambridge University Press.
- Pratt, J., 2007. Food Values: The Local and the Authentic. *Critique of Anthropology*, 27(3), pp.285–300.
- Pritchard, B., 1999. The Regulation of Grower – Processor Relations : A Case Study from the Australian Wine Industry. *Sociologia Ruralis*, 39(2), pp.185–200.
- Prudham, S., 2003. Taming Trees: Capital, Science, and Nature in Pacific Slope Tree Improvement. *Annals of the Association of American Geographers*, 93(3), pp.636–656.
- Rangnekar, D., 2004. *The Socio-Economics of Geographical Indications*, Geneva: International Centre for Trade and Sustainable Development (ICTSD). Available at: <http://ictsd.org/downloads/2008/07/a.pdf> [Accessed May 19, 2013].
- Rangnekar, D., 2011. Remaking place: the social construction of a Geographical Indication for Feni. *Environment and Planning A*, 43(9), pp.2043–2059.

- Ratcliff, A. et al., 2009. A future for the Riverland: an alternative view. *Australian & New Zealand Grapegrower & Winemaker*, 544, pp.58–59.
- Raynolds, L.T., 2002. Consumer/Producer Links in Fair Trade Coffee Networks. *Sociologia Ruralis*, 42(4), pp.404–424.
- Raynolds, L.T., 2014. Fairtrade, certification, and labor: global and local tensions in improving conditions for agricultural workers. *Agriculture and Human Values*, 31(3), pp.499–511.
- Renard, M.-C., 2003. Fair trade: quality, market and conventions. *Journal of Rural Studies*, 19(1), pp.87–96.
- Renting, H., Marsden, T.K. & Banks, J., 2003. Understanding alternative food networks: exploring the role of short food supply chains in rural development. *Environment and Planning A*, 35(3), pp.393–411.
- Rheinberger, H.-J., 1998. Experimental Systems, Graphematic Spaces. In T. Lenoir, ed. *INSCRIBING SCIENCE: Scientific Texts and the Materiality of Communication*. Stanford, CA: Stanford University Press, pp. 285–303.
- Ribéreau-Gayon, J., Ribéreau-Gayon, P. & Seguin, G., 1980. Botrytis cinerea in Enology. In J. Coley-Smith, W. R. Jarvis, & K. Verhoeff, eds. *The Biology of Botrytis*. London: Academic Press, pp. 251–274.
- Ribéreau-Gayon, P. et al., 2006. *Handbook of enology. Vol. 1, The microbiology of wine and vinifications*, Chichester: Wiley & Sons.
- Richardson-Ngwenya, P., 2012. A vitalist approach to sugar-cane breeding in Barbados: In the context of the European Union Sugar Reform. *Geoforum*, 43(6), pp.1131–1139.
- Robben, A.C.G.M., 1996. Ethnographic Seduction, Transference, and Resistance in Dialogues about Terror and Violence in Argentina. *Ethnos*, 24(1), pp.71–106.
- Robinson, J., 2008. Australia: introduction. Available at: <http://www.jancisrobinson.com/learn/wine-regions/australia> [Accessed February 24, 2014].
- Roe, E.J., 2006. Things becoming food and the embodied, material practices of an organic food consumer. *Sociologia Ruralis*, 46(2), pp.104–121.
- Roe, E.J., 2010. Ethics and the Non-Human: The Mattering of Animal Sentience in the Meat Industry. In B. Anderson & P. Harrison, eds. *Taking-Place: Non-Representational Theories and Geography*. Farnham: Ashgate, pp. 261–280.
- Rosin, C. & Campbell, H., 2009. Beyond bifurcation: Examining the conventions of organic agriculture in New Zealand. *Journal of Rural Studies*, 25(1), pp.35–47.
- Rössel, J. & Beckert, J., 2013. Quality Classifications in Competition: Price Formation in the German Wine Market. In J. Beckert & C. Musselin, eds. *Constructing Quality: The Classification of Goods in Markets*. Oxford: Oxford University Press, pp. 288–316.

- RWIDC, 2005. *Riverland Wine Industry Regional Profile 2005*, Berri: Riverland Wine Industry Development Council.
- Saleh, E., 2013. Pursuits of Quality in the Vineyards: French Oenologists at Work in Lebanon. In R. E. Black & R. C. Ulin, eds. *Wine and Culture: Vineyard to glass*. London: Bloomsbury Academic, pp. 245–260.
- Sánchez-Hernández, J.L., Aparicio-Amador, J. & Alonso-Santos, J.L., 2010. The shift between worlds of production as an innovative process in the wine industry in Castile and Leon (Spain). *Geoforum*, 41(3), pp.469–478.
- SAWIC, 2006. *The Over-supply of Cool Climate Wine Grapes*, Adelaide: South Australian Wine Industry Council. Available at: http://www.pir.sa.gov.au/data/assets/pdf_file/0018/33561/cool_climate_paper_oct06.pdf [Accessed January 28, 2014].
- Shapin, S., 2012. THE TASTES OF WINE: TOWARDS A CULTURAL HISTORY. *Rivista di estetica*, 51(3), pp.49–94.
- Sheales, T. et al., 2006. *australian wine industry: challenges for the future*, Canberra: Australian Bureau of Agricultural and Resource Economics. Available at: http://data.daff.gov.au/data/warehouse/pe_abarebrs99001317/pc13547.pdf [Accessed April 11, 2013].
- Siddle, R., 2010. Paul Schaafsma attacks Wine Australia’s “flawed” strategy. *Harpers Wine & Spirit Trades Review*. Available at: <http://www.harpers.co.uk/news/paul-schaafsma-attacks-wine-australias-flawed-strategy/309689.article> [Accessed May 22, 2013].
- Sjögren, E. & Helgesson, C.-F., 2007. The Q(u)ALYfying hand: health economics and medicine in the shaping of Swedish markets for subsidized pharmaceuticals. *The Sociological Review*, 55(s2), pp.215–240.
- Slater, D., 2002. From calculation to alienation: disentangling economic abstractions. *Economy and Society*, 31(2), pp.234–249.
- Sonnino, R., 2007. Embeddedness in action: Saffron and the making of the local in southern Tuscany. *Agriculture and Human Values*, 24(1), pp.61–74.
- Stark, D., 2009. *The Sense of Dissonance: Accounts of Worth in Economic Life*, Princeton: Princeton University Press.
- Stassart, P. & Whatmore, S.J., 2003. Metabolising risk: food scares and the un/re-making of Belgian beef. *Environment and Planning A*, 35(3), pp.449–462.
- Stengers, I., 1997. *Power and invention: situating science*, Minneapolis: University of Minnesota Press.
- Stengers, I., 2000. *The invention of modern science*, Minneapolis: University of Minnesota Press.
- Stengers, I., 2010. *Cosmopolitics I*, London: University of Minnesota Press.

- Sternsdorff Cisterna, N., 2013. Space and Terroir in the Chilean Wine Industry. In R. E. Black & R. C. Ulin, eds. *Wine and Culture: Vineyard to glass*. London: Bloomsbury Academic, pp. 51–66.
- Stoller, P., 1989. *The taste of ethnographic things: the senses in anthropology*, Philadelphia: University of Pennsylvania Press.
- Stoller, P., 1997. *Sensuous scholarship*, Philadelphia: University of Pennsylvania Press.
- Stoller, P., 2005. The Presence of the Ethnographic Present: Some Brief Comments on Loïc Wacquant's Body and Soul. *Qualitative Sociology*, 28(2), pp.197–199.
- Strathern, M., 1988. *The gender of the gift : problems with women and problems with society in Melanesia*, London: University of California Press.
- Strathern, M., 1996. Cutting the network. *Journal of the Royal Anthropological Institute*, 2(3), pp.517–535.
- Strathern, M., 1999. *Property, substance and effect : anthropological essays on persons and things*, London: Athlone Press.
- Strathern, M., 2004. *Partial connections*, Walnut Creek, CA: AltaMira Press.
- Swanton, D., 2013. The steel plant as assemblage. *Geoforum*, 44, pp.282–291.
- Swinburn, R., 2013. The Things that Count: Rethinking Terroir in Australia. In R. E. Black & R. C. Ulin, eds. *Wine and Culture: Vineyard to glass*. London: Bloomsbury Academic, pp. 33–49.
- Szerszynski, B., 2010. Reading and Writing the Weather: Climate Technics and the Moment of Responsibility. *Theory, Culture & Society*, 27(2-3), pp.9–30.
- Tanaka, K. & Busch, L., 2003. Standardization as a Means for Globalizing a Commodity: The Case of Rapeseed in China. *Rural Sociology*, 68(1), pp.25–45.
- Teil, G., 2010. The French Wine “Appellations d’Origine Contrôlée” and the Virtues of Suspicion. *The Journal of World Intellectual Property*, 13(2), pp.253–274.
- Teil, G., 2012. No Such Thing as Terroir?: Objectivities and the Regimes of Existence of Objects. *Science, Technology & Human Values*, 37(5), pp.478–505.
- Terrio, S.J., 1996. Crafting grand cru chocolates in contemporary France. *American Anthropologist*, 98(1), pp.67–79.
- Thévenot, L., 2002. Which Road to Follow? The Moral Complexity of an “Equipped” Humanity. In J. Law & A. Mol, eds. *COMPLEXITIES: Social Studies of Knowledge Practices*. Durham, N.C.: Duke University Press, pp. 53–87.
- Thompson, E.P., 1967. Time, Work-Discipline, and Industrial Capitalism. *Past & Present*, 38, pp.56–97.
- Thrift, N.J., 1999. Steps to an ecology of place. In D. Massey, J. Allen, & P. Sarre, eds. *Human geography today*. Cambridge: Polity Press, pp. 295–321.

- Thrift, N., 2003. Practising ethics. In M. Pryke, G. Rose, & S. Whatmore, eds. *Using social theory: thinking through research*. London: Sage Publications, pp. 105–121.
- Thrift, N.J., 2008. *Non-representational theory: space, politics, affect*, New York, NY: Routledge.
- Tregear, A. et al., 2007. Regional foods and rural development: The role of product qualification. *Journal of Rural Studies*, 23(1), pp.12–22.
- Trubek, A.B., 2008. *The taste of place: a cultural journey into terroir*, London: University of California Press.
- Trubek, A.B. & Bowen, S., 2008. Creating the taste of place in the United States: can we learn from the French? *GeoJournal*, 73(1), pp.23–30.
- Tsing, A., 2005. *Friction: an ethnography of global connection*, Princeton, N.J.: Princeton University Press.
- Tsing, A., 2009a. Beyond economic and ecological standardisation. *The Australian Journal of Anthropology*, 20(3), pp.347–368.
- Tsing, A., 2009b. Supply Chains and the Human Condition. *Rethinking Marxism: A Journal of Economics, Culture & Society*, 21(2), pp.148–176.
- Tsing, A., 2011. Arts of Inclusion, or, How to Love a Mushroom. *Australian Humanities Review*, 50, pp.5–21.
- Tsing, A., 2012a. On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales. *Common Knowledge*, 18(3), pp.505–524.
- Tsing, A., 2012b. Unruly Edges: Mushrooms as Companion Species. *Environmental Humanities*, 1, pp.141–154.
- Tsing, A., 2013. Sorting out commodities: How capitalist value is made through gifts. *HAU: Journal of Ethnographic Theory*, 3(1), pp.21–43.
- Turner, V., 1967. *The forest of symbols: aspects of Ndembu ritual*, London: Cornell University Press.
- Turton, D. & Ruggles, C., 1978. Agreeing to Disagree: The Measurement of Duration in a Southwestern Ethiopian Community. *Current Anthropology*, 19(3), pp.585–593.
- Ulin, R.C., 1996. *Vintages and Traditions: An ethnohistory of Southwest French wine cooperatives*, Washington, D.C.: Smithsonian Institution Press.
- Ulin, R.C., 2002. Work as cultural production: labour and self-identity among southwest French wine-growers. *Journal of the Royal Anthropological Institute*, 8(4), pp.691–712.
- Ulin, R.C., 2007. Writing about Wine: The uses of Nature and History in the Wine-Growing Regions of Southwest France and America. In G. Campbell & N. Guibert, eds. *Wine, Society, and Globalization: Multidisciplinary Perspectives on the Wine Industry*. New York: Palgrave Macmillan, pp. 43–62.

- Ulin, R.C., 2013. Terroir and Locality: An Anthropological Perspective. In R. E. Black & R. C. Ulin, eds. *Wine and Culture: Vineyard to glass*. London: Bloomsbury Academic, pp. 67–84.
- Unwin, P.T.H., 1991. *Wine and the vine: an historical geography of viticulture and the wine trade*, London: Routledge.
- Vannini, P. et al., 2010. Performing Taste at Wine Festivals: A Somatic Layered Account of Material Culture. *Qualitative Inquiry*, 16(5), pp.378–396.
- Vatin, F., 2013. Valuation as evaluating and valorizing. *Valuation Studies*, 1(1), pp.31–50.
- Virilio, P., 2007. *The original accident*, Cambridge: Polity.
- Wacquant, L., 2004. *Body & soul: notebooks of an apprentice boxer*, Oxford: Oxford University Press.
- Wacquant, L., 2011. Habitus as Topic and Tool: Reflections on Becoming a Prizefighter. *Qualitative Research in Psychology*, 8(1), pp.81–92.
- Walker, A. & Manning, P., 2013. Georgian Wine: The Transformation of Socialist Quantity into Postsocialist Quality. In R. E. Black & R. C. Ulin, eds. *Wine and Culture: Vineyard to glass*. London: Bloomsbury Academic, pp. 201–220.
- Walton, S., 2006. Down under going backwards? Available at: <http://www.wine-pages.com/guests/stuart/australia.htm> [Accessed June 26, 2013].
- Warner, K.D., 2007. The quality of sustainability: Agroecological partnerships and the geographic branding of California winegrapes. *Journal of Rural Studies*, 23(2), pp.142–155.
- WFA, 2000. *The Marketing Decade: Setting the Australian Wine Marketing Agenda 2000-2010*, Adelaide: Winemakers' Federation of Australia. Available at: http://www.wfa.org.au/assets/strategies-plans/pdfs/Marketing_Decade.pdf [Accessed December 12, 2010].
- WFA, 2013. *Actions for Industry Profitability 2014-2016*, Adelaide: Winemakers' Federation of Australia. Available at: <http://www.wfa.org.au/assets/noticeboard/Actions-for-Industry-Profitability-2014-2016-Dec-13.pdf> [Accessed December 14, 2013].
- WFA et al., 2009. *Wine industry must confront the reality of oversupply*, Adelaide: Winemakers' Federation of Australia. Available at: http://www.wfa.org.au/resources/1/Reports/WRAA/WRAA_statement_10-11.pdf [Accessed March 27, 2014].
- WFA & WGGGA, 2008. *Australian Wine Industry Code of Conduct*, Available at: <http://www.wineindustrycode.org/AWICOC.pdf> [Accessed December 11, 2010].
- WGCSA, 2011. Survey highlights industry woes. *Wine Grape Council of SA Newsletter*, 7(February), pp.1–2. Available at: <http://wgcsa.com.au/wp-content/uploads/WGCSA-Newsletter-7-February-2011.pdf> [Accessed April 04, 2011].
- Whatmore, S., 2002. *Hybrid geographies: natures, cultures, spaces*, London: SAGE.

- Whatmore, S., 2003. Generating materials. In M. Pryke, G. Rose, & S. Whatmore, eds. *Using social theory: thinking through research*. London: SAGE, pp. 89–104.
- Whatmore, S., 2006. Materialist returns: practising cultural geography in and for a more-than-human world. *Cultural Geographies*, 13(4), pp.600–609.
- Whatmore, S., 2007. Between earth and life: Refiguring property through bioresources. In H. Clout, ed. *Contemporary Rural Geographies: Land, property and resources in Britain: essays in honour of Richard Munton*. London: Routledge, pp. 84–95.
- Whatmore, S., 2013. Earthly Powers and Affective Environments: An Ontological Politics of Flood Risk. *Theory, Culture & Society*, 30(7-8), pp.33–50.
- Whatmore, S. & Hinchliffe, S., 2010. Ecological landscapes. In D. Hicks & M. C. Beaudry, eds. *The Oxford handbook of material culture studies*. Oxford: Oxford University Press, pp. 440–458.
- Whatmore, S. & Landström, C., 2011. Flood apprentices: an exercise in making things public. *Economy and Society*, 40(4), pp.582–610.
- Whatmore, S., Stassart, P. & Renting, H., 2003. What's alternative about alternative food networks? *Environment and Planning A*, 35(3), pp.389–391.
- Whatmore, S. & Thorne, L., 1997. Nourishing networks: Alternative geographies of food. In D. Goodman & M. Watts, eds. *Globalising food: agrarian questions and global restructuring*. London: Routledge, pp. 287–304.
- Wikan, U., 1993. Beyond the words: the power of resonance. In G. Palsson, ed. *Beyond Boundaries: Understanding, Translation and Anthropological Discourse*. Oxford: Berg, pp. 184–209.
- Wilkinson, J., 1997. A new paradigm for economic analysis? *Economy and Society*, 26(3), pp.305–339.
- Wine Australia, 2007. *Directions to 2025: An industry strategy for sustainable success*, Adelaide: Australian Wine and Brandy Corporation. Available at: http://www.wfa.org.au/files/policy_strategy/Directions_to_2025.pdf [Accessed August 22, 2011].
- Wine Australia, 2008a. *Barossa Valley*. Available at: http://www.wineaustralia.com/en/WinefactsLanding/ArticlesandAnalysis/Article-Barossaprofile.aspx?ec_trk=followlist&ec_trk_data=Articles+and+Analysis [Accessed September 4, 2014].
- Wine Australia, 2008b. *Clare Valley profile*. Available at: http://www.wineaustralia.com/en/WinefactsLanding/ArticlesandAnalysis/Article-ClareValleyprofile.aspx?ec_trk=followlist&ec_trk_data=Articles+and+Analysis [Accessed September 4, 2014].
- Wine Australia, 2011. *Winegrape Purchases: Price dispersion report 2011*. Available at: <http://www.wineaustralia.com/en/WinefactsLanding/GrapeandWineProduction/Winegrapecrushandprices/AustralianWinegrapePurchasesPriceDispersionReport2011.aspx> [Accessed July 12, 2011].

- Wine Australia, 2012. *Australian Beverage Wine Production, 1969-2012*. Available at: http://www.wineaustralia.com/en/Winefacts%20Landing/Grape%20and%20Wine%20Production/Wine%20production%20and%20stocks/Australian%20Beverage%20Wine%20Production.aspx?ec_trk=followlist&ec_trk_data=Wine+production+and+stocks [Accessed December 01, 2013].
- Wine Australia, 2013. *South Eastern Australia*. Available at: <http://www.wineaustralia.com/en/Production and Exporting/Register of Protected GIs and Other Terms/Geographical Indications/South Eastern Australia.aspx> [Accessed July 2, 2013].
- Winter, M., 2003. Embeddedness, the new food economy and defensive localism. *Journal of rural studies*, 19(1), pp.23–32.
- WOWA, 2014. *Western Australian Wine Industry Strategic Plan 2014-2024*, Claremont, WA: Wines of Western Australia. Available at: http://www.winewa.asn.au/images/WAWineIndustryStrategicPlan/35368_WINE_Wine_Industry_WA_Strategic_Plan.pdf [Accessed June 30, 2014].
- Zimmerer, K.S., 2000. The Reworking of Conservation Geographies: Nonequilibrium Landscapes and Nature-Society Hybrids. *Annals of the Association of American Geographers*, 90(2), pp.356–369