Steven Timothy Wright (BA Hons., MSc, PhD)

Accounting for taste:

Conversation, Categorisation and Certification in the Sensory Assessment of Craft Brewing

This thesis is submitted in partial fulfilment of the requirements for the degree of

Doctor of Philosophy:

PhD e-Research and Technology Enhanced Learning

Department of Educational Research,

Lancaster University, UK.

July 2014

Declaration

This thesis was completed as part of the PhD Doctoral Programme in e-Research & Technology Enhanced Learning.

This thesis results entirely from my own work and has not been offered previously for any other degree or diploma.

Signature

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Abstract

The recent rapid growth of “craft beer” has led to a search for definitions and categorisation of that sector with “beer style” used as one criterion. This thesis explores the origins of these style definitions and how they act as a technology of classification which affects how sensory judgments are formed and expressed in practice, and how judges are examined and certified.

The investigation draws on actor-network theory and ethnomethodology to trace how taste descriptions are assembled and translated into test items in an online exam. The material orderings and classification practices which assemble competition judging are then explored ethnographically by following the trajectory of a beer through these situated actions. The magnification is increased through developing original methods utilising digital pens, and draws on principles from conversation analysis to explore the sequential and categorial

aspects of judging talk and its co-ordination with writing and form-filling. Finally, auto-ethnographic and material-semiotic explorations are used to explore how a blind beer tasting exam is assembled, and the models of learning and assessment it enacts.

The historical construction of the contemporary language of sensory assessment supports the construction of the style guides. Once assembled into an information infrastructure the style guide is extended to act in multiple different ways: its propositions are translated into testable facts with multiple choices, it functions as a technology of material ordering and coordination, as a regulatory technology placing limits on how taste judgements can and cannot be expressed or recorded, and as a re-enactment and materialisation of individual cognitivist models of assessment.

Through exploring the ways a classification system is assembled, translated and made authoritative this thesis extends the conceptualisation of what is considered a technology in technology enhanced learning, and extends the dialogue between that disciplinary field and scholarship in science and technology studies.

Acknowledgements:

I am infinitely indebted to the love, help and support of my wife, Carolyn, and of my daughters Lucie and Imogen (both born during the PhD).

This thesis is dedicated to Karl: without your beer, and getting me started brewing, it wouldn't exist.

There are a myriad of other people without whom this thesis would never have happened – in particular I must thank my brilliant supervisor Prof. Mary Hamilton; and also the feedback, support and encouragement of Cormac O'Keeffe and Jeffrey Keefer along with many others on the PhD TEL programme and ANT Facebook group. I would also like to thank Ann Grinyer for her support and encouragement, and the great Alice in Wonderland quote.

My sincere thanks also go to my internal examiner (Julie-Ann Sime), and external examiners (Eric Laurier and Tara Fenwick), for their critical engagement, questions, feedback and suggestions to improve this thesis.

Huge thanks to my mother, Jill Wright, whose proof-reading prowess and critical comments are unsurpassed.

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In a bid to make this a little less anthropocentric: my thanks also go to my LiveScribe pens, ATLAS.ti, Microsoft Word, f4 transcription, Evernote and Endnote – I couldn't have done it without you.

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ALICE was beginning to get very tired of sitting by her sister on the bank and of having nothing to do: once or twice she had peeped into the book her sister was reading, but it had no pictures or conversations in it, "and what is the use of a book," thought Alice, "without pictures or conversations?'

from Alice's Adventures in Wonderland
by Lewis Carroll (1865, p. 1)

margin of 38 mm

margin of 25 mm

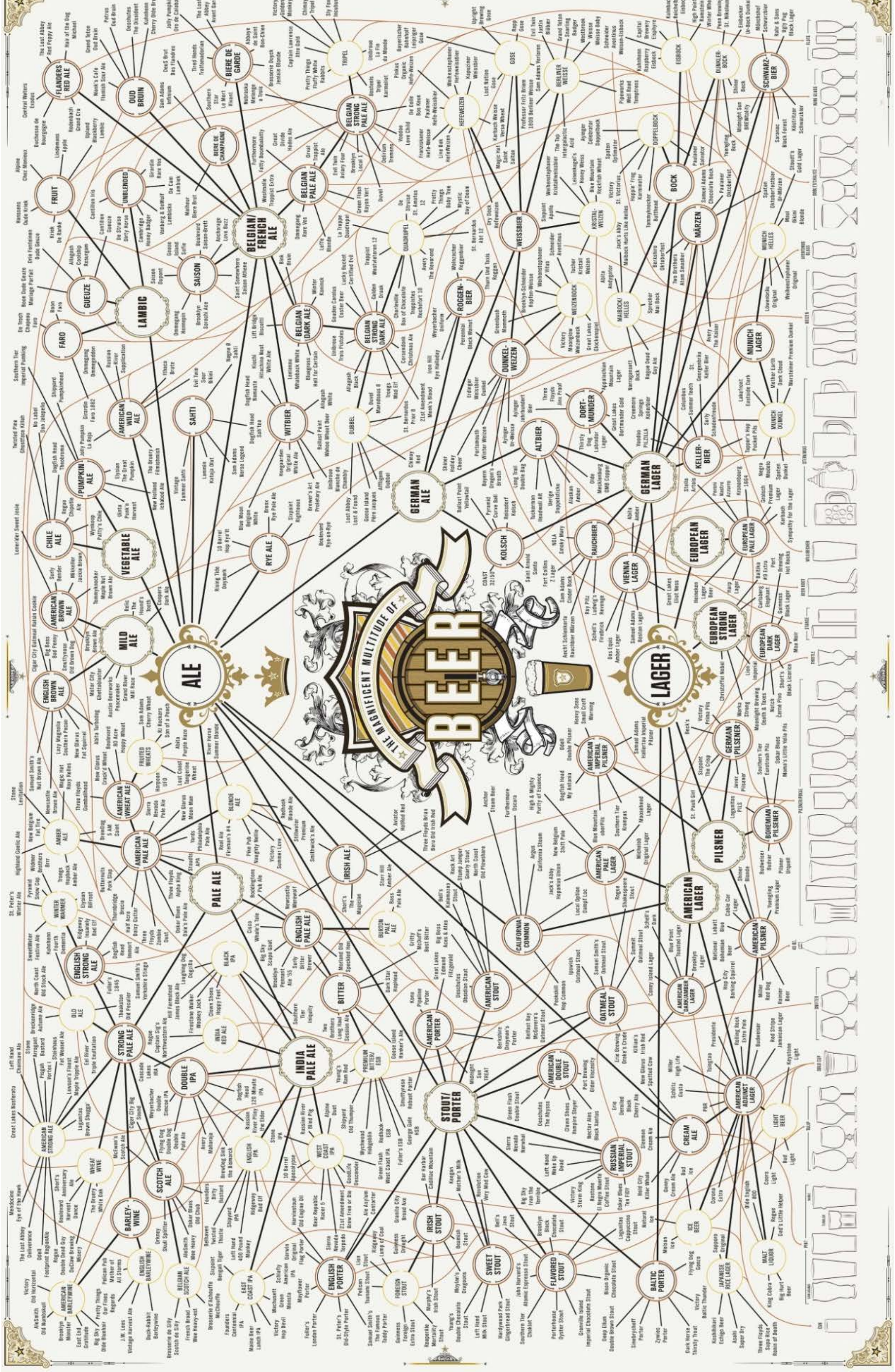

Figure 1: The magnificent multitude of beer". A representation of the variety of beers as a network of styles, commercial examples and associations with material objects. (© Popchartlab, 2014, reproduced with permission)

margin of 25 mm

1 Introductory Engagements

This thesis considers how the classification of *beer styles* is created, how it circulates, what it is contingent on, and the effects of these classifications on the *practices* of tasting: how they are learned, how they are done and in particular how they enact assessments.

I have introduced one approach in the opening image (Figure 1) through representation as a network which relates *styles* to *commercial examples* and also to judgements and conventions of what are the appropriate material objects for sensory engagement in the form of different designs of glasses in which to serve the beers. The interpretation and representation of this as a *network* is a powerful one that I will be drawing on. The concepts of making *judgements* and establishing *conventions* for serving and experiencing a beer through a particular material configuration that are “appropriate for a style” is where this investigation intersects with educational processes of learning, assessing and accrediting understanding of these conventions and practising such discriminations.

Why beer? It is more than just a drink to enjoy, or for amateurs to argue over style definitions. Beer has a significant place in making history through assembling sciences and processes of industrialisation and today is a vast multi-billion dollar international industry. Beer is the most-widely-consumed alcoholic beverage globally, with 187 billion litres drunk around the world in 2011 - approximately seven times the volume of wine consumption (Euromonitor International Ltd., 2011). These Industry reports classify beer by broad styles including “lager, dark beer, stout and low/non-alcohol beer” in the Euromonitor report. The recent and rapid growth of “craft beer” as a sector has led to other analysts working to provide a definition of what constitutes “craft beer”. S*tyle* is used as one of the core criteria (CGA Strategy, 2013), drawing on the classification systems developed for home brewers explored in this thesis. Entangled with this is the development and use of a very specific, historically situated, way to describe taste. The development of this is itself contingent on, and constitutive of, shifts in scientific practices and what counts as evidence to construct facts, evaluations and categorisations.

Moreover, these evaluations and categorisations are performed as economic actors. The classifications evoke strong opinions, and assemble groups around their definitions. There are those in the industry: analysts, marketers, writers, breweries and their professional brewers who use these classifications for analysis, marketing, designing and brewing beers incorporating and performing notions of style. There are also passionate, highly skilled, amateurs: beer bloggers, amateur historians and homebrewers who are writing, researching, designing and brewing beers also incorporating and performing notions of style. The gaps between these groups are often narrow with shared practices and frequent transitions from "amateur" hobbyist to "professional" brewer with the change in status achieved by shifting to a commercial footing. Exploring these intersections provides this thesis with a vehicle to make a contribution to explorations of the interactions of technologies with learning.

I draw on scholarship and engagements with classification systems from the field of science and technology studies (STS) in order to contribute to the field of technology enhanced learning (TEL) research. By further developing and contributing to an emerging dialogue between these two areas of scholarship I challenge narrow conceptualisations of what constitute the technologies that are considered within "technology enhanced learning". Rather than taking a more typical focus on the apparatus of devices used in learning and assessment practices I instead trace how classifications act as technologies: organising and structuring information thus enabling the apparatus of devices that instantiate and materialise these classifications to have agency in practice. This engagement also requires the development and assemblage of new methods and methodologies for undertaking and representing such an investigation which represent an additional original contribution.

1.1 Opening vignettes: routes in to the thesis.

To explore some of the themes introduced through the opening beer style infographic I use three vignettes to set the scene for this journey. Exploring these different locations using some of the methods deployed in this investigation is an introduction to, and exploration of, key topics and themes for this thesis. The vignettes are diversely drawn from international news reports, a specialist magazine and my "local" – a pub in Lancaster. Each one assembles international and local networks of people, objects, technologies, words, and judgements.

1.1.1 Vignette 1: Home brewing in the White House

BBC Sign in News Sport Weather iPlayer TV Radio

NEWS US & CANADA

Home World UK England N. Ireland Scotland Wales Business Politics Health Education Sci/Environ

Africa Asia Europe Latin America Middle East US & Canada

President Obama's home brew beer recipe revealed

Play 00.13 01.52

2 September 2012 Last updated at 17:59

The White House has released details of one of its most closely guarded secrets - the recipe for President Barack Obama's home-brewed honey ale.

Details of the recipe were kept secret until 13,000 people signed an online petition demanding more information. A White House video was then posted on the internet, showing chefs brewing the ale.

But cynics have suggested that the politics may be behind the release. One of the oldest American political cliches states that people vote for the person they would most like to have a beer with - and Mr Obama's rival in the November election, Mitt Romney, a Mormon, does not drink.

Figure 2: BBC News report on release of the White House homebrewing recipe

In September 2012 home brewing suddenly, somewhat inexplicably, made international headlines (Figure 2). Online 12, 240 people had signed a petition on behalf of “homebrewers across America” to “call on the Obama Administration to release the recipe for the White House home brew[sic] so that it may be enjoyed by all” on the ‘We the People’ (2012) e-democracy website.

Images of Barack Obama toasting medal of honour recipient Sgt. Dakota Meyer at the White House were issued by the Obama administration as a response along with an “Inside the White House” video on YouTube showing beer being “home brewed” in the President’s official residence (Figure 3) which were subsequently reported on by media agencies around the world.

Figure 3: Video still from "Inside the White House: Beer Brewing

The recipes were released – one was described as a “honey ale” the other as a “honey porter”. These beer names describe an ingredient (honey) and a broad “type” or “style” of beer. The recipes include ingredients and processes for reproducing these beers using a range of manufactured extracts and other ingredients including malted grains, hop varieties and yeast.

The New York Times commissioned Brooklyn brewery "brewmaster" and beer writer Garrett Oliver to brew a batch. The columnist wrote a review:

> The verdict: It was good. Very good.
> The aromas were floral with a touch of orange and a metallic note that I sometimes find in honey. On the palate, it was breezy, fresh, tangy and lightly bitter, not bone dry but not at all sweet … It didn't have the insistent rush of bubbles that you would find in a mass-produced beer, or the snappy twang of a pilsner, but rather the soft fizz of a British hand-cranked cask ale.
> "It's not without complexity," Mr. Oliver said, "and it's an interesting, broad sort of bitterness, a British type of bitterness, which fits the sort of hops they used." (Asimov, 2012, p. D3)

Here I introduce some of the core matters of concern for this thesis: the evaluation of home-brewed beer and the translation of tasting practices into written text. Through this translation the experience is made reportable and accountable and the writing becomes transportable and preservable as print on paper or digital text online – and thus more transportable and preservable than the material beer. There is an overall category verdict of "good, very good" followed by the use of a very particular language to describe the flavours and sensations of the experience as "breezy, fresh" using terms that seek to *evoke* the sensations, whilst for the aromas of "a touch of orange and a metallic note" are terms that are *referential* to other objects and tastes. Taste is described using some of the basic taste sensations of "bitter" which Garrett Oliver then comments on adding a geographic specificity to the *type* or *category* of bitterness as "a British type" which fits "the sort of hops they used". This introduces a geographical categorisations and ideas of particular types of flavours and sensations as representative of, or even *performing*, a specific geographical and historical construction: 'Britishness'. Within this short paragraph of a slow-news story there are a mixture of connections and complexities that are enacted through describing and assessing beer tasting. I now dive a little deeper into this world to find out what else becomes entangled in the practices of homebrewing.

1.1.2 Vignette 2: Zymurgy, the Journal of the American Homebrewers Association

As a member of the American Homebrewers Association (AHA) I receive bi-monthly copies of their magazine *Zymurgy*[1] by air mail from the USA. Flicking through a recent issue I find a report on the AHA's "home beer and wine maker survey" which reports the results from the organisation's 2013 survey that "there are approximately 1.2 million homebrewers in the United States – that's more than 1 per every 200 adults aged 21 and higher"[2] (Zymurgy, 2014b, p. 10). Following these survey results there is an 8-page feature sharing images, ideas and construction methods for home-made, improvised gadgets for use in brewing (Figure 4). Detailing such practices and how-to guides from members is part of the magazine's approach to the distributed learning and sharing of practices and methods between members.

platform. Use the chain to go from hook to hook. (This step is just a precaution in case the wort is too heavy). While mounting this part, be sure the top of your kettle will be below the mash-tun spout. Mount the burner using small brackets.

10. Spray paint it whatever color you want.

11. Start brewing with your new gravity fed brew-grill.

Thomas Trombly

3.

Blowoff Yeast Collector

When I am brewing multiple batches, this little yeast collector has been awesome. It is inexpensive and easy to build using just the supplies shown. To make the holes for the grommets, I just heated up the rear portion of a half-inch drill bit and once hot enough it just melts right through, leaving a perfect opening. Shave the excess and the grommets go right on.

I was inspired by the Burton system but only for capturing the most yeast possible so the drainage aspect wasn't a concern. I set up my collector after adding my oxygen and let it blow off at high krausen for about two days. Once I have collected around two to three vials' worth of beautiful creamy yeast, I replace my collector setup with a standard blow-off tube in a pitcher of StarSan. I don't have any issues with clogging due to the short period of time that I am collecting. The yeast is coming out with such force it pushes through quite easily, as you can see in the photo. Additionally, by only collecting for two days or less, this allows me to get the best yeast possible. I primarily use Wyeast 1056, 1187, and 1469. Some behave better than others but they all produce fantastic results. The containers can be salvaged LME containers or Walmart has them for $7.

Troy Faircloth

4.

Better Stainless Hop Spider

For my hop spider, I started with a standard two-quart stainless dog pail. I cut off the bottom with an angle grinder. I then cut slits to bend tabs for holding the clamp in place. Next I attached stainless steel eye bolts to form the legs of the spider. I used a 6" stainless worm clamp to secure a nylon paint strainer bag and I was done. This hop spider is solid as a rock. I've been brewing with it for two years and it's worked perfectly.

Scott Bieber
Middletown, Del.

5.

Yoga Mat Thermowrap

This is my 8-gallon stainless mash tun with a thermowrap made from my wife's old yoga mat. At ambient temps around 50° F (10° C) it will only lose two or three degrees in an hour. I used a box cutter to cut it to size, then attached the pieces with wire. It isn't flame proof, but it works great as soon as the vessel hit its target temperature and the burner goes off. If

Figure 4: Sharing socio-material practices

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[1] This thesis considers standards, rankings, the ordering of words and translations to numbers. As a tangential example "Zymurgy" is included among the 4th highest-scoring 7-letter words in Scrabble scoring 25 points.

[2] All of whom are above voting age of course – perhaps suggesting why the Whitehouse administration sought to court their interest in vignette 1.

These informal mechanisms for sharing practices and learning are central concerns for this thesis. It extends from material fabrication into the sensory domain through the regular section called “commercial calibration” which is introduced with the following strapline:

> One way beer judges check their palates is by using commercial “calibration beers” - classic versions of the style they represent. Zymurgy has assembled a panel of four judges who have attained the rank of Grand Master in the Beer Judge Certification Program (BJCP). Each issue they score two widely available commercial beers using the BJCP score sheet. We invite you to download your own scoresheets at www.bjcp.org, pick up a bottle of each of the beverages and judge along with them in our Commercial Calibration. (Zymurgy, 2014a, p. 71)

The article is a double-page-spread which features the beer name and label at the top-left along with a categorisation of “BJCP Category: 23 Specialty [sic] Beer”. Beneath this heading are 4 columns each headed by a caricature of the *Grand Master*-ranked judge. Underneath the images are reproductions of their *score sheets* which give long, detailed descriptions for Aroma, Appearance, Flavor, Mouthfeel and Overall impression along with a total score out of 50 (Figure 5).


THE SCORES

Sixty-One—Dogfish Head Craft Brewery, Milton, Del.
BJCP Category: 23 Specialty Beer

THE JUDGES' SCORES FOR DOGFISH HEAD SIXTY-ONE

DAVE HOUSEMAN

Aroma: Complex aroma of grainy, biscuity malt, earthy/herbal hops, and hints of grapefruit fruitiness. No DMS. No diacetyl. Alcohol perceived at a low level. Fruitiness is not specifically grape in nature to me. An inviting aroma. (10/12)

Appearance: Bright clarity. Red hue to the amber color. Thin, rocky, pinkish-white head with long retention. (3/3)

Flavor: Complex malt with a grainy, biscuit character. High, balancing hop bitterness and an earthy, herbal hop aroma. No DMS. No diacetyl. Fruity esters not so much grape-like as slightly vinous with grapefruit and pepper notes. More alcohol evident in flavor than aroma. More complexity than the 60 Minute IPA; still a fruity IPA. Balance more toward hops, esters, and alcohol than underlying malts. Somewhat drier than the classic 60 Minute IPA. (16/20)

Mouthfeel: Medium body and mouthfeel. Frizzy mouthfeel from carbonation. Noticeable alcohol warming, somewhat higher than expected in an IPA alone. (5/5)

Overall Impression: An interesting beer using Syrah grapes. Some malt still shines underneath and, as with any IPA, the hops are prominent. The grapes add a pinkish-red hue to the color and ferment out as a drying, vinous character with noticeable wine-like fruitiness in aroma and flavor. I don't know that I would have identified Syrah grapes without knowing what to look for, but this is a very tasty spin on a classic IPA and would accompany a burger and fries admirably. (7/10)

Total Score: (41/50)

BETH ZANGARI

Aroma: Pronounced and significant piney, peppery herbal, and woodsy hop aromas dominate. A low buttery note emerges on a swirl, with a more wine-like spicy pepper and raisin aroma coming forward. Fermentation is clean; low ale fruitiness. Malt is a toasty background component. (9/12)

Appearance: Reddish, burnished copper colored with brilliant clarity; creamy off-white foam falls to a thick, dense layer and rings the glass. Held to the light, brilliant fuchsia highlights shine. (3/3)

Flavor: Complex hop flavors dominate a toasty malt middle. Firm hop bitterness combines with firm malt backbone, with the flavors changing from spicy, to smoky, then to musky raisins and dried grass. Balance shifts among components—first hop aroma, then malt backbone, then the hop bitterness lingering post finish. (15/20)

Mouthfeel: Medium-full bodied, moderately creamy carbonation texture with low alcohol warmth. A tannic, lightly astringent finish amplifies the herbal hop character, the red grape tannins, and persistent alcohol warmth. Tannins linger on my teeth. (4/5)

Overall Impression: The first sips exhibit more Syrah wine/grape character in the flavor, giving way to an almost exclusively IPA malt and complex hop character. Syrah presents a hint of buttery diacetyl found in some robust reds—a reminder that grape must is present behind the big, brash beer. A good sipper on its own, this beer would also be a perfect accent to an old-fashioned beef pot roast with potatoes and carrots. (8/10)

Total Score: (39/50)

SCOTT BICKHAM

Aroma: Moderately high earthy aroma, with an autumn leaf character and notes of cranberries and raspberries. The hop character manifests as moderate grassy and grapefruit notes with a slight catty character that recalls tomato plants. Light peppery and spicy notes underneath are likely from the Syrah must. Malt is subtle with some light biscuit and caramel notes. (9/12)

Appearance: Beautiful burgundy color, with pristine clarity. White head with tightly beaded bubbles and very good retention. (3/3)

Flavor: Good malt support underneath, with light caramel notes but nothing too prominent—enough to provide some support for the flavors that follow. Fruit character is moderately high, with Syrah grapes, boysenberry, and a little plum. The hops lend a low to moderate citrus character and earthy notes that transition to a moderately bitter finish. Hop profile is pronounced but is softer than many IPAs and does not overpower the fruit. (16/20)

Mouthfeel: Moderate carbonation and body with some residual sugars that linger on the lips. Some tannins lend a slight mouth-puckering character just after the beer is swallowed. Moderate alcoholic warmth is appropriate for the IPA style. (4/5)

Overall Impression: A very interesting beer that was enjoyable to taste. The Syrah character could have conflicted with the hops, but the earthy components complement and even enhance each other. A little smoother finish would improve the drinkability. (8/10)

Total Score: (40/50)

GORDON STRONG

Aroma: Strong aroma of fresh hops, caramelly malt, and fruit. The hops give a grassy, citrusy, green character. The malt adds sweetness and a honey-like note. The esters are apples and pears with citrus accents. Not much overtly associated with grapes. Clean. Enticing. The caramel character grows as it warms. (9/12)

Appearance: Beautiful pinkish-orange color, like a blush wine. Crystal clear. Tall pinkish-white head; frothy, persistent. (3/3)

Flavor: Grape/wine flavor blended with citrusy, herbal hops and a medium-light caramel sweetness. Medium-high hop bitterness with a dry finish accentuated by tannin. Balanced aftertaste with hops, grape, and malt all evident. Clean fermentation. The wine-like aftertaste is incredible; it works very well. Just a touch on the sweet side. (15/20)

Mouthfeel: High carbonation. Medium body. Moderate tannin astringency, like in a red wine. Moderately warming. (4/5)

Overall Impression: Super refreshing with the high carbonation and dry finish. Has almost a wine cooler flavor but not in a bad way. The caramel sweetness is on the high side and detracts from the overall balance, but the flavor combination is superb. The tannin accentuates the hop bitterness, giving it a drier, slightly harsh finish that helps offset the sweetness. Still, for an IPA, I'd like less of that sweetness in the way of the hops. (8/10)

Total Score: (39/50)

Illustrations by Terry McNerney

72 ZYMURGY January/February 2014 HomebrewersAssociation.org

Figure 5: Calibrating palettes feature in Zymurgy magazine

The descriptions use a set of referential terms relating to ingredients "aroma of grainy, biscuit malt, earthy/herbal hops"; other flavours and aromas "cranberries, raspberries, grassy, apples, pears"; chemical compounds "No DMS. No diacetyl" and processes "Fermentation is clean" (Figure 6):

Figure 6: Calibrating people as tasting instruments: detail of judges' scores

1.1.3 Calibrating and aligning bodies

This idea of "calibration" of a panel of judges shows continuities with the instrumental positioning of sensing bodies in what Steven Shapin (2012a) groups together as "the sciences of subjectivity", wherein the tasting/smelling/touching body is involved in "becoming a measuring instrument" (Muniesa & Trébuchet-Breitwiller, 2010), and the expert calibration of these human instruments and processing of the data they generate then becomes a concern for "the education and training of sensory scientists" (Lawless, 1993).

Through these I dive straight into core concerns and core literature that informs this thesis: the way that tasting is judged, described, translated and made transportable through writing, and how this intersects with the historic development and practices of these sciences and proto-scientific practices.

In this second vignette I have introduced specific ways in which tasting practices are regulated and distributed and some of the standards associated with them: a standard form you can download, a standard scoring system, standardised categories and standardisation in the language used. These too are core concerns of this thesis: how such standards are assembled and reinforced to form an *information infrastructure*: a technology of ordering information (Bowker, 1994; Bowker & Star, 1999).

So, where are these judgements and practices used? Following the commercial calibration feature are two pages listing scheduled competitions that have been "officially sanctioned" by the Beer Judge Certification Programme (BJCP). These competitions are for *amateur* brewers – defined as those who are brewing as a hobby rather than as a profession or for commercial ends[3].

However, if one is not recognised as a professional (by virtue of brewing commercially) the BJCP constitutes and organises processes of assessment and certification through which amateurs can gain accreditation as judges. This is achieved through taking and passing examinations and gaining credit for experience in the specific settings of their sanctioned competitions. The practices and processes of these educational, assessment, and information-ordering practices are the primary topics of investigation in this thesis.

These two initial vignettes have been drawn from events and publications from the USA. In the final vignette I turn to explore ways in which these classifications have become enmeshed in practices and materials in the UK at that most British of institutions: the pub.

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[3] There are other (usually separate) competitions with associated organisations, certifications and awards for *professional* commercial breweries and beers. Competitions such as the Great American Beer Festival "invites industry professionals from around the world to sit together in small groups and, without knowing the brand name, taste beers in each specified style category" (Brewers Association, 2014).

1.1.4 Vignette 3: From pump clip to constructed histories – contexts for enquiry and engagement

In this final vignette I start not from a document but from a place and then trace associations from there in order to explore how the themes and concerns of this thesis relate to an everyday British setting. Through this I introduce some of the methods deployed in this enquiry.

Figure 7: BJCP style classification in use in the UK for a commercially sold beer

At my "local"[4] here in Lancaster a beer from the nearby Cumbrian microbrewery "Fell Brewery" is available on draught. The pump clip names it as "Robust Porter" (Figure 7). *Robust porter* is both a name for this particular beer, and also a connection that it is an example of the beer style *Robust Porter.* This style is derived from the BJCP style guides which were introduced in the previous vignette. It also suggests it will share some properties with the "White House Honey Porter" from vignette one. I can therefore ask "what is 'a porter'?" and where does this term "*robust porter"* come from? Attempting to answer that involves exploring history, the practices that account for and create histories, and tracing connections between these. The route involves some rather circuitous explorations of controversies in order to arrive at a key concern for the methods, engagement and position of this investigation.

[4] "My local" is British vernacular encompassing proximity, and connections: typically a pub one lives near to or frequents. See Brown (2011) for an popular exploration of the evolution of this institution.

However I argue that the journey, and the voices and accounts that are encountered, are as important as that destination.

To start tracing the origins I emailed the head brewer of Fell Brewery to ask where the beer name came from. He replied that:

> I came across it in Ray Daniels' excellent book "Designing Great Beers" which I have been using for many years. Although from an ABV% point of view, our porter is probably better characterised as Brown, the amount of dark speciality malt I put in it plants it firmly in the Robust category.

The book “Designing Great Beers” (Daniels, 1996) is based on the classifications of the BJCP style guides and gives information on recipe design together with information on competition-winning recipes for each style. The Fell brewery head brewer mentions how his recipe was a hybrid of two closely related styles within *Category 12: Porter* in the 2008 BJCP style guides and their use in the recipe design book. The two styles are *12a Brown Porter, 12b Robust Porter*[5]. Each style description includes details of “typical ingredients”, such as those mentioned by the brewer at Fell, along with a short history. Exploring these histories is a route in to some of the criteria for how styles are constituted and rationalised. For *12a Brown Porter* it gives the following:

> **History:** Originating in England, porter evolved from a blend of beers or gyles known as “Entire.” A precursor to stout. Said to have been favored by porters and other physical laborers.” (BJCP, 2008)

The history for *12b Robust Porter* refers to this, stating:

---

[5] Stop press! As I make final preparations for submitting this thesis for examination a major revision of the style guides is proposed and in the process of consultation (Strong, 2014). The categories of “Brown Porter” and “Robust Porter” are proposed to have their names changed to “English Porter” and “American Porter” respectively and to be moved into different categories (BJCP, 2014). Details of continuities and changes from previous classifications were published in draft form the day prior to submission! Therefore, and somewhat unfortunately, they are not considered here.

> **History:** Stronger, hoppier and/or roastier version of porter designed as either a historical throwback or an American interpretation of the style. Traditional versions will have a more subtle hop character (often English), while modern versions may be considerably more aggressive. Both types are equally valid. (BJCP, 2008)

These accounts present historic developments as a rationale for style differentiation. The histories accounted for here share key features suggesting derivation from, or a common antecedent with, an article that sought to make this differentiation published in “Brew Your Own” magazine written by the beer historian Horst Dornbusch:

> Near the end of Queen Victoria's long reign, as the 19th century was coming to a close, the Robust Porter split off from the standard London or Brown Porter. The Porter, long a brew of working class lineage and favored by the rough, hearty and robust strand of the British social fabric, seemed to be just a touch too rough for the more gentile denizens of refined Victorian society. A gentleman might want his dark ale, but it had to be a bit more upscale. Strange then that the upper-crust Porter that evolved came to be known as "robust," a term more workman- than gentleman-like! (Dornbusch, 2006)

The cited article goes on to draw a parallel to this separation as being “not unlike stout in earlier times” – drawing a differentiation between *porter* and *stout* as “styles”. However this is bluntly disputed by amateur beer historian Ron Pattinson who dismisses these as “fantasy beer stylings”, asking:

> I wonder when the term "Robust Porter" was first coined? Was it Victoria's reign? Or was it Elizabeth II"s? I'd ask what his evidence is for such ludicrous claims. But that would be a waste of time, because there isn't any. (Pattinson, 2011)

Here I suggest that in *amateur* practices there are continuities with peer-review processes among *professional* historians in the academy. These parallel some of the other continuities in the practices between amateurs and professionals and how these divisions are constituted in the beer judges considered in vignette 2. There is also controversy over the historic justification that accounts for divisions among beer styles. It is not only the controversies, but also the ways in which these are expressed and spill over into broader critique that have consequences for positioning this investigation. As I continue to trace these controversies between these “great amateurs” a little further they will connect to a core concern for the conduct of this investigation.

The original article, and the BJCP style guide, make a differentiation of Porters as being distinct and different from (though related to) the styles of Stout. This differentiation is challenged not only by Ron Pattinson but also by another beer historian, author, and blogger, Martyn Cornell. He poses it as a broader question and shows how this question makes connections to other amateurs interested in and searching for definitions and divisions:

> **What IS the difference between porter and stout?**
> One of the top 10 questions people who end up at this site put into search engines such as Google is a query about how to distinguish between porter and stout, something I’ve not actually tackled head-on yet. So – what difference *is* there between the two beers?
> Er …
> None.
> (Cornell, 2009)

He then explicates this view: that stout always was and still remains a type of “stout porter” and that institutionalised divisions (such as those in the BJCP guides) are both overstated and incorrect. As this is published in a blog post there is the opportunity for discussion through comments by interested readers and replies by the author. Such accounts assemble a local group through informal, occasionally anonymous, discussion which includes both elements of peer-review and the turn-taking structures of conversation. One of these conversational threads in response to this article has direct relevance to the conduct of this thesis:

> By and large the difference between stouts and Porters today has to do with the dark grain schedule. I draw the distinction between a robust porter and any stout is (generally) the use of Black patent in a porter and roasted barley in a stout. However, the only porter that can even be considered close to many stouts is the robust porter … So there.
>
> [To which Martyn Cornell replies:]
>
>> Mmmm – you're looking at this through the spectacles of the BJCP, I fear. In the UK, such terms as "robust porter" and "brown porter" are meaningless.

This exchange connects back to the BJCP style guidelines, which are now being enrolled to support and contest positions, and used as an authority on differentiating styles. This differentiation is now based not on historic constructions but, as the Fell head brewer did, through ingredients. However it is rejected as false "spectacles" through which both the past and present are being misrepresented. Nevertheless, the final assertion that "In the UK, such terms as "robust porter"... are meaningless" is itself challenged by the photographic example that opened this vignette and the account of its brewer through which I have shown that term demonstrably in use in the UK.

This may appear to be a rather circumlocutory approach to arrive at the somewhat minor point that definitions from the BJCP guides have been transported and are in use in the UK[6]. However, it was the journey, not just the destination, which was important. Through tracing the connections, voices and controversies encountered I have introduced some of the accounts, their tone and the criticism directed towards the existence, organisation and use of these style guides from a different group of amateurs interested in the classification of beer: amateur beer historians. Engaging with these accounts is important for the positioning,

[6] I will turn to explore existing British classification systems in section 3.2.3.

practice, processes and accounting for this investigation. And it is to how, and why, that is the case that I now turn.

1.2 Conducting this investigation: Approaches and considerations for engaging with the classification system and its practices

So, what are “the BJCP style guides”? I have introduced them as accounts for sensory experience and as a printable form in vignette 2. I then explored them as ways of accounting for and ordering history, and as a resource and authority for making such distinctions in vignette 3. These are different *performances* and *practices*, of which I suggest further productive questions would include: “what were they *designed* to do?” but also “what *do* they do?”. Furthermore, there is a relevance to considering how critiques such those in vignette 3 are engaged with by the authors and spokespersons of this classification system.

This is addressed directly by the current BJCP president Gordon Strong who writes that:

> Beer styles are part of a structured method for categorising and describing beer. They are intended to be a convenient shorthand for discussing beer, and to allow all who taste the beer to be able to describe it using a common framework and language . …
>
> Most style guidelines are created with a purpose in mind. The guidelines of the BJCP and the Brewers Association are designed to assist competitions by providing a frame of reference for brewers and judges, and by grouping together similar beer styles for judging purposes. Without beer styles, competitions would be nearly impossible to conduct. Judging would simply become a hedonistic event, where judges would pick beers according to their own personal preferences. The outcomes would be totally arbitrary and would depend on the background and whims of those who judge the beers - not a desirable situation. …
>
> For some professional brewers (and even homebrewers), even mentioning the subject of beer styles is like waving a red rag in front of a bull. Some beer enthusiasts support the idea of beer styles but strongly disagree with particular style descriptions or sets of guidelines. These strong responses are generally either based on *a misunderstanding of the purpose of the guidelines, observations of them being*

> *used incorrectly*, or *a dislike of the persons or group making the guidelines*. These contentious issues are what led me to call beer styles *a misunderstood necessity*. (Strong, 2011, pp. 156-157 - my italics)

In the quotes from blogs in vignette 2 I showed clear examples of the sort of "beer enthusiasts … [who] strongly disagree with particular style descriptions or sets of guidelines" together with clear indications in their writing that this is from a "dislike of the persons or group making the guidelines". However, I suggest that attending to such controversies (as I did in the third vignette) helps to expose the ways classification systems are used, as well as how this system constructs histories, geographies and a language of taste. This is to render such systems not as structured, explanatory resources to settle "matters of fact", but instead as topics for investigation as "matters of concern" (Latour, 2004b).

Furthermore, I suggest that the text I italicised in the quote above is of particular importance for the positioning of this investigation and how it should proceed. It is clearly stated that an approach which shows "*a misunderstanding of the purpose of the guidelines"* or is based on "*observations of them being used incorrectly"* could be dismissed through the same "us vs them" dichotomy. Moreover, it is a call to engage with these statements as genuine concerns and, furthermore, for them to act as pointers towards appropriate methods and settings for further exploration. Taking them seriously challenges me to consider choices, settings and the assemblage of methods that would explore the "correct use" and "the purposes of the guidelines" *in practice*. However, to work *only* within observations of "correct use" could also exclude or ignore their extension beyond such settings (such as those I have introduced throughout this chapter). I therefore argue that it will also be important to explore and engage with the ways in which these classifications extend and act beyond these "correct" settings. It is through investigating how standards and classifications have unintended consequences that I suggest there will be resonances with the agencies, contingencies and consequences of other information infrastructures and assessment processes in education - and it is to those engagements that I now turn.

Figure 8: ANT montage

2 Sensitising Terms, Travelling Companions, Methods Assemblages and a Route Map for this Investigation

Again I open with an image (Figure 8) – this time a montage that seeks to visually assemble and juxtapose data and ideas that are explored in this chapter. A word cloud visualisation of word frequencies in the text of this thesis is overlayed onto M.C. Escher's (1963) woodcut of ants treading an infinite Möbius strip, partially obscuring Jeffersonian transcription (Jefferson, 1984) of beer judging talk from my fieldwork. It is deliberately messy – a concern that I shall explore further in this chapter - and makes a visual play on Latour's (2005) re-positioning of Actor Network Theory (ANT) wherein "the acronym A.N.T. was perfectly fit for a blind, myopic, workaholic, trail-sniffing, and collective traveller. An ant writing for other ants." (p.9).

2.1 Sensitising terms from the vignettes

In the opening vignettes I introduced you to some of the *concepts*, *ideas*¸ and *methods* of this thesis. I have shown encounters with *taste* as a sense, together with *classification* and *categorisation,* I have introduced their combination into the *classification system* of a style guide, which I have positioned as an *information infrastructure.* I have shown glimpses of how this has been constructed through histories, has spread and been reused. I have also presented encounters with ideas and approaches to differentiating *amateurs* and *professionals,* and of engagements with *informal learnin*g and *educating at a distance.* I described some of the methods through which learning is *assessed* and *accredited* and the *ranking* of those who pass through assessment 'filters'. All of these are related to sets of *standards* and associated *practices*. I have also touched on the *settings* for which those were designed and some of the *normativities* about where those "should" be used, and from those suggested they can be productively explored and considered. The opening vignettes also included *data* and introduced an approach of *tracing connections* from a news story, a magazine and a pump clip to other places and debates. Through these I have presented some of my *empirical data* from *fieldwork* and some *methods* for *tracing connections*.

I now turn to translating those concerns into research practices through posing questions for investigation, and methods for exploring those questions. A traditional approach after introducing the context would be to *review the literature* to *define my terms* and perhaps set out my *epistemological position.* From that I would describe a *theoretical frame* then derive a *methodology* and then draw down a set of *methods* (Silverman, 2010).

However, are such neat divisions and ordered hierarchies truly meaningful or possible? Rather than asserting a bounded *context* I introduced some vignettes and traced connections, and whilst many of the terms italicised above are theoretically derived and informed by a diverse literature of prior research and theorisation, they are complex and inter-dependent rather than neatly orderable into linear hierarchies or sequential steps suggesting a concept of progress.

2.1.1 The metaphor of the network

In contrast to the idea of a hierarchy or modernist positioning of a progressive accumulation and ordering of knowledge I seek a different metaphor. Rather than reviewing a "body of literature", and from that finding a "gap" or "end point" to which I seek to add another forward step, I instead seek to trace connections and entangle literature as part of that tracing.

In m construction my text contributes a node in an active and acting network, rather than a step in a single direction. This acting and active network forms part of the conceptualisation of an "actor-network". However as Latour (1998) considers there is a risk that the term 'network' may be interpreted as technical, and with the proliferation of computer networks may have lost its usefulness as a critical tool in contrast to hierarchical sociological conceptualisations of institutions, nation-states or society. Other terms are proposed – the 'meshwork' of Ingold (2007), or "cat's cradle" of Haraway (1994) – many of which, like ANT's "network" metaphor draw inspiration from the concept of the rhizome developed by Deleuze and Guattari (1987). With these caveats in mind I shall at times use 'network' but emphasise it is *not* computational but rather scale-free, non-hierarchical and rhizomatic.

2.1.2 Reconfiguring "the literature", engaging with the institutional standardisation of research

In this (re)configuration "the literature" is no longer a dead corpus of prior work to review and build on, but is instead a living mesh of words and ideas to help formulate questions and to place in dialogue with empirical evidence. Rather than drawing down an 'appropriate' set of methods from a methodology and theory I am now involved in the active construction of a *methods assemblage* (Law, 2004) which performs this network into being, and performs linkages with other networks.

However, research processes and procedures are bound up with, and performed through, institutional requirements and standards. Whilst this investigation started from a serendipitous encounter – a post on an internet forum proposing a beer judge exam preparation course which would be made available to distance learners (to which I shall return in chapter 3) – it was required to conform to certain steps. First, and foremost, among these was writing a proposal with a set format that would include research questions, plans, ethical considerations and an indicative literature review.

2.1.3 Literature engagements: From searches to networked approaches

Initial broad searches in 2011 for the proposal using the Web of Science core collection of research literature for the term "taste" in the *title* and "tasting" I the *topic* retrieved 29,357 articles - dominated by work in biological and neurological sciences. Filtering these by the broad domains of "social science" or "arts and humanities" reduced this down to 7,908. The highest ranked, non-exclusive, classifications of research areas within this literature together with the number of articles retrieved (shown in brackets below) help to illustrate the heterogeneity of the uses of the terms "taste" and "tasting", as well as the disciplinary associations of these investigations:

1. psychology (4,615),
2. behavioural sciences (2,731),
3. neurosciences (1,348)
4. pharmacology (1,150),
5. biochemistry (1,137),
6. literature (585),
7. gastroenterology (557),
8. arts humanities other topics (471).
9. art (473)
10. physiology (439).

"Education, Educational Research" as a discipline ranked 32nd (109 articles) with fuzzy categorisation including articles from other disciplines such as animal science, dietetics and health (particularly paediatrics and research on the effects of advertising and packaging). Taste figures here as aesthetic rather than sensory, for example developing "a taste for literature" was the topic of 9 articles[7]. As such this literature serves as an interesting *topic* for investigation, but has limited application as a *resource* to guide my engagement.

The broader framing of this exploration as a sociological consideration of education and learning suggested that the area of "Sociology" (ranked 18th, with 265 articles) could be more productive. Again there was fuzzy categorisation with medical and neuroscientific publications still being included. Once excluded, the number of results in sociology was reduced to 194 using the following search criteria:

TITLE: (taste) AND TOPIC: (tasting)

Refined by: Databases: (WOS)

RESEARCH DOMAINS: (SOCIAL SCIENCES or ARTS HUMANITIES)

AND RESEARCH AREAS: (SOCIOLOGY)

[excluding] RESEARCH AREAS: (ENDOCRINOLOGY METABOLISM or GENERAL INTERNAL MEDICINE or BEHAVIORAL SCIENCES or IMMUNOLOGY or PEDIATRICS or INFECTIOUS DISEASES or NEUROSCIENCES NEUROLOGY or PHARMACOLOGY PHARMACY or BIOCHEMISTRY MOLECULAR BIOLOGY or GASTROENTEROLOGY

[7] The one text retrieved among these relating to educational technology research (Ross, 1994) used food, taste and recipe formulation as a metaphor for the direction of educational technology research rather than as a topic for investigation.

HEPATOLOGY or TOXICOLOGY or CARDIOVASCULAR SYSTEM CARDIOLOGY or BIOTECHNOLOGY APPLIED MICROBIOLOGY)

Timespan: 1945-2011

Search language=Auto

Within these retrieved articles taste was connected to food (29), to Bourdieu's concepts of distinction (29), to music (23), to art (22) and to media (7). Initially ranking all 194 articles by times cited (as an indication of influence) and reviewing their abstracts identified a particularly pertinent article which would shape this thesis fundamentally: Antoine Hennion's (2007) "Those things that Hold Us Together: Taste and Sociology", ranked at number 9 with 49 citations.

Hennion's exploration extends his earlier work on amateur classical-music lovers (2001; 2001) and the continuities and contrasts with the attachments of drug users (Gomart & Hennion, 1999) extending those considerations of the place of "great amateurs" in their encounters with tasted objects – to encompass rock climbers and wine connoisseurs. The latter group then draws on work (in French) with his collaborator Genevieve Teil (1998, 2001)[8].

Hennion draws influence from ANT and its proposition to symmetrically account for both human and non-human entities and the distribution of agency between them as they construct "the social". Rather than the troubled term "network", which I grappled with earlier, Hennion instead proposes a concept of *attachment* to both embody and de-centre the amateur and place agency always and already with the object too. This then opens up the tasted object's "right to respond, [and] their capacity to co-produce 'what is happening'" (Hennion, 2007, p. 101)[9]. By investigating amateurs and their attachments Hennion proposes that multiple elements are reflexively mobilized in one way or another, and places those into a typology of:

the *community* of amateurs,

the *devices and conditions* of tasting,

[8] These works remain untranslated but are given an extended summary in English by Latour (2004a)

[9] The concept of attachment advanced by Hennion has also been taken up as one that helps challenge some of the misconceptions that arise from using the metaphor of "network" in actor-network theory. For example ideas that this suggests a technical, computing or physical network rather than a scale-free and non-hierarchical metaphor challenging micro-/macro- dichotomies or the frequent focus on hierarchies such as class or bureaucracies in sociology. (Latour & Stark, 1999).

the *body* that experiences,

and the *tasted object*'

(Hennion, 2007, p. 136 - my italics, and literal de-lineation).

This serious engagement with amateurs engaged in tasting practices had strong resonances with the research setting I was interested in. It suggested a more "networked" approach to literature engagements would be productive through tracing connections to and from this node: both temporally through citation alerts, and conceptually through following chains of references to and from the article. This can be visualised, as a network[10] shown in Figure 9:

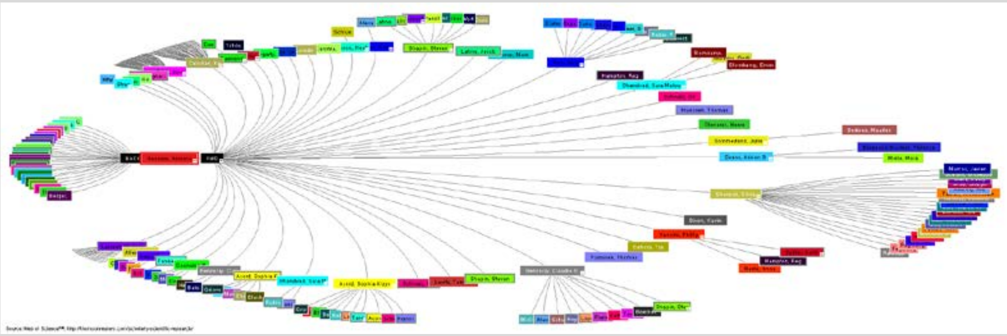

Figure 9: Two-generation map of citations to and from Hennion (2007)
(generated using the Web Of Science Citation Map tool).

More fundamentally, this paper posed the possibility of translating its ideas and typology into a set of research questions to guide, focus and help to structure an investigation – to which I now turn.

2.2 Research questions

As explicated in connection to the literature my questions are specifically informed by literature. I present them here as a place to start situating and exploring that literature and how these connect with technology enhanced learning, rather than as the end point of a "literature review":

[10] As a network representation this is semiotic, referential and technical but not reducible to any one of those.

- How are tasting bodies, tasted objects, devices and conditions of tasting done in the practices of beer judging?
    - How are bodies, objects and the devices and conditions of tasting aligned and arranged to enact assessments?
    - How is an information infrastructure used as a resource in the situated practices and interactions of sensory evaluation and assessment?
    - How are the categories assembled and used to accomplish evaluative tasting through practices?
    - How do members orient to and use devices and tools which instantiate these classification systems?

2.3 Explicating the research questions, enrolling travelling companions

As well as drawing explicitly on the work of Hennion these questions also draw on other terms and concepts which I now explore in more detail. However, rather than seeking to “define my terms” and thereby fix them as inflexible and inviolate I wish to make much more contingent connections. To do this I position some of the ideas, conceptualisations and typologies I shall draw on as ‘travelling companions’ to be taken along on the research journey. As ‘travelling companions’ they will be placed in a dialogue with the situations and practices I explore, and also the disciplinary positioning of this thesis, in order to be critically assessed and examined for how useful they are in making sense of my data and answering the research questions.

2.3.1 First travelling companion: Technologies as tools and more

This thesis explores the ideas of *technology* and how it is linked to *learning*. The programme which frames this thesis, the associated research centre, and the disciplinary field in which this is positioned conventionally propose this as a relationship of *enhancement* through the phrase of “Technology Enhanced Learning” (TEL). However, such a direct and instrumental linkage proves highly problematic on further consideration – see Bayne (2014a, 2014b) for a thorough exploration. It is not this linkage that is my central concern here but rather the implicit assumptions and often unexplicated and narrow engagements with what constitutes "technology" within TEL.

To explore this I draw in particular on the sustained engagement and theorisation of technology from the field of science and technology studies (STS). Within STS it is emphasised that "'technology' comprises much more than just machines. The sociology of technology thus has a focus much wider than just hardware"(Grint & Woolgar, 1997, p. 13). To explore this further I draw on Langdon Winner's (1977) examination of the ways in which the word *"technology"* appears in academic and everyday speech where he notes how the term is "widely used in ordinary and academic speech to talk about an unbelievably diverse collection of phenomena - tools, instruments, machines, organizations, methods, techniques, systems, and the totality of all these and similar things in our experience." (p8). He proposes the following typology:

- *Apparatus*: the "tools, instruments, machines, appliances, weapons, gadgets which are used in accomplishing a wide variety of tasks ….. For many persons, "technology" actually means apparatus" (p11)
- *Technique* refers to the Greek root of technology as technē and covers "methods, procedures, routines - that people engage in to accomplish tasks" (p12)
- *Organization* refers to the use of the term technology to refer to "some (but not all) varieties of social organization- factories, workshops, bureaucracies" (p12)
- *Network* is his term for the use of technology to "mark those large-scale systems that combine people and apparatus linked across great distances" (p12)

The "technologies" I am interested in here are a *network* in Winner's typology: those technologies linked to and performing "the BJCP" through the style guide and assessment processes, and how these act as an *information infrastructure* (Bowker & Star, 1999) organising and classifying taste descriptions, tasting practices, certifications and assessments. I also take an interest in the *apparatus* of Winner's system: the devices which instantiate this system in practices. These may be the overtly "technological" devices of smartphones and laptops, or the more prosaic paper-based forms and checklists which structure information. Even the humble pencil, a device that is now so ubiquitous that it is "a technology which has become almost invisible" (Lawn & Grosvenor, 2005, p. 11)[11], is a key part of this technological assemblage. Thus I enrol both a broader conceptualisation of what constitutes technology and bring along STS scholarship as travelling companions. When these are placed into dialogue with work within the TEL field it becomes apparent that most TEL research considers only the "apparatus" (tools) of Winner's typology. However, as fellow TEL researchers drawing on STS-derived perspectives Hamilton and Friesen (2013) elucidate, these "technical things are only a surface underneath which teems a complex ecology" (p.9). An important, but often invisible, part of that complex ecology are standards and classification systems, so I now turn to consider which explorations and approaches to those will be useful to take along with us.

2.3.2 Second travelling companion: Standards, classifications, certifications and information infrastructures

There is significant previous work within STS that explores the agencies and effects of classification systems and their connections with amateur practices. Star and Greisemer's

[11] A visit to the Keswick Pencil Museum or reading Petroski (1992) shows how complex the manufacturing requirements were to enable this widespread adoption and ubiquity. Furthermore, the substantial changes to practices in formal education and the persistence and mobility of pupil's records and accounts of learning that came with the shift from chalk and slate to pencil and paper become obfuscated through this invisibility.

(1989) exploration of the assembly and classification of “vertebrate zoology” for the Berkeley's Museum in the early 20th century is a key text. The authors suggest that this classification system became a way of organising the methods for the gathering of objects, their categorisation, indexing and re-use. This displaced “why” questions with “how” and enabled interoperability of the handling of diverse materials, relations and information. Standardisation was achieved through *practices*, and these practices assembled an information infrastructure capable of being used by diverse groups at a distance which is still in use today. These ideas were further explored and expanded in Bowker and Star’s (1999) exploration of the developments, histories, contingencies and consequences of three other classification systems: the international classification of diseases (ICD), racial classification in apartheid-era South Africa and classification of Nursing Interventions. The latter categorisation exploring the tensions around surfacing the hidden work of care to make it more valuable and accountable with the concomitant risk of translating those practices into mere box-ticking accounting exercises.

These studies, together with related work on standards in medical practice by Timmermans and Berg (2010)[12], inform the extensive treatment of the politics of classifications by Busch (2011) who describes standards as “the recipes by which we create realities”. In order to consider the standards and classification practices that form the empirical core of this thesis Busch’s typology of standards is a useful travelling companion to draw on in these encounters. He applies his typology symmetrically to both humans and non-humans – an important concern for this thesis and the other theoretical approaches I draw on.

[12] Timmermans and Berg’s work has theoretical relevance for this thesis. However, I have not drawn on it extensively, finding instead the synthesis and typologies developed by Busch that move and extend their insights beyond the biomedical setting as having more relevance and structural value.

> **Olympic standards** are those for which there is one winner or just a few winners. (p43)
>
> **Filters** are standards that perform quite differently. The metaphor of the filter suggests the key aspect of this type of standard: some people or things can pass through the filter and thereby meet the standard, while others fail in this regard … Filters are also used to sort among things. (p.43) … Unlike Olympic standards, which identify a single winner as the best, filters are designed to eliminate the unacceptable.
>
> **Ranks** are a third form of standard. As the term implies, standards that rank persons or things put them in some sort of (usually) linear hierarchical order. (p.45)
>
> **Divisions** are simply different categories that are unranked. (p.46)

His tabulation succinctly explicates each of these:

Type	People	Things
Olympics	Professional athletes, musicians, singers, dancers	Best wine of 1996, car of the year, best hotel in Paris
Filters	Citizen, Rotary Club member, student at a particular high school, medical school graduate	Safety of food, toys, and children ' s clothing; nation-states
Ranks	Associate professor, vice president, assistant director, general	Grain grades and standards, earthquake size
Divisions	Butcher, baker, candlestick maker, undergraduate major	Apple varieties, cloud types, types of crystals

Table 1: A typology and examples of the use of standards for people and things
(Reproduced from: Busch, 2011, p. 42)

He also presents a visualisation using an x-axis for non-hierarchical *divisions* and *categories* and a y-axis for the hierarchical *ranks* with *filter* and *Olympic* thresholds (Figure 10):

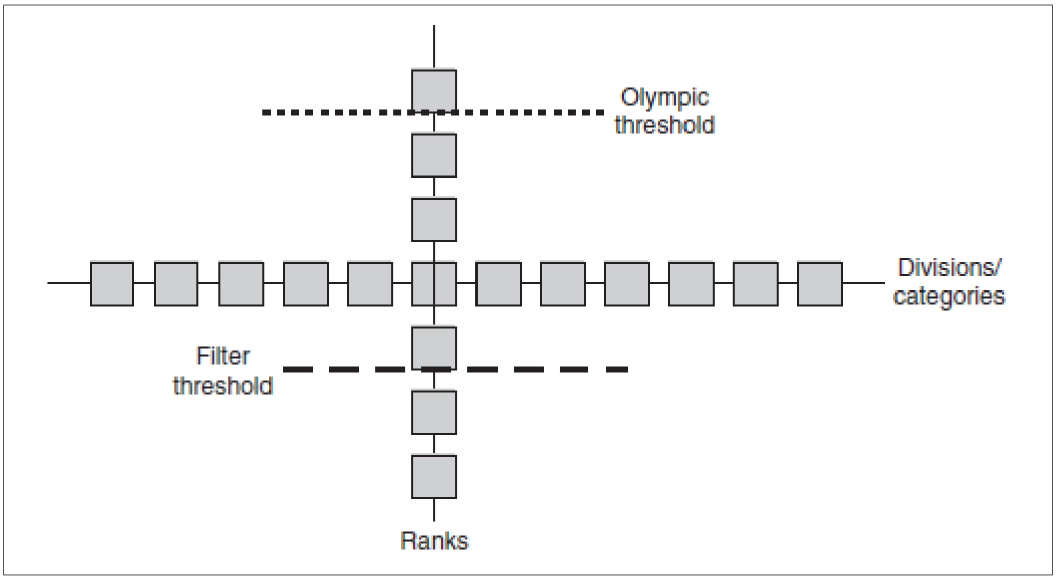

Figure 10: the relationships among four types of standards (Busch, 2012, p.48)

Of course such a diagram intentionally simplifies often implicit rankings in categories/divisions – exploring those is therefore a task as I place this typology in dialogue with the empirical evidence I shall present.

2.4 The retinue of relations

While the core lines of argument in this thesis relate to these two 'travelling companions' - the ways technologies are conceptualised, and the agency of standards and classifications as technologies of ordering information - they will be explored through practices of tasting, and in connection with considerations of learning and assessment. These connections craft what I now term a 'retinue of relations' which require acknowledgment and exploration, though remain subsidiary to the central thrust of the argument. I explore these in an analogous manner to the core companions: seeking to initially assemble a set of contingent conceptualisations and definitions here. These will also be explored, challenged and changed through encounters with data – as a subsidiary, though unavoidable, set of engagements.

2.4.1 First retinue of relations: Taste and the tasting body

As previously considered in detailing my initial database searches, the term ‘taste’ carries an inherent complexity referring as it does both to the sensory practice of ‘tasting’ and also to the cultural value of ‘good taste’[13]. By placing the words *taste* alongside words like *category* and the practices of *categorisation* and *classification* the following quotation becomes an “obligatory passage point” (Callon, 1986) for this text:

> “Taste classifies, and it classifies the classifier. Social subjects, classified by their classifications, distinguish themselves by the distinctions they make” (Bourdieu, 1984, p. 6)

This entangles the work of Pierre Bourdieu as part of the retinue of relations between classification and taste. His work is certainly *one* way of exploring taste (well elucidated by Mann, in press), and an influential one - as seen in the database search results. However, is taste-as-distinction a useful one to take with us? Here tastes are “preferences and dispositions of the elite, inculcated at home and at school, [they] are actually heirlooms, forms of cultural capital: they serve to reproduce class structure and class boundaries” (Schwarz, 2013, p. 417 - my parentheses). In this formulation the focus is on the performance of *distinctions* rather than *tasting.* However, as one of the most influential explorations of taste as a social phenomenon I suggest it must be taken along for the ride.

Hennion asserts that “sociology should take the amateur more seriously, even treat her/him more respectfully” (2004, p. 131). His work explores how Bourdieu and those working with Bourdieu’s ideas have a tendency to dismiss such amateurs presenting them such that

---

[13] Whether these can truly be separated is of course an enormously complex question in its own right, but one that is outside the scope of this current project.

> At worst, the amateur is a "cultural dope"[14] who is wrong about the nature of what she/he does; at best, she/he is the passive subject of an attachment, the real determinants of which are unknown to her/him. (Hennion, 2004, p. 131)

There are some tension between these relationships: on one side are the critical theorists drawing on Bourdieu who seem to see so much *more* than the amateurs they describe; on the other are the self-proclaimed practitioners of a post-critical, “new sociology of art” (Schwarz, 2013) which draws extensively on Hennion’s work who seem to see (and hear, taste and smell) much *less* than the great amateurs in their passionate attachments.

This connects to the idea of attachment which Hennion places as the key dimension of relationships between embodied amateurs and the objects of their passion, proposing that *attachment* is a better term than *taste* as it splits oppositions between causes and the “inexpressible instantaneousness” (Hennion, 2004, p. 109) of effects whilst also acknowledging that these occur in “a present that cannot be reduced to analysis” (p.109) and furthermore focussing on *states* rather than *labels* and bringing a shift of focus onto activities.

Through mobilising Hennion’s ideas and work in my research questions, and by using them to structure this thesis, they move from the retinue to act as a guide for the journey. However, I deliberately left one part of his typology out of my research questions. I do not ask directly about “a community of amateurs” as the term *community* is an aggregate that is asserted, but left unexplicated. Within explorations of learning the term “community” seems to carry a similar amount of problematic baggage as the term *taste* can bring with it in the

[14] This phrasing of a “cultural dope” intentionally and explicitly re-uses Garfinkel’s (1967) phrase from his commensurate critique of Talcott Parson’s structural determinacy.

broader field of sociology[15]. As such it becomes an additional, perhaps peripheral travelling *question*, asking "how is 'a community of amateurs' assembled? How would it be asserted or recognised as being 'a community'?" This repositions the notion of community as a topic for investigation rather than as a resource for explanation.

2.4.2 Second retinue of relations: Learning as a situated practice

As well as considering the technology of TEL, this thesis must also relate this to learning. Whilst I have rejected and made reference to problematisation of the instrumental linkage of the former to the latter as "enhancement", my engagement with "learning" requires some explication. Rather than attempt an exhaustive review of this complex concept, or to craft a definitive statement or position my intention here is to assemble a contingent definition and useful connections. To do this I draw on the work of Steve Fox (1997) who provides a useful review of *situated learning theory* (SLT) vs *traditional cognitive theory* (TCT) noting that the latter dominates thinking about education. He sets out how TCT "sees learning as a process that takes place inside the head or inside the mind… a process of acquisition [and] internalization in which learners memorize, understand, and are able to reproduce on demand in writing or orally the contents of the syllabus which they have been taught." (p729). This view institutionalises boundaries – with the central one being the inside vs outside of the separated mind of the learner. Fox argues that this naturalises and takes a particular view of knowledge for granted – that it is professionally produced and subject to expert classification, organisation and control to ensure quality and universality. This places it in opposition to localised, common-sense, limited and undisciplined lay knowledge. Against this mentalist formulation he positions the loose affiliation of approaches around "situated

[15] See for example Hodgson and Reynolds (2005) on the oft-uncritical and idealised interpretations when asserting a "community" around networked learning that ignore problematic aspects and repressive forces.

learning theory" which "seeks to overcome the mind-body dichotomy" and recognise that learning "encompasses mind and lived-in-world, treating relations among person, activity, and situation, as they are given in social practice" (p.731). Here learning is understood as occurring in social-and-material situations with the mind no longer an isolated container to be filled but instead part of a connected, active and embodied learner engaged in a "learning process as a generative process of knowledge production which is indisociable from the situated, contextual, social engagement with the material lived-in-world"(p.732).

These ideas are built on by Gherardi (2000) in a consideration of institutional learning: she proposes that practice and learning are fundamentally linked arguing that "thinking of learning through participation in a practice enables a focus on the fact that, in everyday practices, learning takes place in the flow of experience, with or without our awareness of it." (p.214). She goes on to note the pivotal role of breaches and breakdowns in exposing knowledge and learning as "systems of practices, existing in the world of tacit knowledge. That is, tacit knowledge that is simply usable but that becomes the object of reflection when a breakdown occurs." (p.214) – suggesting that any methods must be attuned to investigating such breakdowns. This assembles a retinue of relations around learning – not as a focus on an individual atomised human learner but on a network of social and material practices – and suggestions of sensitivities for methods.

At the intersection of Busch's typology of standards and classifications, and the views of education and learning that permeate traditional cognitive theory, are *practices of assessment and evaluation* - the final retinue of relations.

2.4.3 Third retinue of relations: Assessment and evaluation as standards and practices

Assessment brings together several of these strands. Whilst there is a vast literature on educational assessment I could draw on (for example there are 2, 670, 000 article citations retrieved by google scholar for the search term "educational assessment"[16], with specific foci such as computer-assisted language testing within this[17]) that is not the focus of this thesis – which is instead asking how classification technologies act to structure information such that it *can* be tested. For this sort of engagement the literature I have introduced previously around the agency of standards is particularly pertinent for exploring these issues.

Assessment practices both inside and outside of formally constituted educational engagements are involved in the development of many classifications and standards with Busch (2011) presenting this as a "tripartite standards regime (TSR)" of standards, certifications and accreditations. He notes that these differ from hierarchical forms of governance and "are often a cobbled-together network of persons, organizations, and things, rather than being constructed on a formal hierarchy of status relations" (p.221). How these are assembled or cobbled together is therefore an important consideration for any investigation of standards in learning.

Gherardi's work is again useful here as she suggests that:

> what people produce in their situated practices is not only work, but also the (re)production of society. In this sense, practice is an analytic concept that enables interpretation of how people achieve active being-in-the-world … the competent reproduction of a practice over and over again and its refinement while being practised (or its abandonment) is the constant negotiation of what is thought to be a

[16] See for example Glaser, Chudowsky, and Pellegrino (2001) and also Gipps (2011) for widely-cited explorations of the topic.

[17] See (O'Keeffe, 2013) for an exploration of the intersection of these.

> correct or incorrect way of practising within the community of its practitioners. (Gherardi, 2009, p. 536)

Drawing on Hennion's work she suggests that *attachment* ties the practitioner to the objects and routines of practice, with a continuous assessment of whether "the collective formation of taste at the moment when the aesthetic judgments supporting the practice are formed. Taste may therefore be conceived in terms of taste-making, i.e. a situated activity that rests on learning and knowing how to appraise specific performances of a practice." (Gherardi, 2009, p. 538).

This draws in aesthetic appraisal as a part of assessing the ongoing performance of practices and evaluations of them. As a result there are two, somewhat contradictory, sets of relations assembled around assessment: one grounded in standards and traditional cognitive theory of assessing the individual, the other an ongoing situated, negotiated assessment of practice. Each is performed through practices and exploring how these are achieved therefore becomes a topic of empirical investigation for this thesis where the core travelling companion of the agency of standards intersects and crafts relations with learning and assessment.

2.5 Some methodological sensibilities for enacting this investigation

From the questions posed, the related sensitising terms, and having enrolled some travelling companions to help explore them, the task is now to consider how this investigation can be enacted practically: How to proceed? What methods could be used to investigate this topic and explicate the practices? And, through engaging with methods-as-performative, asking: What will an assemblage of methods enact?

To recap some of the key topics of interest:

- From an interest in tasting *attachments* I will be exploring and explicating the *situated activities* in which *tasting* is done,
    - This needs to be enacted *symmetrically* not just focussing on the tasting body, but also on the tasted objects "right to respond, [and] their capacity to co-produce 'what is happening'"(Hennion, 2007, p. 101)
- From an interest in the agency of classification systems I will be exploring how *categorisation and standardisation work* are done in *practices*
- From the interest in how these *information infrastructures* intersect with the arrangement of *assessment* and *accreditation.*
    - A symmetrical consideration encompasses exploring how these are done through the *alignments and orderings of people, materials and practices*

What approaches could be appropriate to investigate these? By starting with "a set of care-full empirical and theoretical sensibilities" (Law & Singleton, 2013, p. 488) I embrace Law's suggestion that

> There is an immediate methodological consequence. We need to proceed empirically. If we are to do philosophy, metaphysics, politics, or explore the character of knowledge, we cannot do this in the abstract. (Law, 2012a, p. 157)

This involves a rejection of some approaches that have been employed to engage in this area. For example Hampton (2012) suggests that "artistic inquiry in the form of a short story … provides the best opportunity to accurately study the experience of drinking wine, because what an individual goes through, and why a wine drinker is drawn to others, cannot be adequately documented by any other means" (p.857). Such an approach places the writer in complete control over imagined events, and suggests that such experiences are not accounted for in practices. On the contrary I suggest there will be ample opportunity to study the experience of drinking empirically, and find ways of documenting them through rigorous, non-fictional narratives.

2.5.1 Engaging with these sensibilities through methods

To proceed empirically methods need to be assembled to engage with and specify some of the sensibilities identified previously, namely:

- A symmetrical engagement with people and materials, human and non-human objects as material-semiotic assemblages.
    - This requires that I "take objects and events of all kinds into consideration when trying to understand the world. No phenomenon can be ignored on the grounds that it belongs to another discipline" (Mol, 2003, p. 158) – an approach Mol terms *praxiography:* the writing of *practices* rather than the narrower *ethnography:* the writing of *ethnos* (people).
    - It also requires an approach that engages with the *attachments* between these including sensory *tasting* as well as *accounts of tasting.*
- A view of learning as occurring in social-and-material settings, readable as material-semiotic networks assembled and transformed through situated activities.
- A focus on *practices* as "constant negotiation of what is thought to be a correct or incorrect way of practising "(Gherardi, 2009, p. 536).
    - I propose that this requires an orientation to the *sequential* and also *categorial* aspects of these negotiations-in-practice in order to explore and evidence how judgements of correctness or incorrectness are communicated, acknowledged and accounted for.
    - A sensitivity to, and methods for representing, *breaches* and *breakdowns* in order to explore what is revealed by them.
- A concern with the ongoing assessment and evaluation of practices.

- In particular an exploration of how educational, aesthetic and sensory realities are done and accounted for.
- A focus on the intersection of these assessments with standards and classifications.
- An interest in how dichotomies such as amateur/professional or formal/informal are constructed in these practices.

From these sensitivities I propose that empirical methods, approaches and traditions can be assembled which will enact interesting, engaging and enjoyable data. Yes *enjoyable,* because I agree and engage with the assertion that “research should be fun because good research is passionate” (Law & Singleton, 2013, p. 788). I suggest that this is another important place for symmetry: the passionate attachments of and aesthetic pleasure of the amateur with the tasted object should also be extended to become a part of my research engagement and its presentation as they are in the empirical observation of their practice.

2.5.2 Engaging with methods as performative: the methods assemblage

These ideas and possible approaches can be usefully explored though the concept of a *methods assemblage* which is:

> the crafting of relations that shape, mediate and separate an object in-here, its relevant context out-there, and then an endless set of out-there relations, processes and all the rest that are a necessary part of the assemblage but at the same time have disappeared from it. (Law, 2004, p. 84)

Law argues that a methods assemblage does not seek to uncover or represent a singular reality but acknowledges its own performativity of crafting relations that create *realities*. This is achieved through:

> the crafting or bundling of relations or hinterland into three parts: (a) whatever is in-here or present; (b) whatever is absent but is also manifest in its absence; and (c)

> whatever is absent but is Other because, while it is necessary to presence, it is not or cannot be made manifest. Note that it is the emphasis on presence that distinguishes method from any other form of assemblage. Note also that to talk of crafting is not necessarily to imply human agency and skill. (Law, 2004, p. 84)

Introducing these ideas in this way is rather problematic as they are abstracted from the practices I explore, with both the practices themselves, and my practices of exploration enacting these differences. Therefore, turning now to consider the methods used in this investigation should help to explicate the workings of these ideas, and the methods I use.

2.5.3 Ethnographic approaches: Multi-sited and multi-modal engagements

The method of ethnographic observation where "an ethnographer enters a field with all his or her senses, and takes into account the architecture, the furniture, the spatial arrangements, the ways people work and interact, the documents they produce and use, the contents of their communication, the timeframe of social processes and so on" (Eberle & Maeder, 2011, p. 54) is in many ways the signature mode of much of the work in science-and technology studies (STS) and especially Actor-Network Theory (ANT)[18].

Methods and techniques employed include "observation, interviews, collection of documents, audio-visual materials as well as representations of artefacts…the researcher does fieldwork and collects data herself through physical presence" (Eberle & Maeder, 2011, p. 54). However, this is in part a traditional view placing physical presence as a core principle. When engaging with "virtual" fieldwork there is still physical material presence somewhere (the computer user, the servers, the connections, the standards for interaction and data exchange) but also a digital presence to be established in a dispersed and distributed 'virtual

[18] for example scallop fishermen working with scientists (Callon, 1986), the failed development of a new metro system in Paris (Latour, 1996a), following scientific researchers in the Amazon (Latour, 1999), hospital and clinical settings performing different arteriosclerosis (Mol, 2003) and salmon fisheries in Norway (Law, 2012b; Law & Lien, 2013).

field' including online forums, blogs and twitter streams. For these engagements principles of virtual ethnography (Hine, 2000, 2008) have been proposed. Another related response to these emergent challenges of engaging with distributed, yet connected, field sites is Marcus' (1995, 1998) proposal of multi-site ethnographies in which:

> Research is designed around chains, paths, threads, conjunctions, or juxtapositions of locations in which the ethnographer establishes some sort of literal, physical presence, with an explicit logic of association or connection among sites that in fact defines the argument of the ethnography. (Marcus, 1998, p. 90)

This advice to follow connections (an approach used in the opening vignettes) connects to an ANT sensibility: to 'follow the actors' (Latour, 1996b) whatever they are, along their chains of association. These approaches of tracing associations also engage with an ethnographic mode of investigating classification systems and their organisation through "the ethnography of infrastructure" (Bowker & Star, 1999; Star, 1999). Here, again, the focus on breakdowns is important as moments when the usually hidden work of the plugs, settings, sizes and other standards of infrastructure is exposed. In this study these approaches include engagement with standards translated into XML code, software and apps that instantiate the style guide classifications and enable interoperability.

As this is an engagement with tasting practices it also requires a particular orientation towards "sensory ethnography" (Pink, 2009) which re-balances evidence and experience gathered through the contact senses (smell, taste, touch) with the more traditionally prioritised distal senses (hearing, sight) and thus challenges the occularcentrism of many ethnographic engagements.

However, it would be misrepresentative to claim a special place for being a participant-observer, or even for using multiple methods and technologies as an ethnographer. My accounts are supplemented by those of other participants who were also observing, reporting and documenting their experiences. These “lay ethnographies” make me the subject of their participant observations and accounts. I suggest that a true commitment to taking the great amateur seriously is to recognise and use these accounts as skilled passionate engagements to be incorporated symmetrically with my own as empirical evidence informing this enquiry.

With these sensitivities, in particular those of praxiography and the application of symmetry and free associations from ANT, this creates a new dilemma. It is impossible to attend to everything equally and simultaneously. There needs must be focus and selection: of actors to follow and on where I should be “cutting the network” (Strathern, 1996) of associations. There is also a question of accounting for this - at what level of detail? How granular should that be? What texture of empirical data should this engagement present? To engage with this I turn to one of the intellectual antecedents of ANT: ethnomethodology (Latour, 2005).

2.5.4 Engaging with ethnomethodology: Exposing breakdowns, sequences and categories

Ethnomethodology defies ready categorisation almost as elusively as actor-network theory.

> Ethnomethodologists propose to study the ways in which collectivity members create and maintain a sense of order and intelligibility in social life. [This can be contrasted with] the interests of most qualitative researchers who want to know the world *as participants see it*, ethnomethodologists prefer to study how, by the use of which procedures and methods, *any particular 'world' is produced and perceived*.(ten Have, 2004a, p. 151- my parentheses, itallics as original)

The continuities with the sensibilities of actor-network theory are evident from that quote: looking at how world(s) are produced, ordered, created and maintained. ANT extends this from a focus on *people*, to *people and things*. How then are these investigations undertaken? One way is through deploying “ethnomethodologically informed ethnographic methods” (Iszatt White, Kelly, Randall, & Rouncefield, 2004). Paul ten Have notes certain signature approaches to “the ways in which ethnomethodological studies are done, through 'breaching experiments', particular kinds of field studies and the ubiquitous use of audio or video recordings” (ten Have, 2004a, p. 151). Yet this is not a formula or a recipe as “every ethnomethodological study requires the creative invention of a unique approach to the problems of gaining access to the phenomena of interest and ways to render them accessible to others’” (ten Have, 2004b, p. 171). This creativity and uniqueness is both an appeal and a challenge: to assemble appropriate tools and techniques as well as methods of presentation.

2.5.5 Becoming the phenomenon and the “unique adequacy requirement”

Whilst breaching can be engineered, as ethnomethodology’s founder Harold Garfinkel was wont to do: telling his students to ask a stranger to give up their seat on public transport when others were free, or to go home and pretend to be a lodger when interacting with their families, these are often ethically dubious. Garfinkel noted how they promoted “astonishment, bewilderment, shock, anxiety, embarrassment and anger” (Garfinkel, 1967, p. 47). Rather than engineering deliberate breaches I instead orient my attention to those unprovoked moments when the expected order is breached – including the everyday processes of “doing research” using video or audio recording which provide ample opportunities for breakdowns, and also moments when their imposition is oriented to by the informed participants.

I also draw on the ethnomethodological approach where “researchers study their own sense-making work by putting themselves in some sort of extraordinary situation. This may be a situation in which routine sense-making procedures are bound to fail, or where one has to master a difficult task or where one is instructed by a setting’s members to see the world in a way that is natural for them but not for oneself” (ten Have, 2004b, p. 33). This requires developing a situated basic competence whilst reflexively attending to how this is achieved and when one conforms or breaches the expected interaction order as a participant and observer. Garfinkel (1996) suggests that investigations have a unique adequacy requirement for methods. This requirement proposes that "in order to be able to study the specifics - the 'quiddity' or 'just whatness' - that make up a particular profession, an investigator should develop a rather deep competence in that type of work." (ten Have, 2004a, p. 154).

Ethnomethodological approaches have brought interesting engagements to exploring taste. These include participant-observation studies of coffee connoisseurship in Manzo (2010), and the connections between judgement, description and standardised vocabularies by professional coffee tasters in Liberman (2013). Through participation the experience and development of competencies becomes a key resource to explicate the local work of categorisation and the ways in which standards are used in situated practices. I, like Manzo and Liberman, was a participant-observer in this research: taking an active part in the preparation course, exams and practises of beer judging.

2.5.6 Ethnomethodology's sibling/offspring: The work of Harvey Sacks

Garfinkel supervised and co-authored papers with his student Harvey Sacks who acknowledged his "pervasive impact" (Sacks, 1972a, p. 32). Sacks went on to place a particular focus on one of the most basic practices of situated action – the organisation of categories and turns-at-talk. He developed approaches for exploring the ways "in actual interactions, that people actually choose between (and invoke) particular categories" (Silverman, 1998, p. 77) an approach he called "membership category analysis"(MCA) which seeks to explicate the situated use and organisation of categorising people through "membership category devices" (MCD). In addition, and increasingly in his later work, he took great interest in the sequential ordering and turn-taking in 'naturally occurring' conversations[19]. The analytical study of turn-taking, breakdowns, repair and the ways in which understanding is displayed and interactionally achieved became known as conversation analysis (CA). Gail Jefferson worked closely with Sacks developing a system for the transcription of talk (Jefferson, 2004; Sacks, Schegloff, & Jefferson, 1974) to display the overlaps, hesitations, pauses, interruptions and prosodic features of talk that are so often glossed over when the focus is on interpreting “meaning” rather than talk-as-an-interactive-accomplishment.

Research in both CA and MCA has been overwhelmingly oriented to analysing human-human interaction. However, there are significant openings for considerations of human/non-human interaction. Lucy Suchman’s (1987, 2007) investigations are foundational here. She used CA methods and extended conventional transcription to symmetrically consider how turns in a human / non-human interactive sequence with a photocopier occur. Her approach makes visible the information asymmetries, exposing the moments of breakdowns and their causes when the machine is incapable of having the situated knowledge of the human users and displays only a pre-programmed “planned” orientation to an interactive turn rather than displaying an orientation to “situated actions”.

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[19] Presenting ethnomethodology and conversation analysis together glosses over and bypasses divisions, debates and criticisms especially those from EM of CA and its development into a somewhat positivist paradigm (see Lynch (1997); Lynch and Bogen (1994) for extended considerations of this). By engaging with CA as a performative methods assemblage with a set of tools and techniques I seek to recast these critiques and draw on, rather than becoming subservient to, some aspects of the development of CA as a discipline. This is also to bypass the fierce debates within those who developed Sack’s work as largely separate strands of CA and MCA. MCA has been rejected or downplayed by those steering CA in a particularly conventionalist, almost positivist direction (e.g. arguments proposed by Schegloff, 1992, 2007) and has seen attempts at reclamation (e.g. Housley & Fitzgerald, 2002; Silverman, 1998) and then codification as an approach for the purposes of educating those interested in its application as “a method” (Lepper, 2000); Stokoe (2012a, 2012b). Such a codification is itself a topic of debate between Stokoe (2012b) with responses from Fitzgerald (2012); Gardner (2012); Rapley (2012); Silverman (2012)).

Within MCA considerations of how non-humans are categorised has received very little attention. Whilst Lepper (2000) proposes approaches to using MCA methods to analyse documents and images, the orientation remains towards the categorisation of people therein. McHoul and Watson's (1984) study of geographical classifications in the classroom is a notable exception in exploring categorisation of geographical features by children, and Eglin and Hester (1992) tantalisingly propose that:

> The scope of MCD inquiry may extend beyond the traditional sociological domains. Is there any scholarly activity, indeed any human activity earned out in language, that does not entail describing, judging, and inferring, to which membership categorization (extended to things other than persons) is not applicable? (pp. 263-264)

However, whilst the opportunity for considering non-human categorisation is introduced here it remains firmly grounded in "human activity earned out in language". I suggest that the influence and methods of these approaches can be productively lashed together with ANT's insistence on symmetrical consideration of human and non-human activities to consider sequential and categorial work in complex socio-technical, human/non-human networks.

2.5.7 Actor-Network Theory contra Ethnomethodology: exploring tensions, extensions and (dis)continuities

The interaction and tensions between ethnomethodology (which claims not to be a methodology) and actor-network theory (which claims not to be a theory) are both varied and complex. Foundational papers such as Callon (1986) and later developments such as Latour (1993) credit and explore ethnomethodology's influence on ANT, while in his exploration of STS and ethnomethodology Lynch (1997) credits ANT as "the most radical and interesting of the postconstructivist sociologies of scientific knowledge" (p.111) .

Tensions emerge when exploring contrasts between the laboratory studies work undertaken in the Salk Institute by Latour and Woolgar (1979) that informed the development of ANT, and the ethnomethodological approach of Lynch's (1985) study that was contemporaneous with, but published much later and with less acclaim or impact. In his review of the latter, Latour (1986) criticises Lynch's narrow reliance on complex Jeffersonian transcription of conversations which he suggests give "the same feeling as reading a newspaper through a microscope. Somehow the focus does not seem right" (p.545-6). He further argues that this "enormously limits what counts as data, and what counts as a legitimate explanation of these data." These arguments are significant for my investigation with Latour going on to question such a transcript-bound exploration "Why on earth should we be less free than the people we study/work with? Aren't they constantly changing instruments, focus and scale? The very neurobiologists whom Lynch studies happily mix together anatomy, physiology, electron microscopy: why can't we go from shop talk to photographs, to scientific writing, to science policy, and then back to instruments?" (p.548). Such criticisms are influential in my embracing of ANT's eclectic approach to methods that go beyond the narrower focus on transcribed talk that is central to EM, and particularly CA, studies.

This line of argument is extended significantly by Latour (1996b) where he argues that ethnomethodology is perfectly attuned for understanding simian sociology as "Monkeys almost never engage with objects in their interactions. For humans it is almost impossible to find an interaction that does not make an appeal to technics" (p.238).

Responding to these critiques Lynch argues that Latour is guilty of over-simplifying interactionist studies "as though it had never occurred to any ethnomethodologists or symbolic interactionist to investigate the distinctive interactional orders produced through writing and reading, handling and distributing materials, working with tools and instruments" (Lynch, 1996, p. 248). More fundamentally he suggests that ANTs focus on asymmetrical exploration of "agency" both ignores vernacular attribution to non-humans (e.g. institutions as "agencies" and diseases as "agents") whilst simultaneously constructing "agency" as a context-free, mechanistic and ethereal unified force. Furthermore he suggests that:

> *The Wittgensteinian and ethnomethodological hostility to vernacular theorizing has to do with a sensitivity to the violence that is done when, for example, "smart" machines are treated as substantive equivalents to "smart" students. The objection has nothing to do with a presumed divide between humans and non-humans, because a similar objection would be made if someone were to propose that a "smart" dresser exhibits equivalent abilities to a "smart" mathematician. (p.250)*

This last consideration of course has a particular relevance to the usefulness of ANTs symmetrical considerations and focus on agency in contrast to a more human-centred phenomenological engagement by ethnomethodology when related to *learning*.

2.5.8 Conversation, categorisation and tasting

Whilst I acknowledge and engage with Latour's criticism of the limitations of placing transcribed talk as the sole, or primary, source of data I do not see this as a reason to abandon an engagement CA and MCA approaches. Drawing on these enables connections from and to work that explores the situated activities and interactional achievements that construct tasting. Work by Sally Wiggins and colleagues has given a particular focus to the transcription and display of embodied enjoyment (Wiggins, 2002) and disgust (Wiggins, 2013) of food, as well as the organisation of satiety in the setting of the family meal (Laurier & Wiggins, 2011). Other work in the field of discursive psychology[20] considers the importance of categorisation (Wiggins, 2004; Wiggins, Potter, & Wildsmith, 2001) and subjective vs objective constructions in evaluating tastes (Wiggins & Potter, 2003). Work by Mondada (2009) draws on these papers to explore how evaluations of tasting are interactively organised.

This body of work has a significant contribution to make in showing how evaluations of taste are an everyday occurrence and are not those of isolated individuals: rather they are organised through attachments and connections with tasted objects, display, acknowledgement and negotiation with other people to achieve assessment. They also provide rich resources and standards for transcription of reactions of disgust and enjoyment. Through positioning these alongside Suchman's work on considering situated turn-taking between human and non-human elements of situated actions I seek to assemble a novel approach to exploring tasting assessments empirically.

[20] Discursive psychology is a branch of psychology which draws on the insights and approaches of CA in particular, taking a focus on intersubjective achievement of understanding through interaction in sequences rather than an individual cognitivist view.

2.5.9 Recording and reconstructing sequential and categorial accounting work

In many ways CA can be considered as a method performed into being by the development of cheap and ubiquitous tape recorders[21]. The fidelity of the recordings from such devices leads Peräkylä (1997) to argue for their superiority as "being free of many of the shortcomings in reliability characteristic of other forms of qualitative research, especially ethnography (p.203)".

Recasting this as a methods assemblage challenges such a claim of simple, unilateral superiority. What the tape recorder and transcripts make present are spoken interaction, hesitation, overlaps and approaches to analysis by looking at next-turns to see how understanding of a prior turn is displayed. However, much is manifestly absent – gaze, gesture, physical activity, and the position, perspective and engagement of the researcher. And even more is othered intentionally or otherwise – not least the aforementioned "architecture, the furniture, the spatial arrangements, the ways people work and interact, the documents they produce and use" (Eberle & Maeder, 2011, p. 54) that fieldnotes construct and interpret.

Some of these were made "in here" and present with the advent of portable and cheap video recording equipment, but this merely constructs a new methods assemblage rather than a total vision. However, video recordings are also highly selective and detailed practices such as writing are easily obscured. In this study (as remains the case in many other administrative and assessment practices) much of the activity and accounting is organised around and through the written completion of forms. As this detail is easily obscured an engagement with these requires developing novel approaches:

[21] See Back (2012) for an exploration of this device and its influence on social science methods

2.5.10 Digitally reconstructing writing practices and accompanying talk

When forms are computer-mediated these are amenable to real-time screen recordings, accompanied by video recordings of participants' movements as used in recent work by Bhatt and de Roock (2014). However the practices of beer judging in a competition and in the tasting exam involve writing feedback and scores with a pen or pencil on a paper form.

Work by San Diego, Aczel, Hodgson, and Scanlon (2006) investigates using tablet devices to capture handwriting practices along with video to try and overcome problems of the "post hoc analysis of paper-based worksheets, in which temporal order has to be guessed."(p.5). In their (2012) paper they note that as well as tablets small overhead video cameras enable "overhead recording of handwriting and sketching on paper". However these methods require complex assemblies of equipment constructing a much more experimental setting for investigation. These violate my interest in working with minimal interference in situated actions and events. (The idea of mixing expensive tablet devices with beers is also high risk!)

Another device offers a far less complex or intrusive approach to sequentially capturing writing: a "digital pen" which takes the form of a slightly bulky ballpoint pen that writes with ink and also "points a tiny camera at specially marked paper, captures what is written, and converts the writing to PDF files … The pen comes with microphones that capture audio and software that synchronizes it with the written notes" (Hannon, 2008, p. 15). A standard form can be printed onto the specially marked paper and also added as a "watermark" to the PDF.

The pens incorporate an embedded microphone, however, this tends to capture the sounds of the pen scratching on the paper which then obscures spoken audio. Instead I used the 3d recording earphones which were placed on the table in clip-holders designed for holding cards or photos. These improvised additions kept them off the table surface (and thus out of any spilled beer) – illustrated in Figure 11.

Figure 11: LiveScribe recording pen with printed judging form (L) and earphones (R)

Previously these pens have been used to support observational research practices (Weibel et al., 2012; Weibel, Fouse, Hutchins, & Hollan, 2011) with the researchers using them to take fieldnotes-with-synchronised audio, an approach I previously used in the fieldwork informing Wright, Short, and Parchoma (2013) and Wright and Parchoma (2014). My particular interest here was in their potential to enable *participants* to use them rather than being the preserve of the researcher. This de-centered my ethnographic practices, enabling my participants to record without me being present with minimal interference to their practices. It resulted in rich, sequenced recording of their writing, form-filling and talk. Developing this approach therefore represents a small, but original, contribution to methods for capturing handwriting practices in social research.

The audio was transcribed by a professional and then corrected and transalted to a more comprehensive Jeffersonian notation (Jefferson, 1984, 2004) – which I use not only for its perspicacity in displaying breakdowns and repairs but also as a standard enabling re-use of these transcripts and recordings for other analysts interested in other features of talk around tasting and assessment. These transcripts were amended to use also coloured text to help identify different conversations running in parallel.

2.5.11 Using documents, engaging with amateurs

In exploring how paper forms (scoresheets and exam papers) are used in practices this is to engage with documents as agents in interaction. These were supplemented in situated practices with many other documents – both electronic and on paper. Ethnomethodological and material-semiotic engagements have informed ways of engaging with these "documentary realities" (Atkinson & Coffey, 1997) with Prior (2003) drawing these together and suggesting practical and operational approaches that examine not only their content but also their use in organisational settings to mediate and structure interaction.

As well as exploring the documents and their situated use I also follow the accounts and constructed histories through to historic sources. Brewing has always been a highly regulated industry and there are both early books preserved and digitised as well as comprehensive records held in metropolitan archives. The "great amateurs" I engage with have worked to unearth, reproduce and examine these. In staying true to taking great amateurs seriously I place such primary historical research work alongside, and symmetrical with, that of distinguished professors of the history of science and their explorations of historical records, along with my own tracing through digitised archives and books I have collected together. Such investigations of historical documents and their realities has links with Foucauldian approaches, with Kendall and Wickham (1999) proposing a strong intellectual thread from Foucault to ANT together with operationalising these as methods of tracing associations and looking for sets of contingencies rather than causes which assemble and document a reality. The changing description of taste explored in this way display particularly interesting enactments through presences and absences.

2.5.12 Methods assembled

In this section I have presented the methods I assemble in order to engage with and perform a particular, reflexive, engagement with learning to become a beer judge the related standardisations of tasting.

Each of the approaches I have explored, and the topic of study, can be understood as methods assemblages – ways of making certain things present whilst others are made manifestly absent beyond which lie a myriad of relationships that are "othered". Thus a methods assemblage is not merely a bundle of ways of understanding or putting together research methods but is more profoundly a way of understanding being-in-the-world(s). The BJCP approach is itself a methods assemblage for describing and classifying beers and tastes. Certain realities that are also performed through these methods assemblages: the statistical realities of passing rates, standard deviations and variances on tests, or categories of entries are also among the myriad of materials and ordering practices that are othered. Of course these could be engaged with through different social research methods to craft a different (arguably more conventional) set of presences, manifest absences and otherings. However, my purpose here is to enact a methods assemblage that productively interferences in the assemblage the BJCP have constructed to help explore and expose how it is put together, what is made present, what is manifestly absent and what is othered in the situated activities of examination and sensory judging. This is to ask the important questions proposed by Mol (1998): what are the options, what is at stake, are there really options and how should we choose? In short, by exploring "what is this doing?" I must also ask "how could it be different?" and furthermore "where could I intervene?"

And it is to the practices and their formalisation and standardisation through the BJCP style guides, rules and assessment regimes that I will turn shortly. Before that however I detail the attention given to ethics and then guide you through the structure and presentation of the diverse data in this thesis.

2.5.13 Ethical engagements

These engagements and questions must also be applied to the research process and to maintaining ethical standards whilst also respecting the skilful identity management of the amateurs involved in the different spaces explored.

All participants in this study gave explicit consent to be included. A comprehensive participant consent form detailed the purposes, what participation involved, how to withdraw, the methods of recording – including use of audio, video and photography and engagements with online and social media – and how these would be stored and used in writing up and presenting the research.

Rather than defining a position wherein I would be identified as the researcher but the participants would be denied the opportunity to choose or consider their identification, and in recognition of the ongoing skilful management that members used across different media this was given as a choice and discussed. The consent form stated this explicitly:

> **How will my identity be protected?**
> In the research report you will, as standard, be referred to by a pseudonym. This pseudonym can be given by the researcher or chosen by you. If you wish you can be identified in the research by an existing pseudonym such as a forum alias/twitter identity. Alternatively, you can be identified by your real name.

In discussing and completing these consent forms the chosen name was given and the names used in this document reflect those choices.

During fieldwork at the competition stewards were informed about the research and gave consent to participate, whilst members of the audience were informed about recording. Where audience members became core to the investigation consent to include images was sought via email. Images in which audience members who had not signed consent forms were clearly identifiable were not used. Further consent was sought to make this thesis available electronically.

2.6 A route map for this thesis

In presenting this work I face a challenge – the standards to which I must conform are:

> A thesis for the degree of PhD (as part of the doctoral programme in Educational Research) shall not exceed 50,000 words … shall be written in English … . The text of the thesis shall be word processed on good quality A4 paper … Diagrams and illustrations shall be reproduced or mounted on similar paper … (Manual of Academic Regulations and Practices 2013-14, Lancaster University)

On this page, and on the first page of each chapter, I make these standards visible performing what Bowker (1994) has called an "infrastructural inversion" - seeking to make present the usually hidden and backstage elements of standards in practices.

2.6.1 Typological organisation

The chapters are structured through drawing on the two typologies I have introduced as an aid to focussing attention and drawing inferences:

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margin of 25 mm

- Hennion's typology of bodies that taste, tasted objects and devices and conditions of tasting. (section 2.1.3, page 26)
- Busch's 4-way division of standardisation and categorisation schemes: Olympic, Filters Ranks and Divisions (section 2.3.2, pages 29-35)

margin of 25 mm

2.6.2 Sequential and symmetrical organisation

With sequential aspects of interaction a topic of interest for this thesis they are used to sequence the chapters. Furthermore, through the orientations to symmetry and the performativity of accounts the thesis is also organised to perform a symmetrically structured written account – outlined and illustrated through indentation below:

Title pages, an abstract and acknowledgements open the thesis

Tables of data follow – contents, figures, tables.

Chapter 1 comprised opening vignettes introducing some of the topics, settings, methods and considerations for the investigation.

Chapter 2 presented research questions, enrolled travelling companions and their retinue of relations then explored theoretical sensibilities and methods as an assemblage.

Chapter 3 briefly introduces the classification system and exam preparation course.

Chapter 4 explores the construction and standardisation practices in the online entrance exam which I took in early September 2012.

Chapters 5 explores the situations and orderings leading up to beer judging at the national homebrew competition in mid-September 2012

Chapter 6 extends and magnifies the engagement with these situated practices. The "fulcrum" of the thesis is an invitation to sensory engagement.

Chapter 7 continues the engagement with the situated practices of beer judging through exploring detailed turns-at-talk.

Chapter 8 explores the material-semiotic arrangements and situated practices of the tasting exam I took in October 2012.

Chapter 9 draws these together to give a coda to the thesis returning to the research questions, travelling companions and relations to explore how these have been engaged with and changed through the empirical encounters.

Chapter 10 comprises closing vignettes from performative explorations of the ideas and encounters of the thesis.

Tables of bibliographic references follow.

The appendices detail transcript notations and link to the full transcripts online.

2.6.3 Methods, data and presentation

I have introduced the methods assemblage and the orientation to these – I summarise those in the table below and connect them to the chapters and events in which they are used:

Practice	**Examples**	**Foci**	**Methods of observing (self as participant)**	**Methods of observing (others as participants)**
Tasting beer (ch 5,6,7, 8)	Drinking beers		"Sensory ethnography" fieldnotes	Fieldnotes "Visual ethnography": Video recordings
Discussing assessments (ch 5,6,7)	Judges discussing assessments, agreeing scores	Verbal accounts Written accounts (scoresheets) Sequencing of these	Video recordings Audio recordings	Digital recording (LiveScribe) pens + audio recordings Video recordings
Taking online exam (ch 4)	Clicking on questions, Cross-referencing answers	Sequences Categories Language	Auto-ethnographic screen recording and think-aloud procedures	Spoken accounts Written accounts (forum posts, tweets)
Material orderings (ch 5 ,6, 7, 8)	Setting out tables and chairs, categorising entries		Fieldnotes	Fieldnotes Visual ethnographic methods (photographs, videos, sketches)
Writing on forms (ch 5, 6, 7, 8)	Writing on scoresheets, Writing on exam sheets		Fieldnotes Photographic records of forms	Digital recording (LiveScribe) pens
Documentary realities (ch 3, 4, 5, 6, 7)	Brewing records Historical books	Linguistic terms Historical setting	"Ethnography of infrastructure" Reading documents Downloading documents Documentary archives Blogs	
Style Guide Infrastructure (ch 3,4,5,6, 7, 8)	Style guide app on mobile device	Linguistic terms Ordering devices	"Ethnography of infrastructure" Exploring code, Screenshots Documentary archives	

Table 2: Methods, data and their (re)presentation in this thesis

Each of these empirical data forms is then signified in the text through formatting and fonts

```
CA:    Transcripts follow Jeffersonian principles of a mono-spaced font
       along with line numbers from original transcripts
       (Transcripts are reproduced in the appendices as per CA conventions)
```

Fieldnotes simulate their origin in handwriting

Whilst the reflections on those notes are rendered similarly –

evoking their origins as sketched marginalia and musings

```
I also periodically engage with computer code and render it in a form
analogous to its presentation on screen.
```

These are the primary data forms frequently interspersed with captioned photographic images from fieldwork. Some of these emphasise sequential actions and other images are presented as "fumetti" (Zanettin, 1998) showing spoken turns alongside images as used in Wiggins (2013) and further explored by Laurier (2014). I also present multi-modal data sequentially in tabular form drawing on Suchman (1987).

2.6.4 Situating engagements with "the literature" as a dialogue between ideas and evidence.

This investigation is also connected to "the literature". Where these are extended considerations and explorations they are presented in this format, with a section heading.[22]

More fundamentally, in assembling this investigation as a *written* work I acknowledge Guggenheim's (2011) critique of the poverty of representational approaches in STS scholarship, where he notes that "In the social sciences taste and smell are almost exclusively translated directly into text"(p.71). However, for my purposes a central concern is with the written accounts that are generated of tasting– and the translation practices of amateurs in creating these. The translation of embodied experience to speech

[22] Finally there are footnotes – additional text which supplements, expands, or directs the reader to further explorations related to the core text. For example noting here that the use of fonts and formatting in the section above is influenced by the presentational experimentation in books within ANT-oriented scholarship, especially Latour (1996a) and also Mol (2003).

and text is not the preserve of the sociologist as Guggenheim seems to suggest, but is part of many tasting experiences.

Exploring "the literature" in this manner and with this presentation is also intended as an enactment of Ragin's proposal that research should be "a dialogue between ideas and evidence" (1994, p. 55). I therefore seek to situate these dialogues at the point of their encounter as explication of empirical evidence rather than in a separate literature review.

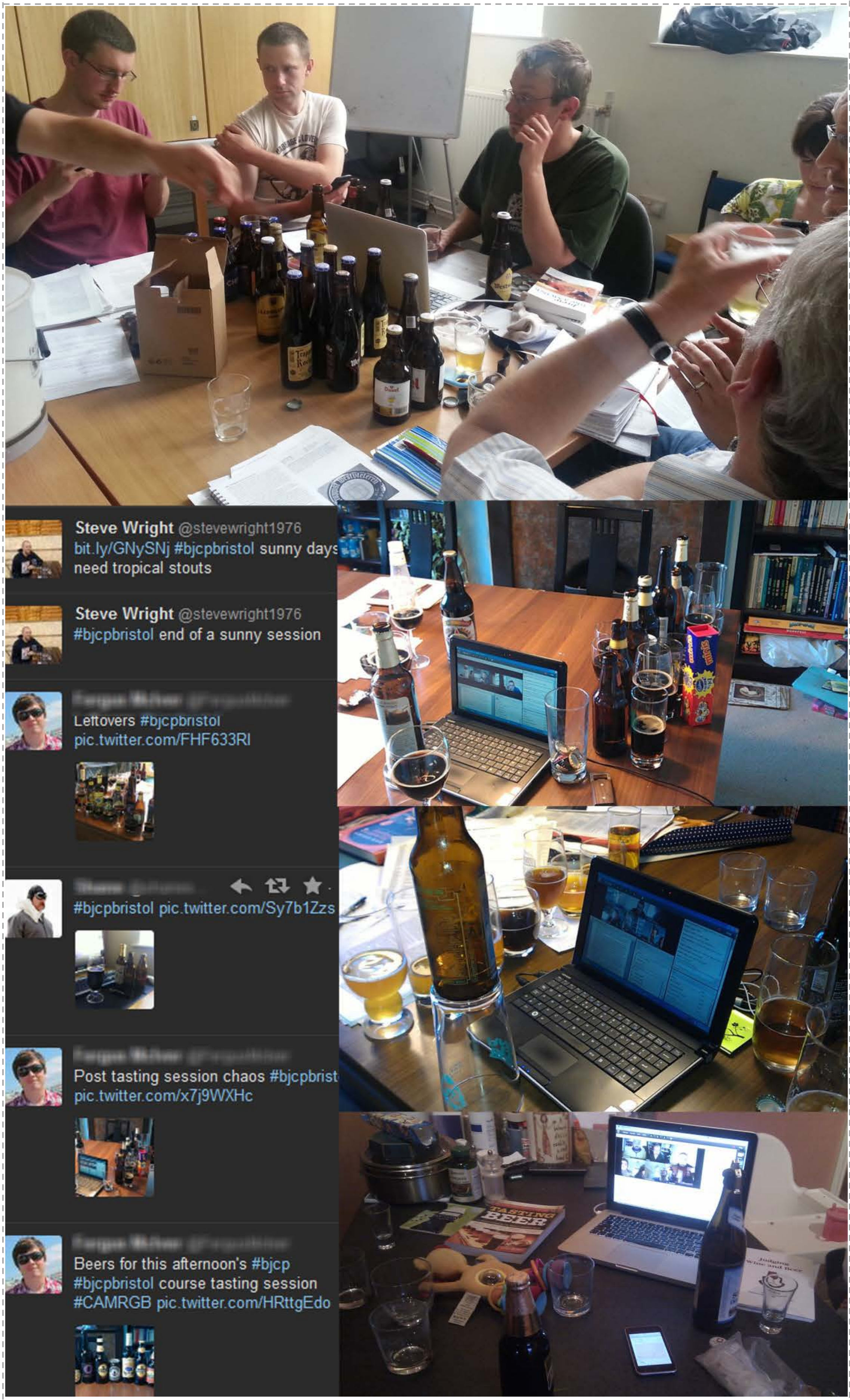

Figure 12: Montage of images from the exam preparation course

3 The BJCP Style Guides and Exam Preparation Course

The opening montage of this chapter (Figure 12) introduced some of the settings and data from my fieldwork on the exam preparation course which is *briefly* considered in this chapter as an introduction to the events that preceded the assessment practices of the exams and judging that are the focus of this thesis. I also explore the classification system of the BJCP style guides in more detail.

The intent is to situate the practices considered in the thesis, but not to "put them in context" as introducing "context" carries a risk. On the one hand this could undo an important orientation – that "context" is a situational achievement rather than a fixed pre-existing container for action. Furthermore, this could implicitly present the categories of an information infrastructure as a fixed, singular object thus rendering the remainder of the thesis as a presentation of perspectives on these pre-existing frames rather than performances that create them. On the other hand, were I to omit *any* information I risk the situated enactments and created contexts becoming incomprehensible if you, the reader, lack the tacit knowledge of the participants. Charting a course between these two is a challenge for this step of the narrative. I therefore draw on the typologies introduced in the previous chapter along with the concept of a "methods assemblage" to explore the BJCP style guides and assessment processes assets of standards and as a "methods assemblage". This approach recasts an introduction to the style guides as an engagement with them as performative accounts.

3.1 Origins

"Never ask for 'a beer'… No one goes into a restaurant and requests 'a plate of food'" reads the late Michael Jackson's (1993, p. 6) provocative introduction to his influential guide to world beers. His work included grouping beers into families, types and styles – asserting that “there is a classic style of beer for every mood and moment. Each can be judged only according to the characteristics of its style” (1988, p. 12).

Jackson’s writing is more transportable, durable and widely distributed than many of the beers he writes about. The publication of his first world beer guide (1977) coincided with legal changes around small-scale brewing. In the UK the 1880 act requiring a brewing licence was repealed in 1963 for domestic consumption, whilst in the USA prohibition-era legislation that banned home brewing was finally repealed in 1978. With these legal changes came an explosion of interest in and practice of small scale brewing with many books, guides and recipes published. The beers Jackson wrote about could now be plausibly, and legally, copied or serve as inspiration for beers made far from their origins. Groups and clubs were formed among enthusiasts to share practice and compare produce, with a competitive element often present. In the UK this was regional and disparate; in the USA a national organisation - the American Home-brewers Association (AHA) - was founded within weeks of the legal change.

Fred Eckhardt (1989) developed Jackson’s world beer guides to include quantitative measures and indicative ingredients for home and micro-brewers to reproduce these beers. These then served as the basis for developing a comprehensive guide for judging such reproductions by the AHA through the formation of the Beer Judge Certification Programme (BJCP). The resulting ‘BJCP style guides’ frame several series of books published on brewing specific beer styles and for books such as “Designing Great Beers” (Daniels, 1996) which was introduced in the third introductory vignette. The guides are then made available in a variety of formats including printed copies, as webpages, as smartphone apps and as extensible markup language (XML) code through which it has been incorporated into brewing software used for recipe formulation, transfer and competition management.

3.1.1 Commercial continuities and defining "professionals"

These guides drew on *commercial examples* and made information available for *amateur* brewers*.* However many of these amateurs would go on to found micro-breweries[23], and as commercial operators would continue to use these style guides.

Home-brewing spans the use of canned kits where just water and a sachet of yeast are added through to the shared methods of commercial brewing using malted grain, hops and yeast cultures. While these all-grain brewing processes may be the same as those found in commercial brewing the scale, frequency, intent and regulatory regimes are significantly different.

The core of the brewing process is mixing malted grain with hot water to activate enzymes that convert complex carbohydrates into fermentable sugars, these sugars are rinsed from the grain, then boiled with hops (adding flavour and bitterness) before being rapidly cooled after which yeast is added to ferment the wort into beer. Varying each of these ingredients creates different properties in the final beer. Throughout the long history of brewing geographical variations in ingredients, customer preferences, technological developments and different tax regimes have affected ingredients and processes for creating beers with major regional variations, which have subsequently been categorised and classified as "styles"[24].

Home brewing equipment, as I showed in the introductory vignette 2, is often improvised, whilst commercial brewing is typically commercially fabricated and used on a larger scale.

---

[23] For example Jim Koch, co-founder of Boston Beer Co. proposed that "Home brewing is the invisible roots of pre-brewers" in his speech at the 2013 Great American Beer Festival.
[24] See for example Cornell (2010a) for a comprehensive history of these in British brewing.

Brewing will usually occur much more frequently in a commercial concern than as a hobbyist, and the intent is to sell the beer (requiring distribution and customers). The regulatory regimes are notably different with beer being extensively regulated extending to strict bans on homebrew being sold. The commercial basis with its associated frequency and importance of engagement with sensory assessment of beers confers "professional status" along with the opportunity to join national bodies such as the Society of Independent Brews (SIBA) in the UK, or the Brewers Association (BA) in the USA.

3.2 Accounts

For those defined as amateurs by virtue of their non-commercial status there are organisations to join such as the BJCP. The BJCP website introduces the organisation thus:

> The purpose of the Beer Judge Certification Program is to **promote beer literacy** and **the appreciation of real beer**, and **to recognize beer tasting and evaluation skills**. We certify and rank beer judges through an examination and monitoring process.
> The BJCP was founded in **1985** and has administered the Beer Judge Examination to **7,714** individuals worldwide. (BJCP, 2013- bold text from original)

Further information is displayed as a dynamic database report which shows that (as of 19th April 2014) 89% of qualified judges are in the USA with the UK only having 25, of whom 8 qualified in 2011. Of the remaining 17 these were the course organiser and 16 exam candidates who participated in the fieldwork for this thesis.

3.2.1 Introducing the BJCP style guides as an information infrastructure

On the page introducing the style guidelines the site states:

> One of the most important parts of the BJCP is our collection of detailed style guidelines

These guides classify 80 beers into 23 categories and also include classifications for meads and ciders. Each category groups together several beers of similar type within their own subcategories (see Figure 13) including descriptions of aroma, appearance, flavour, mouthfeel and overall impression. These are then all used as criteria for judging with sections for each on printed judging sheets. The style guides also include a summary history, comments, ingredients, statistical measurements used in brewing of bitterness (in International Bittering Units [IBUs]), colour (using the standard reference model [SRM]), specific gravities (in UK/US measures of Original Gravity [OG], post-fermentation Final Gravity [FG]), and strength (as Alcohol By Volume [ABV]). Finally there is a ranked list of commercial examples where "Within each category, an effort was made to put the best examples first".

18B. Belgian Dubbel

Aroma: Complex, rich malty sweetness; malt may have hints of chocolate, caramel and / or toast (but never roasted or burnt aromas). Moderate fruity esters (usually including raisins and plums, sometimes also dried cherries). Esters sometimes include banana or apple. Spicy phenols and higher alcohols are common (may include light clove and spice, peppery, rose-like and / or perfumy notes). Spicy qualities can be moderate to very low. Alcohol, if present, is soft and never hot or solventy. A small number of examples may include a low noble hop aroma, but hops are usually absent. No diacetyl.
Appearance: Dark amber to copper in color, with an attractive reddish depth of color. Generally clear. Large, dense, and long-lasting creamy off-white head.
Flavor: Similar qualities as aroma. Rich, complex medium to medium-full malty sweetness on the palate yet finishes moderately dry. Complex malt, ester, alcohol and phenol interplay (raisiny flavors are common; dried fruit flavors are welcome; clove-like spiciness is optional). Balance is always toward the malt. Medium-low bitterness that doesn't persist into the finish. Low noble hop flavor is optional and not usually present. No diacetyl. Should not be as malty as a bock and should not have crystal malt-type sweetness. No spices.
Mouthfeel: Medium-full body. Medium-high carbonation, which can influence the perception of body. Low alcohol warmth. Smooth, never hot or solventy.
Overall Impression: A deep reddish, moderately strong, malty, complex Belgian ale.
History: Originated at monasteries in the Middle Ages, and was revived in the mid-1800s after the Napoleonic era.
Comments: Most commercial examples are in the 6.5 – 7% ABV range. Traditionally bottle-conditioned ("refermented in the bottle").
Ingredients: Belgian yeast strains prone to production of higher alcohols, esters, and phenolics are commonly used. Water can be soft to hard. Impression of complex grain bill, although traditional versions are typically Belgian Pils malt with caramelized sugar syrup or other unrefined sugars providing much of the character. Homebrewers may use Belgian Pils or pale base malt, Munich-type malts for maltiness, Special B for raisin flavors, CaraVienne or CaraMunich for dried fruit flavors, other specialty grains for character. Dark caramelized sugar syrup or sugars for color and rum-raisin flavors. Noble-type, English-type or Styrian Goldings hops commonly used. No spices are traditionally used, although restrained use is allowable.

Vital Statistics:	OG: 1.062 – 1.075
IBUs: 15 – 25	FG: 1.008 – 1.018
SRM: 10 – 17	ABV: 6 – 7.6%

Commercial Examples: Westmalle Dubbel, St. Bernardus Pater 6, La Trappe Dubbel, Corsendonk Abbey Brown Ale, Grimbergen Double, Affligem Dubbel, Chimay Premiere (Red), Pater Lieven Bruin, Duinen Dubbel, St. Feuillien Brune, New Belgium Abbey Belgian Style Ale, Stoudts Abbey Double Ale, Russian River Benediction, Flying Fish Dubbel, Lost Abbey Lost and Found Abbey Ale, Allagash Double

Figure 13 Example style guide segment for Category 18: Belgian Strong Ales, Sub-category B: Belgian Dubbel

3.2.2 Accounting for purpose

The BJCP engages in the debates and controversies around the use and effects of style guides - some of which were encountered in the opening vignettes - through a “frequently asked questions page” which is presented in the form of a dialogue:

> **Why have style guidelines?**
>
> Styles are a convenient shorthand for discussing beer. They allow all those who are tasting and describing a beer to use a common framework and language. Style Guidelines are designed to assist organizers, entrants and judges participating in beer, mead and cider competitions by providing a standardized set of descriptions of beer, mead and cider styles.
>
> The styles included in the guidelines are not meant to describe every beer style made in the world (at least not yet). They are meant to cover the most common ones entered in homebrew competitions. The style descriptions are based on currently acknowledged world class examples, historical references to styles no longer brewed, and writings of noted beer researchers and journalists.
>
> In a competition setting, the Style Guidelines provide guidance to judges so that there is a level playing field for all entrants. Judges and entrants are both using the same descriptions, so the decision on *"which beer is best?"* is based less on personal whim of the judges and more on how well the entered beer matches world class commercial examples of the style.
>
> Style guidelines assist competition organizers by grouping together beer styles of similar characteristic for judging purposes. Judges have an easier time selecting the best beer in a flight if there is as little variation as possible. Grouping beer styles together into categories makes this easier. Category groupings are somewhat arbitrary at times, since some beer styles don't necessarily have strong historical, regional or cultural ties to other styles.
>
> (BJCP, 2010)

I now consider some of the classifications in the accounts above, and other aspects of the BJCP standards which will be encountered, in terms of Busch’s (2011) typology for the ways that these rules and standards organise a reality:

Type	People	Things
Olympics	**Competitions:** competition winner	**Competitions:** Best of Show beer, Category rankings (1st, 2nd, 3rd, honourable mention), **Examinations:** correct answer
Filters	**Brewers:** Homebrewers, commercial brewers,	**Examinations:** Online exam, Tasting exam
Ranks	**Judging ranks:** apprentice, amateur, recognised, certified, national, Master, Grand Master	**Commercial examples,** **Examination:** feedback metrics
Divisions	**Competitions:** Organizers, judges, stewards, entrants	**Guidelines:** Beer styles; Geographical origins; Production methods (All Grain/Extract) **Examinations:** question types (multiple choice, t/f, multiple answer) ***Methods****: all grain/extract brewing;* ***Classifications:*** *SRM colour codes*

Table 3: Busch's (2011) typology of standards applied to BJCP

Several things emerge here – the organisation is classifying both human and non-human objects and choreographing the relationships, evaluations and rankings between them. It is also important to note that the "divisions" often have implicit ranks or can be ranked on a different criteria, thus in the online exam whilst all of the question types are "divisions" in terms of marks (1 mark per right answer) when considered in terms of probabilities of guessing the right answer they can be ranked (true/false as easier than multi-choice multiple-answer). Likewise the division of people in competitions could be ranked on prestige or skill and certification requirements (judges are more "skilled" than stewards). The two extra "divisions" in italics (not introduced in preceding text) can also be ranked: all-grain brewing requiring more skill and ingredients than extract, and colour codes can be ranked from lightest to darkest.

This also enables classification of these examples of these through Hennion's (2004, 2007) typology:

Type	People and Things
Bodies	Judges (apprentice, amateur, recognised, certified, national, Master, Grand Master) Stewards, organisers. entrants Homebrewers, commercial brewers, Palette sensitivity *Perhaps: mouthfeel of beer (described as "body")*
Objects	Beer styles: aroma, appearance, flavour, overall impression Commercial examples, Best of Show beer
Devices	Judging and Examination scoresheets and checklists Colour charts
Conditions	Competitions Examinations

Table 4: Hennion's (2007) typology applied to the BJCP

However this brings little insight to the relationships between these elements nor of the situated engagements enacting those relationships – which is what this thesis sets out to explore.

3.2.3 Other classification systems

The BJCP is not the only classification system in use, however it is one of the most influential. Its influence among brewmasters in commercial microbrewers in the USA is apparent in Steiner's Masters thesis (2009) which explores the phenomenology of taste drawing on Bourdieu.

The American Brewers Association produces an even more detailed set of guidelines used for judging commercial beers from around the world at the world beer cup.

Other classifications are more national in character and scope. In the UK the National Guild of Beer and Wine Judges (NGWBJ) developed a style guide for 12 domestic UK styles with brief descriptions along with rules for judging and an apprenticeship system with sensory exam to qualify as a guild judge. This largely matches the classifications used by the Society for Independent Brewers (SIBA). In an effort to provide empirical evidence and assemble a classification system of cask ales in the UK Thomas (2006) proposes ten classifications of British Ale from commercial samples.

3.3 The exam preparation course

In order to become a judge at a competition there is a programme of certification and examination. This changed in 2012 from a three hour written exam involving tasting four beers along with completing multiple-choice and long-answer papers on styles and the style guides to a two-part exam. Part one became an online multiple-choice exam, with part two an expanded written tasting exam of six beers. In preparation for these exams courses are run by homebrewing clubs with materials made available by the BJCP through their website.

The first exam preparation course in the UK ran from November 2011-September 2012 with a course comprising 10 monthly classes of 2 hours duration. Twenty six people, mostly members of homebrew clubs, in a south western British city signed up for the course – attending at a community centre. In addition six participated exclusively online whilst a further two attended some classes in Bristol and others online[25]. The distance learners connected through the web conferencing system Adobe Connect as a “virtual classroom” with a connection from the community centre via the course leader’s laptop (illustrated in the opening montage – an image of a session at the community centre is at the top, with the lower images showing a twitter stream and some of the images shared by distance participants of the view of their laptop connections and spaces they had been engaging in at the end of the class). The web conferencing software enabled communication through webcams, an audio channel, text chat and sharing files or presentations as well as multiple-choice polls (Figure 14).

[25] Of these participants two would leave the course and not take the exam due to “going pro” and taking their practices as hobby home brewers onto a commercial footing through founding micro-breweries. Both are highly successful, continuing to expand and operate today. That story is outside this thesis but I hope will prove to be a fertile ground for future research.

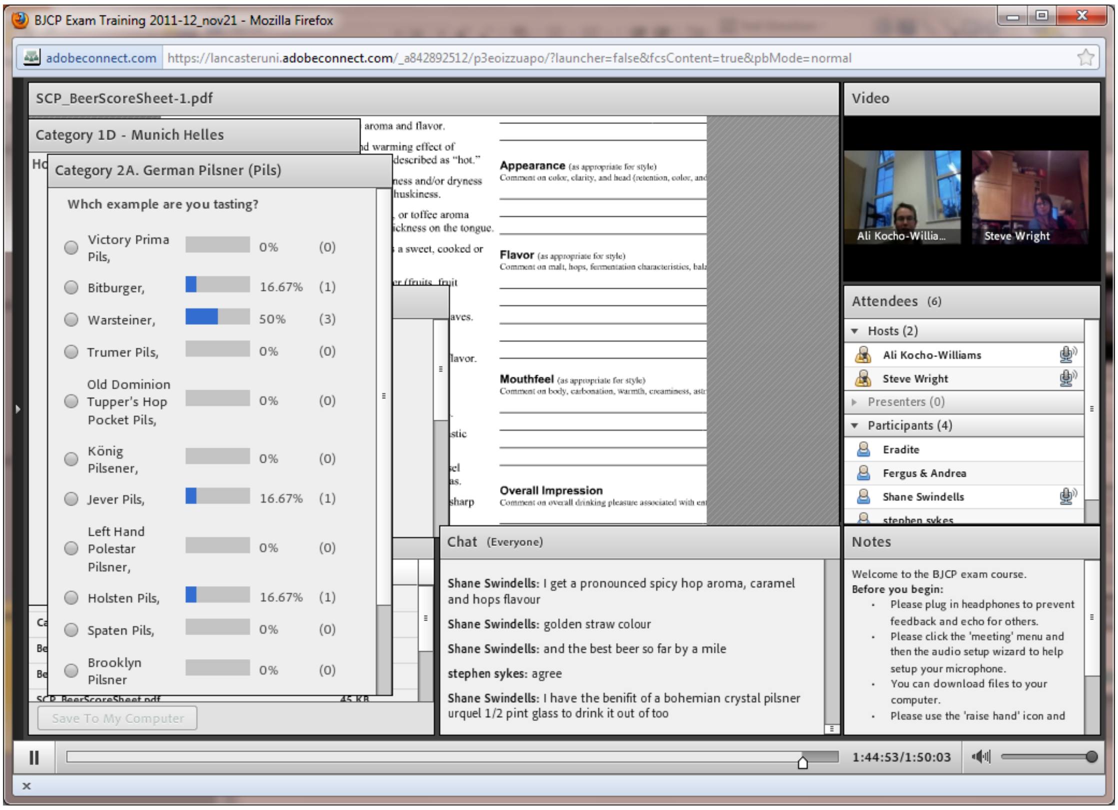

Figure 14 Screen shot of Adobe Connect virtual classroom

The format of each session was an opening lecture accompanied by notes introducing a topic of brewing practice or process such as water chemistry, malting processes and recognising 'common flaws' and steps for their prevention. The latter half of each class was beer tasting. Each class took a set of related categories from the BJCP style guides and then tasted 'archetypical' exemplars for a designated style. For example the 'Stouts and Porters' class had Guinness as the exemplar for "Dry Stout", with Dragon Stout from Jamaica as an example of a "Foreign Extra Stout (Tropical)". For those at a distance there was sometimes variation in the example beers being tried with discussion and comparison.

Additional online communication occurred through a course members-only section of the homebrew club's discussion forum, via twitter and documents shared via Google Docs. There was also extensive activity on twitter before, during and after classes and between participants.

The course was run as preparation for the assessment practices that are the focus of this thesis – whilst this segment of the course is perhaps most obviously amenable to exploration as “technology enhanced learning” that would take me to a narrower engagement with the apparatus of technology and into questions around enhancement (or otherwise) of sensory learning. By contrast it is the enactment of the standards and information infrastructure in assessment practices that I choose to engage with here, leaving aside the distance learning course experiences and the images of these manifest absences that opened this chapter for another investigation. Instead I turn to the first assessment and application of one of Busch’s (2011) “filter” standard in the online exam.

The text of the thesis shall be word processed in double spacing on one side only of good quality A4 paper (210 mm. x 297 mm.)*, leaving a left hand margin of 38 mm., and a margin of 25 mm. on the other three sides.

* ISO 216 specifies international standard (ISO) paper sizes. Paper in the A series format has a 1: √2≈0.707 aspect ratio

margin of 38 mm

margin of 25 mm

Figure 15: Montage of online assessment data and associations

4 Assessing tasting online

4.1 Introduction

I opened this chapter with another visual collage (Figure 14): this time using some of the sources, documents, devices and accounts which I draw on in this section that concern a distinct phase of fieldwork – the online exam. These documents and devices were selected and assembled visually: positioned, scaled, transparency adjusted and arranged to create a stable image from a process of visual engagement with the data. Having assembled this visual account I can also deconstruct it – identifying and disentangling the elements, I can also recognise what has been excluded from the image as well as what is included. My task in this chapter is in some ways similar: to position, scale, relate, and adjust the transparency or opacity of the data through a written account. However it is also somewhat different: while the image celebrates and seeks to represent the mess and complexity of the assemblage, this written account is expected to disentangle that complexity and render a clear line of argument. Any achievement of that is however only a contingent stability: in many ways I would argue that the messiness of the image may be a better representation of these complexities than their translation into text.

4.2 Assembling the data, selecting the examples

The data for this period of fieldwork all relate directly to an online examination designed “to test a prospective judge’s knowledge of beer styles, beer characteristics and the brewing process” (Wolfe et al., 2012, p. 25). This exam is therefore positioned as an obligatory-point-of-passage (Callon, 1986) for prospective and aspiring judges. In Busch’s (2011) typology of standards it is a filter that must be passed through by answering a sufficient number of questions correctly in order to progress on to the tasting exam and the possibility of accreditation through certification.

4.2.1 Exploring e-assessment

The TEL literature concerning e-assessment tends to focus on implementations and their comparison to offline assessments (see for example Thelwall (2000), Sim, Holifield, and Brown (2004)); effects of particular settings or restrictions such as per-item time-limits (Brothen, 2012; Brothen & Wambach, 2004); or "effective approaches" to implementation (e.g. Nicol & Macfarlane-Dick, 2006). Recent literature reviews of the field such as Stödberg (2012) show how research is oriented to explorations of implementation, tools, reliability, learning environments and cognitive skills. However, my concerns here are rather different. Whilst there will have been changes in the assessment practices with the shift from a paper-based multiple choice exam to an online version – one of the shifts which pre-occupies much of the TEL literature and reviews therein exploring concerns around e-assessment (Sclater, Conole, Warburton, & Harvey, 2007) - these shifts and redistributions of tools and agencies would be part of an engagement with *test delivery* rather than *information organisation and classification*. The central concern of this thesis is with the latter: how the agencies of classifications are enacted, how they are assembled and how they are replicated and made authoritative. This is to explore the relationships and contingencies that establish "facts" which are then translated into test items and delivered as multiple choice questions with an agreed "correct" answer – rather than a concern with how any such question is delivered. It is also to consider when, how (or even 'if') they relate to the embodied socio-material practices of sensory judging that will be explored in the following chapters.

4.2.2 Assembling methods

I start my engagement from the online exam, drawing on my experience through an auto-ethnographic account constructed from fieldnotes, screen-shots and screen-capture recordings of the process with an accompanying "think-aloud" (Van Someren, Barnard, & Sandberg, 1994) commentary. These were recorded while taking the two available versions of the online exam accessed via a browser: a demonstration exam of 20 questions which I took during a lunch break at work, and an online entrance exam for which I paid my US$10 entry fee and took using my laptop at home in my study. The demonstration was therefore an opportunity to not only “get the feel for the layout and type of questions” but also to test the recording systems and methods. When taking the 60-minute online exam with its “200 questions drawn from a large pool” which enable each examination to “potentially be different” (Wolfe et al., 2012) I again wore a headset and attempted to record my thinking, reactions and choices as I made them through the headset microphone and Adobe Captivate screen recording software. (I was interrupted briefly by my wife who was wondering who I was talking to for so long!) The 200 questions of the online exam are worth one point each and are presented in three formats: 120 True-False (TF), 50 Multiple-Choice (MC), and 30 Multiple-Choice-Multiple-Answer (MCMA) with the latter only scored as correct if *all* of the correct choices are selected. The pass score is not published.

When taking my exam I split my PC screen with a window on the left enabling me to access the online style guides and a window to the right with the exam questions (Figure 16).

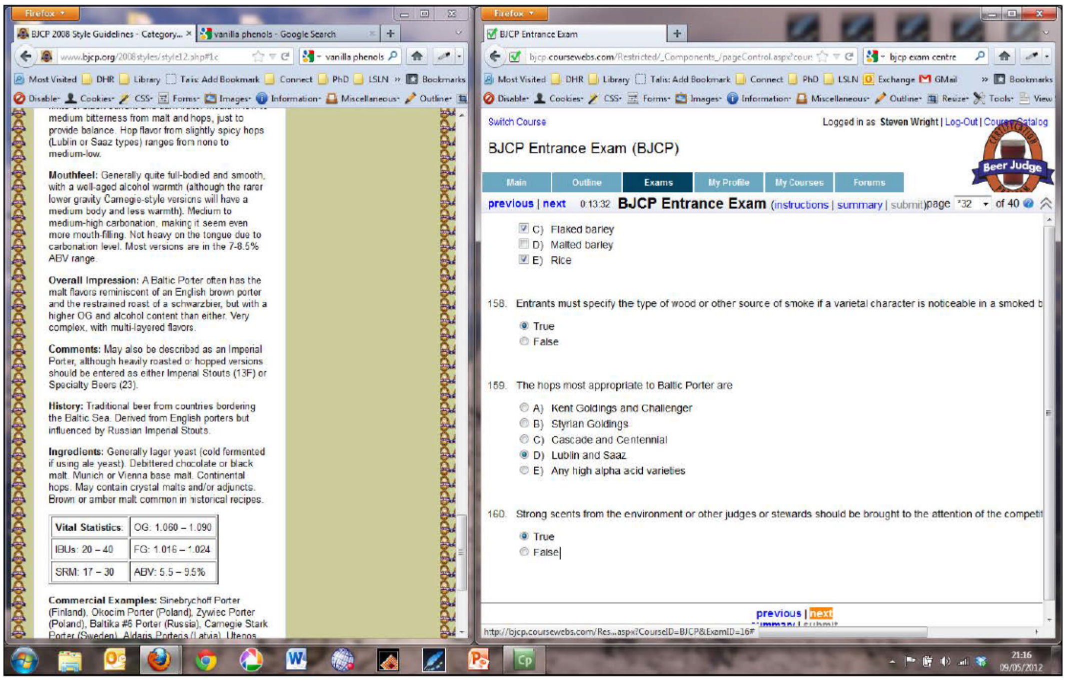

Figure 16: Screen shot taken using screen-capture software of the online exam (right-hand window) and BJCP study guides (left-hand window)

This could of course be classed as simply ‘cheating’. Whilst the exam was “open book” this was not explicitly prohibited but it is certainly close to engineering such a breaching experiment. In being open book the exam did not isolate me as a test taker from resources to support or check my answers – the short time and number of questions however are explicitly designed to render such looking up for *every* question impractical. My interest and commentary reflected on investigating at what stages and in which forms did it test knowledge. In particular how questions were constructed as translations of style guide statements promoting rote-learning or if they required an engagement that could not simply be assembled through textual juxtaposition.

4.2.3 Additional resources: Fifty shades of grey literature?

In addition to these core experiences and recordings I draw here on the question pool relating to "BJCP Ethics, Levels and the Judging Process" which are made available along with answers in the published exam preparation guide where they take on a canonical role defining core proceedings and practices. I also draw on the accounts of participants from my fieldwork which were posted to forums, jotted down as fieldnotes or transcribed from recordings of conversations. Further sources include documents that are referred to in connection with the exam: the study guide, recommended reference material and the manuals produced by the BJCP. Where lines of enquiry drew a blank I sent questions via email to the exam director who was helpful and forthcoming with answers, statistics and additional information.

I then started to trace connections from these diverse actants and accounts to "the literature" in its multiple shades, from the academic publications that inform my position and research approaches through the 'grey literature' of reports and documents to the self-published accounts of bloggers online (and often in print too). These latter are the "great amateurs" that Hennion proposes sociologists should take "more seriously" and treat "more respectfully" (2004, p. 132). One of the particular "great amateurs" I engage with here, Ron Pattinson, has worked since 2007 to comprehensively locate, digitise and translate brewery records into spreadsheets, reconstructed historic recipes and style classifications through his blog "Shut Up About Barclay Perkins". I also trace and use digitised historical documents such as early treatises on brewing by Combrune (1762) and Booth (1829). I draw on these engagements with historical documents and the digitisation of primary historical sources such as brewery records symmetrically with the work of academics and their accounts of engagements with other historical texts.

I explore the online exam as a methods assemblage using the framework that shapes the thesis as a whole. Following Law (2004) I consider how the online exam enacts 'manifest presences' through creating an 'in here' through the presentation of questions on screen and separates them from a set of 'manifest absences', the things which are relevant to the in-here present but have been made absent. I seek to trace what is made absent and how the boundaries are constructed. In drawing the account together I turn to the third enactment of a methods assemblage: an 'othered' reality of the myriad connection that are hidden, repressed or excluded as uninteresting. I structure these explorations, as with previous and later chapters, in relation to Busch's typology of standards as Olympic, filters, ranks and divisions along with the typology I derive from Hennion's work on taste and sociology (2004, 2007) to consider how tasting bodies, tasted objects and the devices and conditions of tasting are constructed, related and categorised in the online exam.

Of course all of these concerns are also enacted elsewhere in the fieldwork events at the national homebrewing competition and the tasting exams that follow this chapter. So, rather than describe enactments that are seen more vividly in those chapters I take a particular focus here on those that most clearly demarcate presences, manifest absences and otherings within the assemblage of the online exam. I consider in turn normativities surrounding the body, the relationships of flavour descriptions to the processes and ingredients of tasted objects, and then the role of numbers and standard measurements as devices for constructing comparability as well as efforts to standardise the language of sensory description into similarly standardised measurements. I address and introduce each of these in connection to the research questions that guided the exploration of the data.

4.3 The construction of tasting bodies and their relationships to tasted objects in the online exam

Tasting is an embodied experience through contact with an object. However, within the questions in the online exam references to the body are largely absent. There were very few that addressed me as the test taking subject directly through the word “you” or possessive “your”.

4.3.1 Constructing the fragility of the sensing body

In the language of the 200 questions that I was presented with in the entrance exam I was made absent. Only 2 questions directly addressed me: one on scoring beers, the other on giving feedback on my overall impression. The questions presented were drawn from the pool of approximately 4000 questions, within which there are only 29 uses of the words "you" or "your”. Of those occurrences 6 were described as ones that had "slipped through" by the exam director with the majority remaining (23) occurring within the set of 124 questions relating to judging procedures. This set is included, with answers, in the study guide. Therefore, all of these were available for consideration (rather than just the subset of 20 that were randomly selected and presented in my online exam). These numbers serve to illustrate that it wasn’t just *my* exam that had few references to me as a test taker, there are very few overall, and furthermore that I had access to *all* of the questions where there is an intentional addressing of the test-taking subject for my consideration and analysis.

The use of “you” in this group of questions is often strongly normative, as seen in this example:

> You should avoid eating spicy or greasy food within a few hours prior to judging (True)

The body is positioned as fragile, limited and easily interfered with. It is to be used as a sensing instrument. However these limits are not to be interfered with:

It is a good idea to take a decongestant prior to a judging event to increase your sensitivity to the aromas of beer.
(False)

Thus the fragility is *not* to be compensated for through ingesting chemicals or "medication that might influence your ability to judge (e.g., decongestants)"[26].

4.3.2 Bodies and the environment

Sensing bodies are not only fragile and prone to distraction they can also be the *source* of these distractions. It was in this form that the only question in my online exam presented the body:

160 Strong scents from the environment or other judges or stewards should be brought to the attention of the competition organizer.
True | False

This sanction transcends the dichotomy of pleasant / unpleasant smells of the body, proposed as a "skunk/rose"[27] dualism by ethnomethodologists Largey and Watson (1972). It is not a normative judgement of pleasure but a sanction against *any* odours which may distract the fragile sensing body from the controlled and calibrated task at hand. Likewise "the environment" is summoned as a consideration with some 'difficult environments' for judging listed including restaurants and breweries due to the powerful smells frequently encountered in those environments. However, in practice, these are often the places that host such competitions. One of my fieldwork locations was a competition held in a brewery

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[26] It is however somewhat unclear whether this is a sanction against such adjustment as unnecessary, as risky or whether this is an implicit sanction against "performance enhancement" by taking drugs.

[27] Skunk is itself an intriguing term for aroma – geographically localised to the North American animal. It is also applied to one of the more (in)famous strains of the hop's sister plant: cannabis. Additionally it is a term used in beer flavour terminology to describe the effect of UV light on hopped beer. This term makes an appearance in the taxonomy and on the wheels of the beer flavour terminology system we shall encounter later in this chapter.

where the aromas of caustic cleaning products and bleaches were almost overwhelming on entry, but "tuned out" by the judges in practice.

4.3.3 Sensing bodies and temporality

Having established where sensing should occur and how distractions should be avoided other references to the body consider how sensing should be done and accounted for. Again these are of limited number within the corpus of questions pertaining to judging processes of which only one explicitly referred to sensing practices in my online exam:

75. Sniff the entry immediately after pouring to ensure proper evaluation of volatile aromatics.
    True | False

Here smelling is embodied through actively sniffing – this is not a passive reception but an active engagement. Furthermore there is a restricted temporal dimension: this must be done *immediately*. It is presented as part of a normative "proper evaluation" of a beer that possesses multiple component parts. Smell has been divided here into a physically embodied sensing activity in relation to the fleeting unstable properties of an object. These properties of the object are translated into the scientific language of chemistry but, as I will show, that language is generally *not* to be used to describe these underlying compounds, which is to be performed in a different register[28]. It is to these different registers that I now turn.

[28] Register is itself an interesting linguistic term with associated sets of standards. Based on the ISO 12620 Data Category Registry the language switch here would be from "b) technical register for the scientific terms" to "c) in-house". (Dhydro Project, 1999).

4.3.4 Exploring the origins of sensory language

Where does this chemical language come from and how does it act to configure the relationship between sensing body and sensed object? The shift to a conceptualisation of a sensed object as having invisible underlying *chemical* properties has been explored by Shapin (2011b) in connection to shifts in the 18th Century from a primarily Galenic engagement with the humours and description of "qualities" to a very different conception of what elements were with the ascendancy of chemistry as a language describing "constituents". In the Galenic paradigm the distinct sensed qualities of imbibed objects - food, beer, wine etc. - were described in terms that were associated with the four humours: blood, yellow bile, black bile, and phlegm. Each humour was associated with one of the four temperaments (sanguine, choleric, melancholic or phlegmatic) as well as one of the four Aristotelian elements (air, fire, earth or water). Food and drink were categorised in terms of associated sensed combinations of these properties: wetness and dryness, hotness and coldness. The language of both the professional medic and the lay subject were shared and closely aligned.

An early book on brewing practices (Combrune, 1804) originally published in 1762 reflects this period. Opening with definitions of technical brewing terms still in use today it then dedicates 20 pages to the four elements of Fire (pp13-18), Air (pp19-23), Water (pp24-32) and Earth (pp.33) before turning to the new scientific instruments of thermometers. Descriptions of taste occupy only 6 pages at the very end with a limited vocabulary displayed in a table which describes only combinations of the terms "acid, sweet, bitter, aromatic, austere and nauseous" (p.345).

A TABLE *determining the tastes of Malt Liquors.*

Heat of the air.	Dryness and extracting heat.	Predominant tastes.
80°	119°	Acid.
76	124	Ac. ac. sweet.
73	129	Ac. sw.
70	134	Ac. sw. sw. bitter.
66	138	Sw. sw. bitter.
63	143	Sw. bit.
60	148	Bit. bit. aromatic.
56	152	Bit. arom.
53	157	Bit. arom. austere.
50	162	Arom. aust. aust.
46	167	Aust. aust. nauseous
43	171	Aust. nau.
40	176	Nauseous

Figure 17: "A table determining tastes of Malt Liquors" (Combrune, 1804, p. 345)

A similarly sparse vocabulary is found in other historic books on brewing (e.g. Booth, 1829) wherein most terms continue to relate to the Galenic concept of "agreement" and the sparse descriptive terms are restricted to those listed above with only three additions: "vinous"(p.28), "old"(p.52) and "mawkish"(p.55).

The shift to a chemical vocabulary and the description of foods in terms of chemical constituents in the 18th Century sees a different configuration of this relationship of sensing body to sensed object: the elements change from describing sensed *qualities* (for example the element of water) to engaging with underlying chemical *properties* (wherein water is now understood as a combination of hydrogen and oxygen) with these elemental properties no longer available directly through the senses. Roberts (1995) explores how this shift affected the education and training of chemists from the "sensuous chemists" of the 17th century using their mouths, tongues, noses and fingers to sense properties to the subjugation of such subjective approaches to the objectivity of new measuring devices. Through this process the sensing body became understood as an unreliable, subjective tool rather than an authentic instrument.

However taste has remained partially removed from this. Despite the development and use of "electronic tongues" (cf. Cetó, Gutiérrez-Capitán, Calvo, & Valle, 2013;

Rudnitskaya et al., 2009) or gas chromatographs (cf. Zgherea, Stoian, & Peretz, 2011) tasting is still done by human bodies with "panel members as measuring instruments" (Meilgaard, 1993, p. 17). Unlike the changes noted by Roberts for general investigations in chemistry when taste is encountered this is not the case. Meilgaard (1993) suggests that "if the gas chromatograph and the panel disagree, one should trust the panel and not the machine" (p.30) a view corroborated by the ethnographic accounts of Mann (2012) exploring tasting practices in the lab. Shapin argues that this shift in status:

> *made taste a scientific and philosophical orphan. But, at the same time, it made taste a suitable case for connoisseurship. Our modern connoisseurs display their ability to analyze, distinguish between, and assign descriptive predicates to each of the thousands of wine flavor components and to produce seemingly precise quantitative measures of how good "good" wines taste. The vocabulary of taste has accordingly moved from the spare to the ornate. (Shapin, 2011a, p. 46)*

And it is this shift that brings me to a consideration of how the tasted object is constructed, categorised and positioned in the online exam.

4.4 The construction, categorisation and positioning of the tasted object in the online exam

One of the achievements of the BJCP style guides is to establish criteria by which different objects can be made comparable. The style guide can travel more easily than the beers – it can be translated into electronic and printed forms, and from statements to questions and answers. It describes beers in words and numbers and constructs its categories through contrast and continuity, beers are no longer sensed fluids but are now organised as divisions with each now a *type* or *class* of fluid. Their properties are broken down further through divisions of sensing as aroma, appearance, flavour and mouthfeel which are synthesised into an overall impression. How these are constructed, categorised and translated into testable propositions in the exam through a particular language is therefore worthy of consideration – tracing what is made present, and exploring the manifest absences that are smoothed over or set aside in this process.

4.4.1 Creating comparability, othering controversy: Vocabularies and referents in the online exam

My first consideration of these processes is through a question which askes the test taker to compare a set of qualities of two styles:

49. Check all that apply. A Dry Stout and a Foreign Extra Stout have what similar malt aroma characteristics?
    A) Coffee like
    B) Toffee
    C) Roasted malt
    D) Chocolate like
    E) Biscuity

This question proposes that beers can be classed into styles and differentiation made between these divisions within a category of “Stout”. Similarities are to be found here in descriptions of their aroma, which is done with reference to other taste objects. This is what Shapin (2012b) calls a *referential vocabulary,* which is the ornate approach enabled by the “orphaning” of taste from philosophy and science, and the subsequent assembly of new philosophies and sciences around taste. It has also seen extensive work within sensory science to achieve standardisations through specific methods which I shall turn to investigate. In contrast to describing Galenic qualities in terms of hotness/coldness or wetness/dryness there are instead references to non-liquid foodstuffs (biscuits, coffee, toffee and chocolate) as well as an unfermented beverage: coffee. These show a strong continuity with the structure, though not the referents, of the contemporary vocabulary of wine. However item C is anomalous - here the aroma properties are defined not in terms of reference to other foods but by reference to a distinct ingredient. This is a marked difference from most wine vocabulary where technical terms of the ingredients such as grape varietals or additives are little used in description and even excluded from Lehrer’s (2009) linguistic analysis of wine talk. By comparison the language of beer is replete with references to the ingredients as flavour references, here “roasted malt”.

My response to this question was to immediately click “roasted malt” and then check this by viewing the web page that listed both styles, reading the items listed for aroma under foreign extra stout and then cross-checking with dry stout. One key issue which preoccupied me and I expressed in my voiceover of this process (whilst commenting on how this felt like a memorisation or rote learning) was checking for a potential issue: was roasted *malt* mentioned, or roasted *grain*?

Dry stout lists “coffee-like roasted barley and roasted malt aromas are prominent” whilst foreign extra stout is described as having “Roasted grain aromas moderate to high, and can have coffee, chocolate and/or lightly burnt notes.” I would therefore retrospectively infer that I was *wrong* in this answer as the latter description mentions roasted grain not roasted malt. This may seem like splitting hairs but as vignette three explored in the introduction the significance of this lies in the BJCP style guide’s use of that particular ingredient, and associated aroma and flavour properties, as *the* method to differentiate stout and porter. In this framework stouts have a common feature of roasted *unmalted* barley[29], made present and also reinforced through use as a testable proposition in an exam.

But such a differentiation between these classes and the identification of continuities is only locally stabilised. Controversies over such a differentiation are made as manifestly absent as the words describing a flavour of roasted malt are made present. The blogger and amateur historian Ron Pattinson who collates, analyses and publishes historic brewery records makes a forthright objection to this sort of differentiation. Quoting from historic sources that

[29] This itself is a historically contingent distinction as using unmalted grains was illegal in Britain prior to the 1880 Free Mashtun Act (Cornell, 2010a).

"Stout, brown stout, &c. are varieties of porter, differing only in their strength. ("A Cyclopaedia of Practical Receipts" by Arnold James Cooley, 1845, page 190) … [and that] … brown stout, which is the strongest porter made in London, contains 6.8 per cent, by measure, of alcohol (Encyclopaedia Britannica, 1824, page 488)" he cites these sources to support his criticism of this BJCP differentiation arguing that "Both sources say unequivocally and explicitly that Brown Stout is variety of Porter. Now let's see - which sources do the BJCP quote? Oh silly me, I was forgetting. They don't provide any references to back up their claims, do they?" (Pattinson, 2008b).

There are indeed no references in the style guides. Looking at historic versions of the style guides[30] the history for "dry stout" was expanded a little between the 1999 versions (style 16A) and the 2004 versions (becoming style 13A) to make the link more explicit adding that "When a brewery offered a stout and a porter, the stout was always the stronger beer (it was originally called a "Stout Porter")". All versions of the guides do explicitly list un-malted barley as an essential ingredient and flavour/aroma property for stout.

Other questions from my online exam similarly black-box these issues asking:

> 45. Lack of hop aroma is appropriate in both Robust Porter and Foreign Extra Stout
> True | False

And

> 172. Very low amounts of diacetyl aroma are acceptable in both Robust Porter and Foreign Extra Stout
> True | False

---

[30] The BJCP make all prior versions of their style guides available including a version with "track changes" showing the detailed revisions between the 2004 and 2008 versions. Such openness is welcome but rare with Bowker and Star (1999) noting how frequently this can frustrate ethnographers of infrastructure.

The detailed descriptions and differentiations made in the style guide enable true/false or multiple-choice questions to be posed about them, enacting the style guides and their correctness anew. The classifications are constructed through not only a referential vocabulary but also references to ingredients and history. As I showed in the 3rd vignette these differentiations and divisions are a topic of debate and discussion. The simple presentation of a question along with “select all that apply” for one mark on the exam then effectively black-boxes these controversies, histories and the contingencies of how these styles came to be named, differentiated and described as manifest absences. What is made present is the authority of the guide and the test taker’s ability to account for that.

4.4.2 The role of numbers in creating comparability

In addition to the extended descriptions, referential terms, and lists of ingredients considered above, the standardisation and comparability of beer styles is also achieved through the inclusion of numeric “vital statistics”. Systems of standard brewing measurements are enrolled into forming these classifications including specific gravities (a measure of liquid density and dissolved sugars) both prior to fermentation (original gravity – OG) and after fermentation (final gravity – FG). Ranges are also given for bitterness using international bittering units (IBU) and colour using the “standard reference model” (SRM) scale.

This agglomeration of different descriptive methods is then translated into sets of testable propositions and comparisons of disparate styles in the exam. Some questions group these together for example:

6. Check all that apply. Compared to a Brown Porter, a Southern English Brown Ale typically:

   A) Is sweeter

   B) Has more of a dark fruit presence

   C) Is roastier

   D) Has less alcohol

   E) Has a more pronounced hop character

This question enrols colours (brown), geographical indicators (Southern English), historical manual labouring professions (river and street porters) and their preferences for a particular beer which became named by association with them as "porter"[31]. There are sensory properties of basic tastes (sweetness), referential vocabulary terms as 'presences' in an objectified beer (dark fruit) and ingredients both as flavours (roastiness), and as "character" (hops) as well as numerical comparison of alcohol by volume.

4.4.3 Translating fluids into numbers

Other questions make more specific and/or extensive use of these statistical descriptions:

30. Old Ales have a higher bitterness range than American Barleywine

    True | False

108. Biere de Garde and California Common are most similar in:

    A) Color

    B) Bitterness

    C) Original gravity

    D) Final gravity

    E) Body

---

[31] The precise origins of this term remain much debated. They certainly predate both Combrune (1762) and Booth (1829) who use the term, with Cornell (2010b) writing that "the earliest known mention of porter by name is in a pamphlet by the political journalist and poet Nicholas Amhurst dated May 22 1721".

These questions are also replete with geographical terms (American, California) however their comparisons are achieved primarily through numbers. I therefore turn first to reiterate where these numbers came from and the purposes for their inclusion, before considering their agency within this assemblage.

As I explored in the previous chapter, the BJCP style guides are largely derived from the work of the late Michael Jackson. His books are included as recommended reading in the BJCP study guides and the current (2008) version of the style guides opens with a full page dedication in memorium to his death in 2007 from the BJCP president Gordon Strong:

> Michael Jackson was the most influential authority on beer the world has ever known. He has inspired generations of beer judges with his passion, knowledge and gifted prose. His books remain definitive references on beer (Gordon Strong in BJCP, 2008, p. ii)

As well as his "gifted prose" Jackson included indicative tables of beer strength including original gravities (OG) and alcohol by volume (ABV) but references to bitterness levels were only sporadic and often vague. Fred Eckhardt (1989) brought this work together and listed specific examples of beers within each style for which he had obtained information on ingredients used as well as original and final gravities, bitterness and colour. This information is then sufficient to engage in recipe formulation – with notes guiding when and how hops should be added to achieve the required bitterness[32]

These statistics are calculable and when creating a beer but are *not* available for those undertaking sensory evaluation and judgement. They are important, even critical, for

[32] For a detailed considerations of how these statistics are used in software and translated in practices see Wright and Parchoma (2012, 2014); Wright et al. (2013)).

designing and producing the beers or “clone brews” but are *not* available to a judge during the practice of judging[33].

However, having translated beers style examples into statistics for the purposes of formulating recipes and then assembling these in the style guides they can easily be enrolled for the purposes of comparison. Beers that share few, even none, of the other properties collected in the style descriptions in terms of geographic regions or history, now share features (as with question 8 above). The question above compares the style “California Common”, derived from one of the few prohibition-era survivors from the USA (Anchor ‘Steam Beer’) with “Biere de Garde” (a Wallonian / Alsatian strong beer historically brewed for storing over summer months for the consumption of farm labourers).

The numbers can also be gathered and tabulated, which is done at the end of the printed version of the BJCP style guides through a table organising all 78 styles – see Figure 18 below.

[33] While final gravity *could* be tested using a delicate glass hydrometer as a measuring instrument this is not typically done. Getting a numeric bitterness score would require either spectrophotometry or liquid chromatography – with these testing services used at substantial cost in the industry and often made available as prizes in amateur competitions.

STYLE	OG	FG	ABV%	IBU	SRM
10. AMERICAN ALE					
A. American Pale Ale	1.045-60	1.010-15	4.5-6.2	30-45	5-14
B. American Amber Ale	1.045-60	1.010-15	4.5-6.2	25-40	10-17
C. American Brown Ale	1.045-60	1.010-16	4.3-6.2	20-40	18-35

Figure 18: Excerpt from style table in BJCP style guide (2008, p.64)

In taking the exam I didn't refer to this table, although other participants in my fieldwork did. One described the exam as "a test in how fast you could turn the pages" and explicitly referred to using this table extensively.

For questions like number 108 above my "think aloud" reactions were "most similar… sheez I have no idea". I clicked on the BJCP style guide category 16, Belgian and French Ale, then the link to the anchor on the page for 18D Bière de Garde, scrolling down to the statistical table, muttering "bitterness 28" whilst noting that colour was 6-19 SRM. I tried to remember these statistics before saying "I would imagine that's colour" as I used the browser back button and then accessed the entry for California Common reading that colour was 10-14. I then returned to the Bière de Garde entry and confirmed my earlier supposition that "yup colour" was the match as none of the other statistics had any overlap. I re-emphasise: none, these two styles have essentially nothing else in common except for being relatively pale beers, however numbers craft connections and comparability.

This exploration highlights the agency of numbers in accounts, and how development for one set of functions (replication of beers and the creation and reproduction of recipes) does not limit their use but rather enables transportation and re-use to be enrolled into tabulated lists and comparative questions. Beers here are not liquids to be sensed and enjoyed but are enacted in a manner akin to a playground game of "Top Trumps". The relationship to the sensory judging for which this is a filtering entrance exam is very distant here, but the numbers make such comparative questions easy to formulate. However they also serve to make them easy to reference rather than memorise in order to answer such questions.

These tables of statistics are one of the devices through which these beers are collected and made objects – I now turn to consider another device that mediates the relationship of the fragile bodies to the classified objects.

4.5 The structuring and standardisation of the conditions of tasting through devices

In exploring the relationship of tasting bodies to tasted objects I have shown how conditions of tasting are enacted through those bodies, objects and the environment of tasting. I turn now to consider how these conditions are aligned, regulated and standardised through the use of specific *devices*.

4.5.1 Calibrating bodies and beers

An object fulfilling this role and relating the fragile body to the objectified beer and to the wider network of commercial examples of styles are the "calibration beers" I introduced in the introductory vignette two. The second question in my online exam was:

2. Calibration beers are selected to be the standard against which entries should be judged.
   True | False (selected)

This question is drawn from within the set published in the study guide, and is derived from the following statement in the judging procedures manual:

> Commercial products used for calibration beers are intended to help judges narrow their scoring to within an acceptable range prior to commencing with the judging. Calibration beers are not intended to serve as a standard against which entries should be judged; rather, entries should be judged based on the standards set by the style guidelines. (p.4)

A "commercial example" is therefore mandated to be used as a *device* to calibrate the sensing bodies. However the primacy of the style guides is also asserted here. This enacts a set of complex relationships – the calibration beer is to calibrate and align multiple judging bodies, but NOT to change the relationship of bodies to judged objects – that is to be mediated instead by reference to the style guides. And it is to be communicated with reference not only to those but also using the language and descriptions of tasting that inform the language of that guide – an objectified, referential vocabulary describing properties of the object.

4.5.2 Standardising language: From gifted prose to obscure referent

One of the example questions from the demonstration exam (which I included in the collage image that opened this chapter) illustrates the normativities associated with the language of beer judging:

> 9. Brettanomyces is a common brewery contaminant that is typically attributed to causing what off-flavor in beer?
> A) Rancid butter
> B) Horse blanket
> C) Sherry
> D) Grassy
> E) Green apple

This has transitioned from describing properties of a beer to the diagnosis of flaws: aroma and flavour are now “off-flavors” associated with issues of contamination. This shows strong continuities with the older Gallenic-era concerns of tasting as assessing “goodness” or “badness” with particular prominence in assessing amateur practices where contamination is more frequently encountered than with industrialised commercial production processes. The contaminant - a wild yeast - is to be associated with one of the listed referential terms. Whilst you, the reader, may well have had exposure to rancid butter, sherry, grass or green apples it is “horse blanket” that is the term to be associated as the aroma descriptor here. I answered it correctly in the demo exam despite the fact I have never knowingly or consciously smelled a horse blanket. How then did I know this term was associated, and how are such linkages of referential terms achieved and standardised in this way?

The beer exam study guide is emphatic that it is displaying this ability that is essential for a judge:

> Regardless of a judge's ability to detect various odors in beer, that ability is useless if the judge cannot use accurately descriptive terms to communicate information to the brewer. Hence, it is important for beer judges to build a vocabulary for describing the variety of odors (and knowledge of the source of those odors). Meilgaard (1993) presents a useful taxonomy of beer-related odors. (BJCP Exam Study Guide, p18)

By following this reference to Meilgaard (1993) it refers to the original research and papers by Meilgaard, Dalgliesh, and Clapperton (1979) which set out a taxonomy and proposes "the arguments for an agreed flavour terminology are the same as those for an agreed chemical terminology or biological terminology or for a common scale of temperature" (p.47). This approach seeks to connect and enrol its classification of referential language into the same order of measurement as those created from the shift to instrumental (rather than empirical) chemistry, and the numeric standards for measuring other properties of beer considered previously.

As well as presenting their taxonomy in a table it is also translated into a wheel design with the subsequent publication of multiple versions of varying complexity, the most comprehensive of which is published online including all 137 terms (Kabakoff, 2012), see Figure 19 below. This electronic version has then been transported and incorporated into another instantiation of the BJCP classification system such as the official BJCP app for iPhone and iPad where it appears along with a searchable version of the style guide and an SRM colour chart.

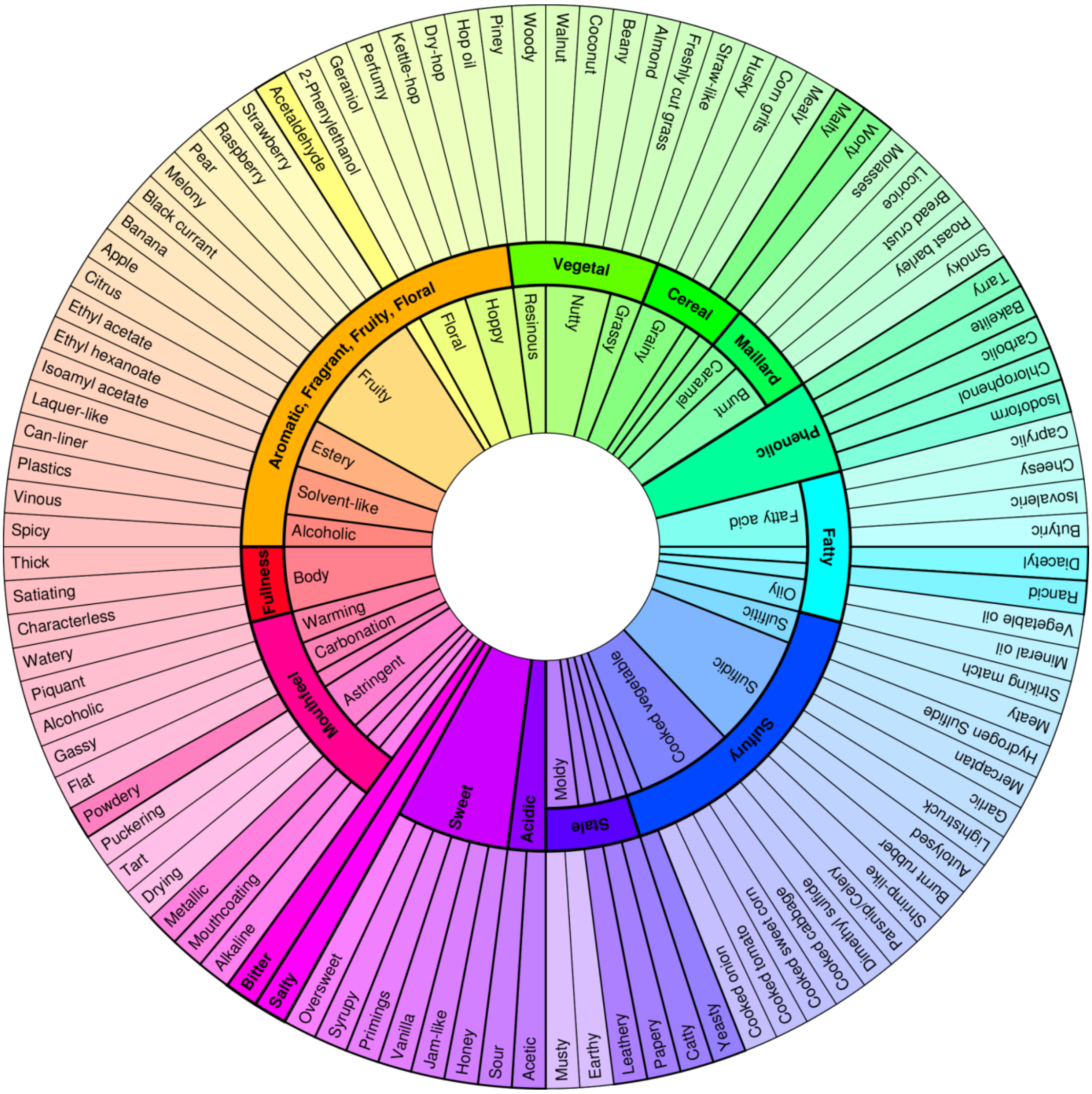

Figure 19: A Versions of the Beer Flavour Wheel developed by Meilgaard et al. (1979)[34]

None of these versions of the wheel, nor the taxonomy, include the term "horse blanket", instead the wheel uses chemical constituents attributed to producing these smells: "isovaleric" and "caprylic". This shift to a chemical terminology challenges the assertion that the wheel provides a "comprehensive system that will enable flavour researchers, brewers and marketing professionals to describe and define each separately identifiable flavour note in beer" (Meilgaard et al., 1979, p. 47). Some of the tensions glossed over in that statement

[34] Full-size available from http://www.beerflavorwheel.com

have been considered with regard to the wine aroma wheel developed at UC Davis by Ann Noble (1990). She suggests that "although descriptive terminology is precise and facilitates communication about flavour, precise terms cannot be used on wine labels: 'asparagus' and 'bell pepper' are not appealing to most consumers shopping for wine" (Noble, 2006, p. 35). These tensions are the precursors to initiatives to develop and update the beer flavour wheel (Brewers Guardian, 2010) as well as a research project to develop a beer aroma wheel for communication with customers who need to understand the terminology. Schmelzle developed "a beer aroma wheel that is structured according to sensory standards. Even people who have no knowledge of the way flavours in beer develop can use it to describe sensory perceptions" (2009, p. 26) – see Figure 20 below.

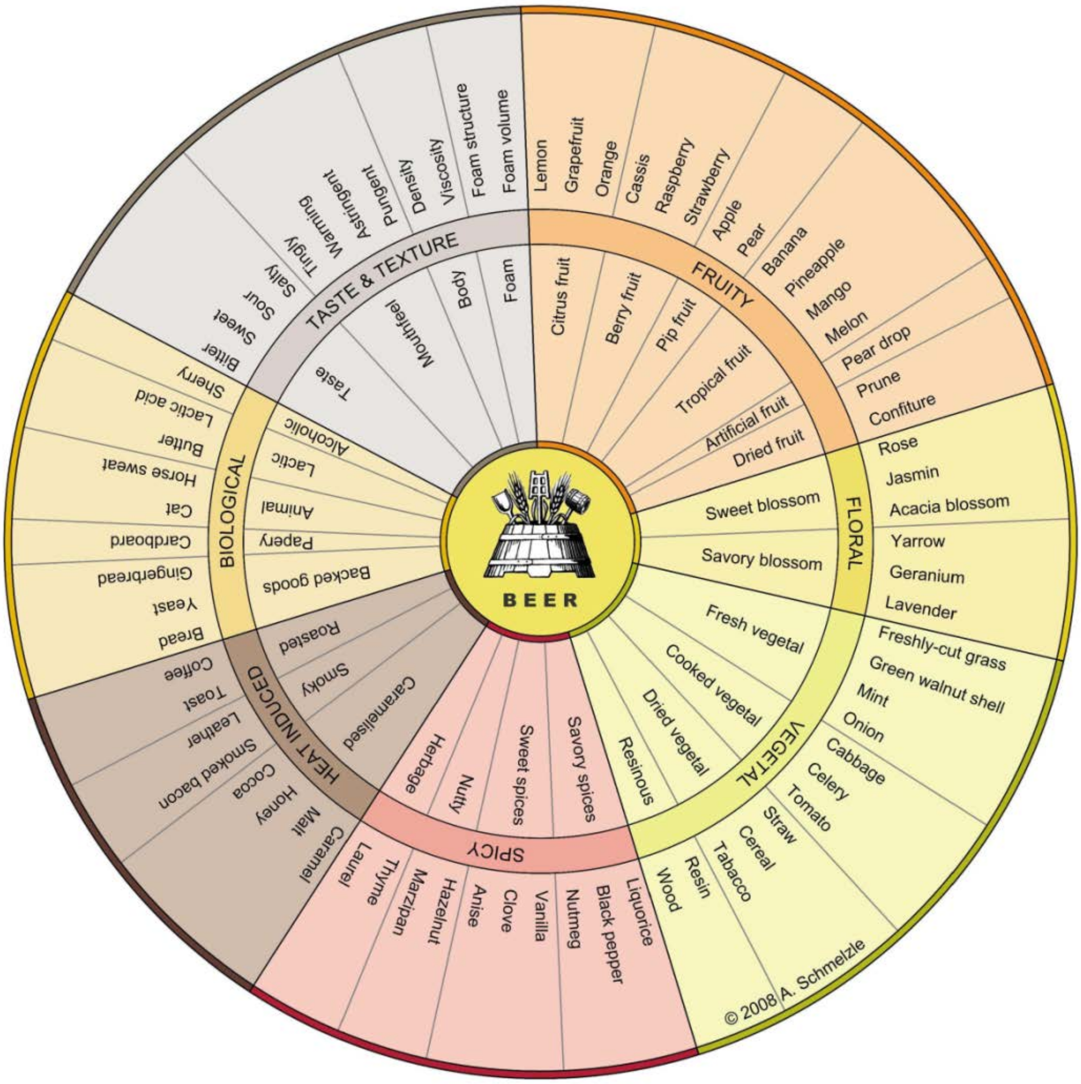

Figure 20: The beer aroma wheel developed by Schmelzle (2009)[35]

The term "horse sweat" *does* appear on this refined beer aroma wheel, however this cannot account for its institutionalisation as *the* dominant reference term for the aroma of Brettanomyces, one that features in the glossary on the beer review website *Ratebeer* (2013) as well as other online glossaries of brewing terms e.g. online brewing magazine *The Beer Sessions* (2013). It appears in blog and forum posts where such terms are argued about as

[35] Full size version available from http://beeraromawheel.com/

snobbish, inaccurate or arcane. Beer culture historians Boak and Bailey present the term as evidence of "The Stale Language of Beer" arguing:

> People will describe 'horse blanket' when they really mean 'that thing you get in that other beer that Michael Jackson said had a horse blanket character'. Who, apart from Adrian Tierney-Jones, has actually smelled a horse blanket? Seriously? (Boak & Bailey, 2013)

Their account links back to, and displays, the "gifted prose" of Michael Jackson, with this question translating it into a testable proposition and establishing it as *the* definitive, orthodox account. Despite this widespread use of the term does all this work to create standardisation hold together? If so, one would expect to find this term in use in other devices used in tasting and judging by the BJCP such as the checklist version of the beer scoresheet which structures the judging in the following chapters. However, of the proposed answers only one appears on the checklist under the section for flaws where "Grassy" is listed (Figure 21):

FLAWS (check where perceived or by indicating L, M or H intensity) **See http://www.bjcp.org/faults.html for suggested fixes.**

Fault	Aroma	Flavor	Mouth	Fault	Aroma	Flavor	Mouth	Fault	Aroma	Flavor	Mouth
Acetaldehyde				Light-struck				Sour/Acidic			
Alcoholic/Hot				Medicinal				Smoky			
Astringent				Metallic				Spicy			
Diacetyl				Musty				Sulfur			
DMS				Oxidized				Vegetal			
Estery				Plastic				Vinegary			
Grassy				Solvent/Fusel				Yeasty			

Figure 21: Flaws section of BJCP Checklist Score Sheet

And rather than "horse blanket" the term "Brett." Is used with tick-boxes in both aroma and flavour sections (see Figure 22 and Figure 23).

AROMA				Malt	Hops	Esters	Other
#	**Aspect**	⦸	**L M H**	☐ Grainy	☐ Citrusy	☐ 'Fruity'	☐ Brett.
	Malt	☐	☐☐☐☐☐	☐ Caramel	☐ Earthy	☐ Apple/Pear	☐ Fruit
	Hops	☐	☐☐☐☐☐	☐ Bready	☐ Floral	☐ Banana	☐ Lactic
	Esters	☐	☐☐☐☐☐	☐ Rich	☐ Grassy	☐ Berry	☐ Smoke
	Phenols	☐	☐☐☐☐☐	☐ Dark Fruit	☐ Herbal	☐ Citrus	☐ Spice
	Alcohol	☐	☐☐☐☐☐	☐ Toasty	☐ Piney	☐ Dried Fruit	☐ Vinous
	Sweetness	☐	☐☐☐☐☐	☐ Roasty	☐ Spicy	☐ Grape	☐ Wood
	Acidity	☐	☐☐☐☐☐	☐ Burnt	☐ Woody	☐ Stone Fruit	☐ ______
	________	☐	☐☐☐☐☐	**Comments >**			

Figure 22: Aroma section of BJCP Checklist Score Sheet

FLAVOR				Malt	Hops	Esters	Other	Balance
#	**Aspect**	⦸	**L M H**	☐ Grainy	☐ Citrusy	☐ 'Fruity'	☐ Brett.	☐ Malty
	Malt	☐	☐☐☐☐☐	☐ Caramel	☐ Earthy	☐ Apple/Pear	☐ Fruit	☐ Hoppy
	Hops	☐	☐☐☐☐☐	☐ Bready	☐ Floral	☐ Banana	☐ Lactic	☐ Even
	Esters	☐	☐☐☐☐☐	☐ Rich	☐ Grassy	☐ Berry	☐ Smoke	
	Phenols	☐	☐☐☐☐☐	☐ Dark Fruit	☐ Herbal	☐ Citrus	☐ Spice	
	Sweetness	☐	☐☐☐☐☐	☐ Toasty	☐ Piney	☐ Dried Fruit	☐ Vinous	
	Bitterness	☐	☐☐☐☐☐	☐ Roasty	☐ Spicy	☐ Grape	☐ Wood	
	Alcohol	☐	☐☐☐☐☐	☐ Burnt	☐ Woody	☐ Stone Fruit	☐ ______	
	Acidity	☐	☐☐☐☐☐					
	Harshness	☐	☐☐☐☐☐					

Figure 23: Flavour section of BJCP Checklist Score Sheet

This displays some of the limits, contingencies and non-coherences as well as the historical specificity of referential vocabulary. Beer writer, journalist and blogger Martyn Cornell puts it thus "I doubt more than one in five hundred beer drinkers knows what a horse blanket smells like, and I bet very, very few beer writers who steal that description from Michael Jackson have ever sniffed a horse blanket either" (Cornell, 2012). That a reference term which is less familiar than the property it is taken to indicate can become so institutionalised exposes the influence, persistence and extension of a particular account that survives through translations even when its referent has been long absent.

4.6 Passing through the obligatory point of passage

In this chapter I have explored through my experience of the online exam and the questions that constitute it some particular aspects that are enacted – the elements made present, the manifest absences and some of excluded others. I have explored how these boundaries are carefully demarcated through the translation of beers into statistics and their tabulation, as well as the fractional divisions standardising words through devices such as the flavour and aroma wheels.

In translating this data into the visual collage that opened the paper and then introducing the elements therein as distinct, separated items I have crafted a written account – comparing the assembled presences of the online exam questions to the manifest absences traced from those questions outward to controversies over the authority of these accounts ("they don't provide any references to back up their claims, do they ") or their normalising effects ("the stale language of beer").

I have explored how these standards have translated text and numbers from other places, and developed for other purposes. They have then become ordered and structured through their translation into test items which also act to reinforce their authority through constructing them as facts with right or wrong answers. I have also explored non-coherences in these, despite regular exhortations that the purpose is to create invariant standardisation. Tracing the term of "horse blanket" as a referential flavour and smell term also exposes both the limits of standardisation and the persistence of terms even when separated from their referent.

What then has been othered? I suggest that the very same things that are othered in the written account I present here: tasting as a sensing act and interaction of embodiment and object. Also pleasure and emotional engagement: this is about analysis and comparison not the passionate abandonment in the interaction. There are sanctions against the inebriating possibilities of the object and methods for avoiding such inebriation to maintain the critical faculties when this is done in practice. The detailed descriptions are lined up next to each other to be compared not felt. And I too in this account have engaged in an intellectual way with questions and tracing them as historical objects arising from historical contingencies to enable such comparisons to be drawn and questions to be constructed.

I have explored here how the tasted object and the sensing body are manifestly in this exam, translated into statistics and standardisation of vocabulary, with the boundaries policed by devices. I have presented and explored evidence of the black boxing of controversies and the debates surrounding these classification terms and considered ways of considering the relationship of this assemblage to that out-there world of accounts, claims and definitional disputes. In the next chapter I turn to consider the continuities and contrasts between this online, disembodied, fixed multiple-choice reality with its normative standards of sensing, describing, judging and classifying here and the fluidities – literal and metaphorical – of these as embodied practices in homebrew competitions and the tasting exam.

The text of the thesis shall be word processed in double spacing on one side only of good quality A4 paper (210 mm. x 297 mm.)*, leaving a left hand margin of 38 mm., and a margin of 25 mm. on the other three sides.

* ISO 216 specifies international standard (ISO) paper sizes. Paper in the A series format has a 1: √2≈0.707 aspect ratio

margin of 38 mm

margin of 25 mm

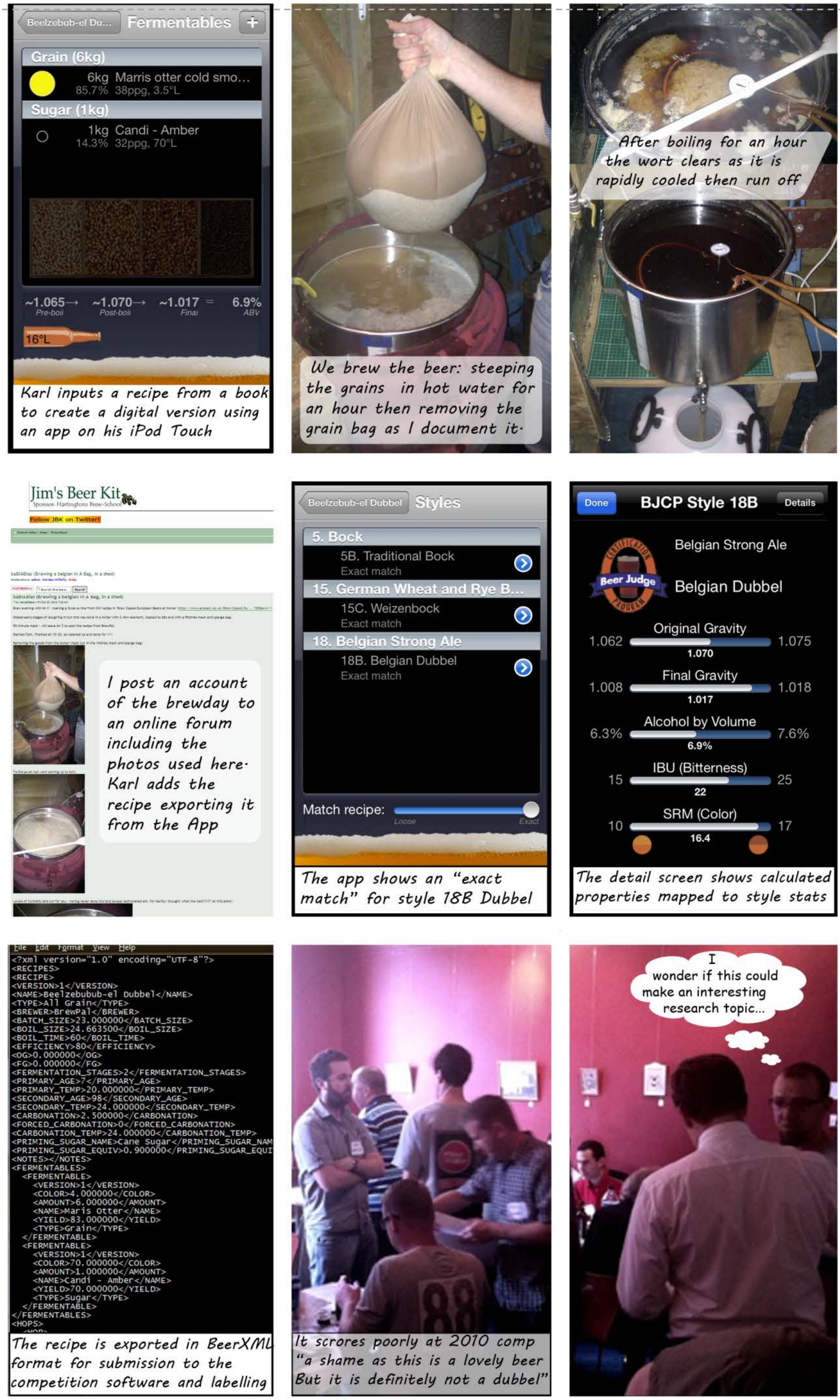

Figure 24: Fumetti exploring the early trajectory of Karl's beer

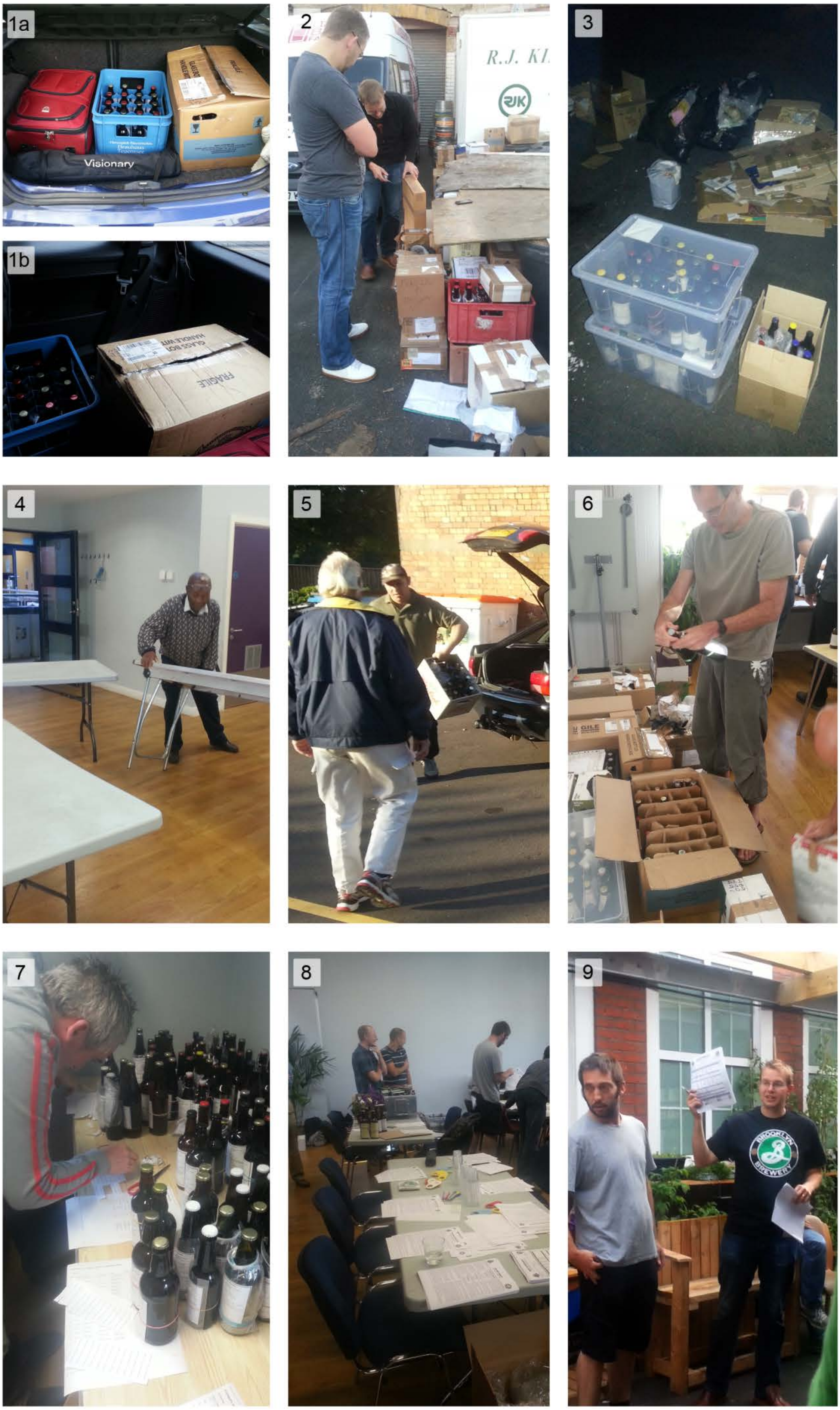

Figure 25: Photo Essay tracing trajectories and alignments of competition materials

5 The Practice of Sensory Assessment Part 1: Gatherings and Orderings

This chapter considers how categories function in practice and how categorisation work is multiply achieved in sensory assessment and judging at a competition. In the opening ‘fumetti’[36] photo essays (Figure 24) I presented images accompanied by captions derived from my fieldnotes. This was followed by a more open invitation to interpret the second, caption-less, photo essay (Figure 25) which only included panel numbers to enable an anchoring between text and images.

The chapter is structured sequentially and expands this visual engagement, seeking to creatively adhere to a tenet of an actor-network sensitivity: to "follow the actors" (Latour, 1996b; 2005, p. 61). I trace trajectories through the fieldwork exploring the entangling of the actant which I follow - a beer bottle - with different standards and how these intersections perform multiple categories through practices. These show continuities - both in method and in practices - between the amateur beer judges of this study and the practices of the professional scientists Latour (1999) follows to ensure the traceability, reversibility and anonymisation of samples and their relationships to standard measures which I explore further in the next chapter.

5.1 Tracing back: Origins and entanglements

I start with a detailed exploration of the images presented in the first fumetti. The narrative is almost a “whodunit”: Who killed Karl’s beer? This echoes the spirit of Latour’s (1996a) investigation of ‘who killed Aramis?’. However, whilst Latour’s investigation of the development and demise of a complex technological system – a planned extension of the Paris Metro – had a clear focus on technological *apparatus* with its “death” more figurative,

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[36] See http://en.wikipedia.org/wiki/Fumetti#Fumetti and Zanettin (1998)

in this investigation I have found the reverse. Homebrewed beer may not be a technological object, nor do I seek to argue that it is, however by drawing on Winner's (1977) typology I make present the technologies involved: the *techniques* of production and the *apparatus* of tools, taking a focus on the interaction of the object of the beer with the *network* of the classification systems and information infrastructures. Thus, while the technologies surrounding the ill-fated beer may be less immediately recognisable as technological compared to a metro prototype, I would argue that the death is far clearer than the metaphorical demise of a project. Homebrewed beers are neither pasteurised nor filtered, they have living organisms in the bottle - thus, like opening a wine, there is a moment when:

> those who consume it are complicit in killing a living thing. That newly opened bottle would be different a day, a week, or a month from now; it would have been different a day, or a week, or a month ago. (Hampton, 2012, p. 856)

I begin this investigation by tracing back to the birth of this beer using detailed "thick description" (Geertz, 1973) to trace its trajectory and tell the story of its creation and transportation to the judging table.

5.1.1 Born digital? From book, to iPod, to web, to competition: tracing the co-ordination of digital and material beer multiplicity

Figure 26: BrewPal recipe screenshot

In the beginning there was an app… and then a beer was born – born digital. The term "born digital" (Palfrey & Gasser, 2008) and the concept of the "digital native" (Prensky, 2001) has a particular resonance in learning technology research – provoking extensive debate and research challenging the notion that there is "a distinct new generation entering university" (Jones, Ramanau, & Cross Graham, 2010). If such a term is problematic for human actants could it however have application in considering hybrid non-human actants? I suggest appropriating this term draws attention to the co-ordination of their hybrid, multiple, digital and material existence. I argue that the beer I follow was indeed born digital and that attending to its digital identity is as important as its physical manifestation as it travels. The app in use BrewPal (panel 1/Figure 26), has "had over 25,000 downloads and over 20,000 upgrades to the latest version" (BrewPal support, 2013, personal communication), this beer is far from alone in being born digital[37].

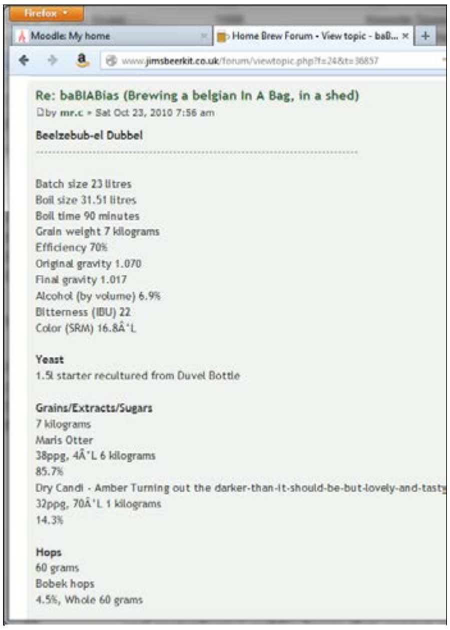


Figure 27: Recipe exported from the app and posted to the forum

[37] I again refer you to Wright and Parchoma (2012, 2014) for a detailed consideration of these apps in use and to Wright et al. (2013) for an exploration of their entanglement with ideas of supporting and assessing creativity.

In the first storyboard panels 1-3 are from October 2010. Panel 1/Figure 26 shows a screenshot of the BrewPal app on Karl's iPod touch. The resulting calculations by the app display expected colour, gravities and strength. The *apparatus* of this device and app were then used throughout the *techniques* of brewing: as a timer and to record actual measurements against the predictions.

Some ingredients were prepared in advance – including yeast re-cultured from a bought bottle of the Belgian beer "Duvel". Karl and I brewed the beer together when I visited, with Karl leading and me assisting and documenting. The process took around 7 hours. During the brewing I took several photos (panels 2-3). I then posted these to the "brewdays" area of the largest UK homebrewing forum where members are asked "Had a good one? Tell us about it here - and don't forget - we like pictures!" with Karl commenting and adding a copy of the recipe exported from the app (panel 4/Figure 27).

How then could the digital beer be neatly separated from the material beer? The digital version, a simulation of the beer, was created first. This digital version was a plan and set of calculations which were modified through the situated actions of brewing. It was adapted and recalculated to record the outcomes of these situated actions. The digital was then transposed, transported and extended online. Each constitutes and is contingent on the other: the processes on the calculations, the records on the outcomes, and both are enmeshed in nested standards of weights and measures, software interoperability and internet protocols. Tracing their co-ordination, I suggest, is more interesting and productive than arguing over a core stable singular essence or differentiation.

5.1.2 Entering the beer into a competition: The agency of numeric style matches

I didn't get to taste the beer– it fermented and then Karl bottled and laid it up in his shed for the months it needed to mature and develop. In that time the first BJCP sanctioned homebrew competition in the UK was announced with entries to be managed online. Karl asked me to submit his beers for him – his computer was having problems and it couldn't be done from his iPod.

He exported copies of the recipes as XML outputs using the BeerXML standard (panel 7). I was then able to save these files for upload and also to import them into my copy of the same app. As a standard with which this actor has become connected, I shall return to explore that in detail shortly, first though I continue the exploration of submitting this entry into the competition management software.

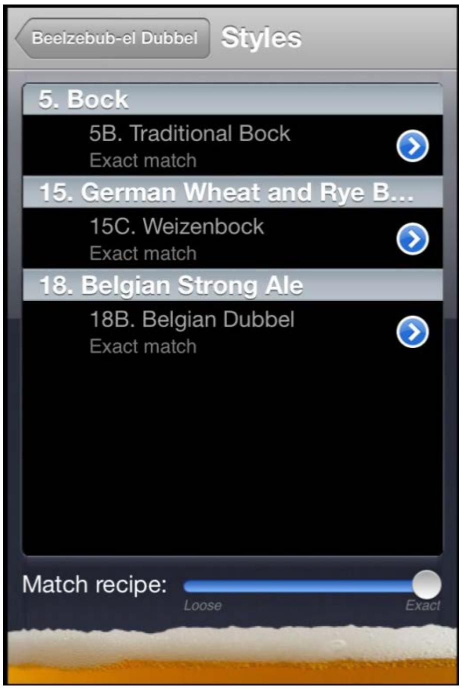


Figure 29: Calculated style matches for the recipe

In order to enter a beer into the competition it had to be classified as a BJCP style. One of the features the BrewPal app offers is a "styles match" (panels 5-6 / Figure 28 and Figure 29) screen where a recipe can be mapped to BJCP style parameters based on a sliding scale of similarity by comparing the calculated numbers for the recipe to statistics for styles. These are the numbers that were previously encountered and traced in the online exam chapter. The recipe-as-brewed (Figure 29) showed three categories with an "Exact match": a German Traditional Bock, a German Weizenbock or a Belgian Dubbel. However beers that have broader categories or no specific statistics (e.g.

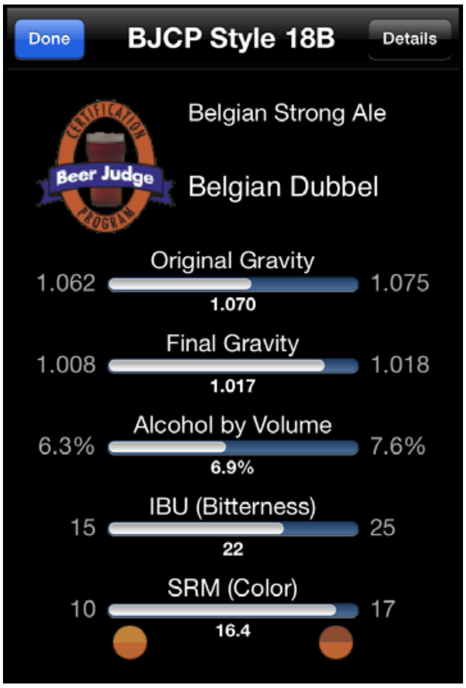


Figure 28: Detailed style fit for the recipe against style criteria

category 16E "Belgian Specialty[sic] Ale" or category 23 "Specialty[sic] Beer" are not shown – they are manifest absences that any beer *could* match so no beer *does* match in this representation.

For a beer brewed with a yeast derived from a Belgian brewery and with other ingredients common to Belgian traditions that appeared to be a good match, with the detailed style fit (Figure 28) showing a reasonable balance across the attributes. From this digital, statistical, matching I chose to enter the beer in category 18B – Belgian Dubbel.

I have presented evidence of the way in which software for designing, recording and supporting the creation of a beer then enables comparison of those calculations to a set of numeric measurements. These were used to assess knowledge of the figures as a criteria for comparing styles in the online exam, here however they are used to map a set of measurements to a set of standards.

I now turn to consider how these specifications and standards are enacted, encoded and made transferable. Entering the beer into the competition management website and registering it in a selected category could be done through manual entry or by uploading the BeerXML file. Using this standard for recipe exchange automated the completion of data in the required and optional fields. Exploring this process of digital transfer and translation using a standard is therefore pertinent to this thesis.

5.1.3 The agency of standards: Exploring BeerXML

I have presented evidence of how software such as the BrewPal app creates a digital beer. The practices of brewing it then involve work to co-ordinate the digital recipe / plan with the situated actions and measured outcomes. Co-ordination is achieved through translating both of these into numeric measurements using other standards. If brewing is successful these two beers – digital and living – will both exist and their measurements will be identical. However, enabling the movement and transportation of either out of the *apparatus* of the device requires further work and co-ordination through using the standards of the *network*. The recipe will exist locally in the device where it was assembled: for Karl this was within the app on his iPod touch. Standards act to enable the translation of this recipe into code which can be transferred and re-used in other location, ideally without transformation. The BeerXML format is designed specifically to achieve:

> the exchange of beer brewing recipes and other brewing data. Tables of recipes as well as other records such as hops can be represented using BeerXML for use by brewing programs. It is our hope that BeerXML will eventually allow for the open exchange of recipes between different beer brewing software packages. (Smith, Avis, Taylor, Perron, & Johnson, 2012)

BeerXML is thus identified as and nested within a general information exchange standard: Extensible Markup Language (XML). The BeerXML format defines different properties and creates a standard for sharing information about a beer recipe between <opening tags> and corresponding </closing tags>. These are both human and machine readable so the following code should be interpretable by reading the tag names and the properties contained within them. In the code Karl's recipe, once translated into BeerXML reproduced below, is standardised to include a beer name (better the one you know), a type (all grain) and containing <fermentables> and <hops> each of which has additional properties used in calculations. (Note the contraction … is used to indicate omitted lines of code.)

```
<?xml version="1.0" encoding="UTF-8"?>

<RECIPES>

<RECIPE>

<VERSION>1</VERSION>

<NAME>better the one you know</NAME>

<TYPE>All Grain</TYPE>

<BREWER>BrewPal</BREWER>

…

<FERMENTABLES>
```

```
  <FERMENTABLE>
    <VERSION>1</VERSION>
    <COLOR>4.000000</COLOR>
    <AMOUNT>6.000000</AMOUNT>
    <NAME>Maris Otter</NAME>
    <YIELD>83.000000</YIELD>
    <TYPE>Grain</TYPE>
  </FERMENTABLE>
…
</FERMENTABLES>
…
<STYLES>
  <STYLE>
    <VERSION>1</VERSION>
    <COLOR_MIN>3.0</COLOR_MIN>
    <COLOR_MAX>6.0</COLOR_MAX>
    <STYLE_LETTER>D</STYLE_LETTER>
    <ABV_MIN>7.5</ABV_MIN>
    <NAME>Belgian Golden Strong Ale</NAME>
    <IS_SELECTED>0.000000</IS_SELECTED>
    <TYPE>beer</TYPE>
    <FG_MIN>1.005</FG_MIN>
    <OG_MIN>1.070</OG_MIN>
    <IBU_MAX>35</IBU_MAX>
    <EXAMPLES>Duvel, Russian River Damnation, Hapkin, Lucifer,
Brigand, Judas, Delirium Tremens, Dulle Teve, Piraat, Great Divide
Hades, Avery Salvation, North Coast Pranqster, Unibroue Eau Benite,
AleSmith Horny Devil</EXAMPLES>
    <MATCH_QUALITY>Good match</MATCH_QUALITY>
    <STYLE_GUIDE>BJCP</STYLE_GUIDE>
…
    <CATEGORY>Belgian Strong Ale</CATEGORY>
    <IBU_MIN>22</IBU_MIN>
```

```
    <CARB_MAX>2.5</CARB_MAX>

    <CATEGORY_NUMBER>18</CATEGORY_NUMBER>

    <NOTES>History:

Originally developed by the Moortgat brewery after WWII as a response
to the growing popularity of Pilsner beers.

…

<NOTES>

  </STYLE>

</STYLES>
```

Several things are notable in the preceding code: the <brewer> is identified as the BrewPal app: its agency has here extended itself into the category of creator. The nesting of this standard within other standards is set in the opening line where conformity to an XML standard is declared. The XML standard enables data transmission, but the interpretation of these tags is then software and hardware dependent. Fermentable ingredient quantities are expressed in metric units (the software interpreting the XML is then delegated the translations, calculations and representation in US or UK imperial units) whilst color is defined using the Lovibond Scale (Smith et al., 2012).

Style is also standardised and included in the BeerXML format and defined in the specification as follows: "The term 'style' encompasses beer styles. The beer style may be from the BJCP style guide, Australian, UK or local style guides. Generally a recipe is designed to one style". The systematic ordering of these styles is then specified in the <STYLE_GUIDE> attribute as "The name of the style guide that this particular style or category belongs to. For example 'BJCP' might denote the BJCP style guide, and 'AHA' would be used for the AHA style guide." Properties of style guides are then encoded including <EXAMPLES> listing standardised commercial examples – which could be used as comparison or calibration beers. There are also properties for <CATEGORY_NUMBER> and <STYLE_LETTER> along with the maximum and minimum statistical scores considered above. These are *all* derived from the BJCP style guidelines, and to date only the BJCP style guidelines are fully implemented in this standard for recipe interchange. The forums where the development of the standard is discussed considers problems, discontinuities and other issues with the incorporation of these style guides – and methods to ensure the standard is not restricted to them.

This consideration of the BeerXML standard serves to show the extension, technical institutionalisation and standardisation of the BJCP style guides through their nesting in another set of standards. This set of standards is designed to enable recipe sharing for multiple potential purposes among brewers both amateur and professional. The instantiation of the BJCP guides and the statistical matching and encoding of the concept of <MATCH_QUALITY> shifts these guides beyond their "intended purpose" and an understanding of their function as a "misunderstood necessity" (Strong, 2011, p. 157) within the boundaries of running competitions and into a set of relations where they intersect with standardisation and normalisation at the point of design and production.

5.1.4 Coordinating material transportation

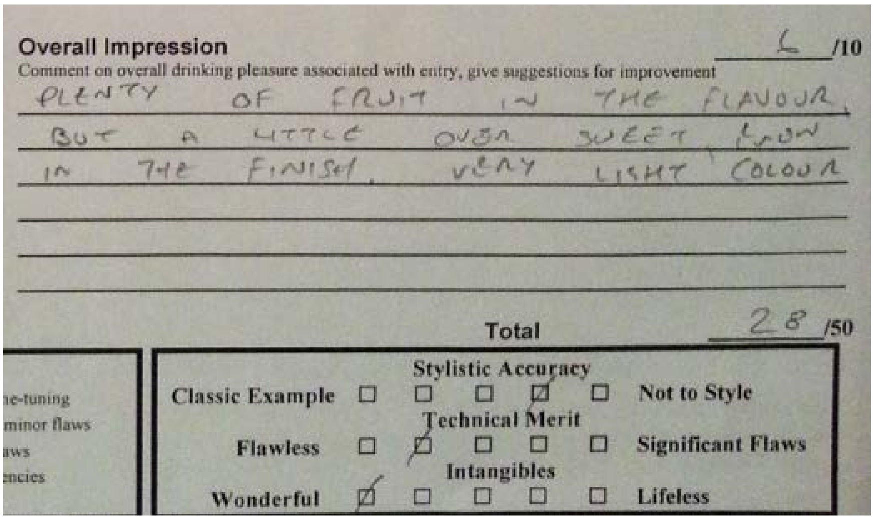
I have now considered the ways in which the recipe software displays recipe design plans, the ways these can be moderated to record the outcomes of the situated actions of brewing and how they are matched to numeric criteria in the style guides as a "fit to style". I have shown how another set of standards enabled the transportation of the local recipe from the *apparatus* of a mobile device to be incorporated and translated into information about a competition entry through the BeerXML standard. This was not without transformation: the app translated the authorship of the recipe from Karl to itself. Through exploring that XML standard I have shown how it incorporates and extends the uses and reach of the BJCP style guides. The competition entry software also intervenes and extends its agency to classify and materialise these categorisations and it is to this co-ordination and materialisation that I now turn.

The software offered template documents in the Portable Document Format (PDF) standard to download, print out and then affix as identifying labels on the bottles. Whilst the transportations of the digital version I have previously considered were largely unproblematic – the recipe could be easily exported as text and posted on the forum, or uploaded as BeerXML to the competition website - the logistics and work required for the physical beer were far more obdurate. Two bottles needed to be combined with their labels, and transported to the competition. I took this on in person – driving down and taking bottles of my own as well as Karl's' beers with identifying labels.

5.1.5 "To translate is to betray": Karl's beer assessed

I attended the 2010 competition in September assisting as a steward (panels 8-9 and Figure 30). One event stood out: a beer being opened, judged and the judge director being called over to ask what to do as the beer was in their view superb but just was not to style as a Dubbel. The judge director took a strong line on this, indicating the beer had to be judged against the category it was entered in rather than the category the judge thought it should be in. I did not realise it at the time but this was Karl's beer – and this would become clear from the comments and feedback on the judging sheets (Figure 31):

Figure 30: View of the 2010 competition judging room and me in conversation with another steward

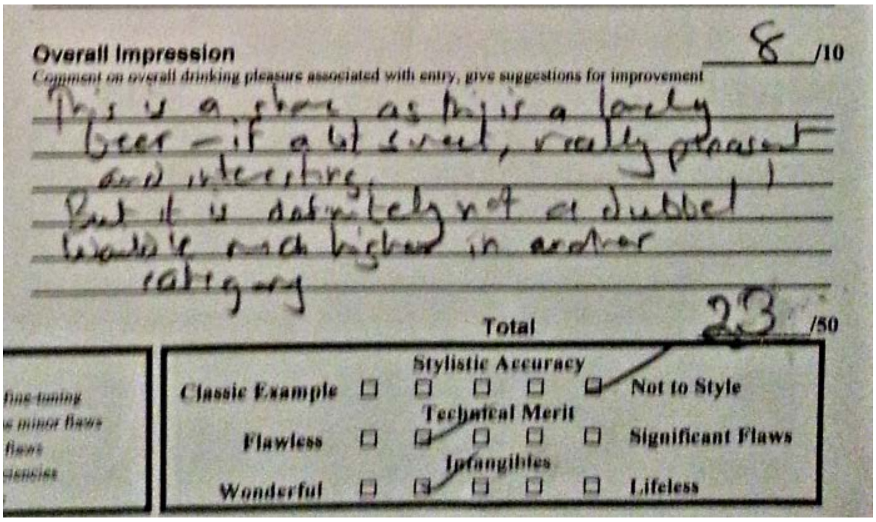


Overall Impression 6 /10
Comment on overall drinking pleasure associated with entry, give suggestions for improvement
PLENTY OF FRUIT IN THE FLAVOUR, BUT A LITTLE OVER SWEET, LOW IN THE FINISH. VERY LIGHT COLOUR

Total 28 /50

ne-tuning
minor flaws
aws
encies

Stylistic Accuracy
Classic Example ☐ ☐ ☐ ☑ ☐ Not to Style
Technical Merit
Flawless ☐ ☑ ☐ ☐ ☐ Significant Flaws
Intangibles
Wonderful ☑ ☐ ☐ ☐ ☐ Lifeless



Overall Impression 8 /10
Comment on overall drinking pleasure associated with entry, give suggestions for improvement
This is a shame as this is a lovely beer – if a bit sweet, really pleasant and interesting.
But it is definitely not a Dubbel
Would be much higher in another category

Total 23 /50

fine-tuning
minor flaws
flaws
ciencies

Stylistic Accuracy
Classic Example ☐ ☐ ☐ ☐ ☑ Not to Style
Technical Merit
Flawless ☐ ☑ ☐ ☐ ☐ Significant Flaws
Intangibles
Wonderful ☐ ☑ ☐ ☐ ☐ Lifeless

Figure 31: Judging comments from National homebrew competition 2010 for Karl's beer – text of second sheet reproduced below

> *This is a shame as this is a lovely beer – if a bit sweet, really pleasant and interesting.*
>
> *But it is definitely not a Dubbel would be much higher in another category.*

The second comment reflects the recalled interaction above, as do the ticks on the scales for "stylistic accuracy". Of course when I later realised what had happened I was mortified, but also intrigued, looking back on this event I see this as one of the seeds that grew into this thesis and thus position it as a part of that story. So many questions were prompted: why did

I classify the beer in that category? Why were the statistics in software which classified this as an “exact match” to a style betray the beer[38]? How did these judges recognise this beer’s quality despite this? Why did one suggest it would “be much higher in another category” but refrain from suggesting which one? The fieldwork I now turn to seeks to address some of these questions empirically. It also guided the actor to follow. As a beer of this strength can mature and develop for several years when the 2011 National Homebrew Competition was announced and was positioned as part of my fieldwork the possibility arose to re-enter the beer and follow it in detail.

In preparation for the 2011 competition Karl and I spent an evening sampling his potential entries– orienting our assessments to how we perceived the beers and their fit with the style guide descriptions rather than using software statistical matching. Whilst Karl’s beer didn’t neatly fit any of the categories “Belgian Golden Strong” seemed to be the best match in part due to using the yeast from a bottle of Duvel – listed as one of the <EXAMPLES> - and also as the archetype of the style in the <NOTES> segment of the BeerXML derived from the BJCP style guides.

5.2 Following the actors, increasing the magnification: the trajectory of a beer through practices of classification

I now turn to consider in detail the materials and practices that enact categorisation for this beer as it travels through the 2011 competition, looking at how the classification system structures these socio-material practices.

[38] “To translate is to betray” is a central argument of Law (2003) that ANTs explorations of translations and movements must attend o their breakdown and betrayals – as seen here in the betrayal of calculations and categorisations. See also Law (2009).

Entry Information

Entry #	453	Competition:	UK National Homebrew Competition
Name of Brew	better the one you know	Category (No.) 18	Subcategory (A-F) D
Category/Subcategory (print full names)		Belgian Golden Strong Ale	

For Mead and Cider		For Mead	Special Ingredients/Classic Style
☐ Still	☐ Dry	☐ Hydromel (light mead)	(required for categories 6D, 16E, 17F, 20, 21, 22B, 22C, 23, 25C, 26A, 26C, 27E, 28B-D)
☐ Petillant	☐ Semi-Sweet	☐ Standard Mead	
☐ Sparkling	☐ Sweet	☐ Sack (strong mead)	

Figure 32: Entry form details listing style category and beer name

In preparation for this competition I again uploaded BeerXML files to register the three beers Karl chose to enter and the four I was entering to the "Beer Competition Online Entry and Management (BCOEM)" software. Each was sequentially allocated a unique entry number. A set of printable pages were also made available to download comprising an entry form (Figure 32) and a page of bottle labels. These included a summary of the categorisations applied by the software along with the entry number, BJCP category and subcategory. For Karl's Beer "Better the One You Know" these were Category 18 (Belgian Strong Ales) subcategory D (Belgian Golden Strong Ale).

BOTTLE ID FORM • • •

Competition:	UK National Homebrew Competition
Entry #	453
Name	Karl [redacted]
Street Address	[redacted]
City	[redacted]
State	[redacted]
Phone Number	[redacted]
Email Address	[redacted]il.com
Name of Beer	[redacted]
Category Entered	18
Subcategory Entered	D
Homebrew Club	

ATTACH ONE FORM TO EACH BOTTLE

Figure 33: Bottle label for Karl's beer

The printable bottle labels (Figure 33) included the same unique identifier or the "Entry #" as well as category number and subcategory identifier. Once printed these were to be attached to the bottles using rubber bands – a somewhat precarious but surprisingly durable method of labelling.

Figure 34: Materials for the competition and research

Now classified and labelled these beers were stored in my cellar. The day before the competition I loaded these, along with beers dropped off to me as a regional collection point, into a crate and the “Beers Of Europe” (BoE) box in which exam preparation beers had been delivered in. I put them in the car boot (panel 1a/Figure 34) along with a case containing my fieldwork research materials: participant information sheets, video camera and tripod, digital camera and LiveScribe pens and associated judging sheets. Having driven down to my Bristol accommodation I transferred these to a taxi to meet with the competition organisers and to help group all these entries (panel 1b).

5.3 Aligning objects and making them traceable

I have now introduced the methods of identification and classification and one method of transportation. I now turn to look at how these beers, including Karl’s entry (classified as entry #453), were organised and transported to the judging table.

5.3.1 Sorting and separating as a precursor to categorisation

The beers I transported had to be co-ordinated and combined with all the other entries for judging. There were four hundred and sixty one (461) entries submitted to the competition with two bottles sent for each entry, requiring the gathering, categorisation and physical organisation of nine hundred and twenty two (922) bottles. While some, like the bottles I transported, came in judges’ or stewards’ cars many were sent by post or courier. The logistics of this transportation and collection was therefore contingent on the operation of the postal and courier transportation systems. Whilst some couriers refuse to transport glass bottles or alcohol, the UK postal system has no specific restrictions[39].

---

[39] This is in notable contrast to the USA where prohibition-era laws remain in force prohibiting the shipping of alcohol via the federal postal system. This has led to novel classification practices in response: Ali told me how bottled beers are regularly classified and shipped as “yeast samples” for BJCP sanctioned competitions in the USA.

Delivery required a location for drop off, and space for storage. The Bristol Beer Factory brewery, a competition sponsor, had taken on this role. The yard behind the brewery became a physical obligatory-point-of-passage for the beers. They were stacked in their packaging alongside bins containing spent grains from brewing that awaited collection by a local farmer.

Figure 35: Un-packaging beers delivered by courier and post at the Bristol Beer Factory

Un-packaging required several hours work by competition organiser Ali, another course member/competition judge Sam, and me. We removed often copious packaging and repacked the beers into boxes (panels 2-3/Figure 35). Wherever possible bottle pairs were kept together but there was no attempt at ordering or categorising - this was an exercise in sifting and separating the required bottles from the now unnecessary packaging. Once completed these beers were loaded into two cars. Only one bottle was broken amongst all of these, for others the quantities of packaging and padding used were substantial. After several hours with the work completed and bottles loaded into two cars we adjourned to the pub – meeting and socialising with others visiting and judging the next day.

5.3.2 The competition day: Room organisation

Competition day: early start I arrive by taxi before anyone else. A courier brings boxes of ice for keeping the lagers cold whilst a steward drops off food for the BBQ lunch: string bags of onions and cabbages, 3 large plastic bags of rolls and boxes of iceberg lettuces and beef tomatoes.

Figure 36: The Community Centre Caretaker helping assemble and set out tables

The caretaker opened the room (panel 4/Figure 36) and helped with setting out tables – warning us about dragging them around and moving them about so that the legs didn't collapse[40]. After roughly aligning the tables we brought the boxes we had loaded the previous night in from the cars. Two further cars arrived from London with judges and crates of beers which are unloaded (panel 5) and the organisation kicks into frantic activity.

Against the side wall of the judging room more crates are placed on the floor. Some of those that have been brought in this morning from the London Regional drop off point still have bottles in packaging. Sam squats by one box starting to work through another round of removing packaging.

Ali moves in his MacBook pro and the printer, printed judging forms, category labels and other organisational materials. He notes the Ethernet port and comments on how important and useful that is as the software for running and organising entries, releasing scores and resolving any issues "needs an internet connection the software runs on a remote server" and Wi-Fi here is "patchy".

Ali takes sheets of paper on which are printed the category number and list of entries. These are laid out along the tables demarcating physical spaces for collecting and organising the bottles. There is insufficient space so more tables are erected and pushed against the walls – I break from making notes to help move boxes and putting up another table.

[40] This exact situation had happened during pilot fieldwork at another competition: the agency of even the most inanimate of objects being abruptly exposed through breakdown, and the resultant shattering of bottles, disordering and release of fluids.

The complex co-ordination, safe transportation and assembly of people, beers, food, forms and prizes into one place had been accomplished. Now the local and material must be choreographed with the remote and digital which requires an effective and reliable connection point between the two. Meanwhile, the classification system is materialised: lists of bottles are printed and physical spaces loosely demarcated.

Figure 37: Steward inspecting Karl's beer

A steward pulled Karl's beers out of its transportation box (panel 6/Figure 37) reading the labels attached by rubber bands in order to find, then allocate them to, a category. Having checked they were a pair he moved them to a central table - apparently unsure where that category was being set out. Soon after another steward picked the beers up and carried them to the far corner of the room placing them in a jumbled loose grouping along with other beers in category 18.

5.3.3 Materialising Style Spaces: Choreographing categories

The BJCP style guides here are a system for material ordering: defining and structuring physical spaces and material entities. From the broad classification of bottles based on the details on the entry labels they have been placed in groups along with a printed "pull sheet" from the BCOEM software (Figure 38). Activity then shifts to detailed work to re-classify the paired bottles with a new anonymous identity.

Figure 38: Karl's beers allocated to a category

This anonymous entry is a "judging ID" allocated by the software from a compound of the category number (e.g. 18) followed by an ordinal 3 digit number derived from an entry's sequential registration onto the system and into a category. Karl's beer was the 19th out of 28 in category 18 and allocated the number 18-019. The software includes a template for printing these "Judging ID" (JiD) numbers onto "a standard sheet of Avery 5160 (address) labels" (Figure 39). Again there are nested *division* standards used to facilitate translation from software database entry to printed labels to identified but anonymised bottles. However, this breaks down as Avery 5160 sheets were not available, due in part to this being based on American paper formats. Ali instead printed these onto adhesive paper, necessitating that each judging number be painstakingly cut out with scissors.

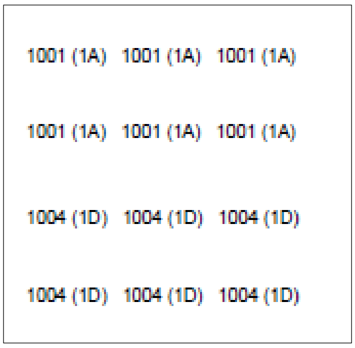


Figure 39: Example judging number output designed for standard labels

> *I go over to where Rob is labelling the Belgian Strong Ales class. I work with him labelling a few and take some pictures of him doing this organisation. As one of the main mail-order homebrew suppliers he commented on how he recognised many the names and address on bottle labels though had only met a few in person.*
>
> *Rob ensures the beers are in a pair, holding two by the neck and positioning them on the table, reading the attached form (Figure 40 - pic 1). Reading through the entry list Rob follows down the list with his finger until he finds the entry number (pic 2). He cross-references this with the judging number (pic 3) and cuts the sticker out from the sheet. He then sticks these on before removing rubber bands holding the bottle labels.*

Figure 40: Materialising Classifications - paying the full price of the passage through practice

This process was repeated across the hall, the noise and chatting that had accompanied the physical transportation of bottles hushed by the quietness of concentration. This is the detailed work of classification and co-ordination in action: the digital must be materialised as stickers and attached to the physical bottle. Each bottle is stripped of identifying marks and becomes a beer allocated to a table and to a pair of judges. The labels are placed on bottle necks – making them difficult to read amidst the massed ranks of bottles awaiting judgement. The work is slow and painstaking – and success is accounted for with exclamations. Heather, one of the course participants and soon to be judging in the competition exclaiming a loud “YES!!!” at finally finding the right label for a bottle then bemoaning that “it took 10 minutes to label one bottle”.

The full cost of the passage and displacements (Latour, 1999) from home brewery to competition table, from digital entry to anonymised bottle are paid through this detailed work of cutting, sticking, cross-referencing, ordering and disposing of entry labels. The computer programme classifications are materialised but this is fragile and difficult. Placing stickers on bottle caps renders them visible but then the identity is fragile: attached to the cap not the bottle. Where this breaching occurs it must be corrected by moving labels to bottle necks: maintaining the traceability of the bottle is essential. Another breach is the absence of identity:

A bottle is pulled from a box which has no label, the box is searched but nothing is found. It is immediately and physically excluded: picked up and moved into the other area of the room, on the floor alone next to the purple door into the store cupboard.

Here a beer is performed as "other" without identification. Lacking an entry number it cannot be classified, sorted, or ordered. It is immediately and physically separated from beers to be judged. As the ordering, aligning and classifying of the pairs of bottles draws towards its conclusion work begins on aligning the humans – judging tables are set out (panel 8/Figure 41) and judges are called outside for a briefing (panel 9) leaving the stewards to finish the labelling.

Figure 41: Aligning judges - tables prepared and materials arranged.

5.4 Aligning Judging Bodies: Material, spatial and sequential ordering

I have considered in detail how bottles are physically organised and sorted, making the categories material. Each bottle has been allocated to a category and ordered within it into a "flight". These classified, sorted, and arranged non-human objects are then co-ordinated and allocated to classified, sorted, and materially arranged human judges. It is those processes of organisation and material arrangement of the human elements of this assemblage that I now turn to consider.

The tables were arranged with rows of chairs facing each other along the sides of the conjoined tables making the room look like a hybrid of a German *bierhalle* and a University examination room. On the tables were arranged the multiple ordering devices for judging: forms to record scores and rankings, cover sheets with instructions both for judges (on completing the sheets) and the recipient (on interpreting the feedback and scores). These include specific guidance on how styles are to be understood and used for judging:

> Most entries into homebrew competitions are in categories that describe a particular style of beer. These styles are usually derived from a commercial beer, or group of similar beers, or a type of beer that is popular among home brewers. The score that is assigned to your beer is an indication of how closely the judge felt your beer matched the characteristics of that style.

Another sheet gives instructions to the judge that:

> The new checklist scoresheets are designed to speed up the evaluation of beer by reducing the amount of writing. Since you are writing less, you can concentrate on your evaluation.

These messages were emphasised and reiterated at the judges briefing outside. The competition organiser talked to all the judges collectively, mandating that comments MUST be written and drawing attention to the instruction sheets. He called out names and table numbers allocating judges into pairs and informing them of their category; large categories of over 20 entries were to be split across two judging pairs. At the end of this collective instruction and allocation I introduced myself and my project and handed out the materials of research: participation consent forms and pens, collecting these back once read and completed. I also asked if any participants would volunteer to record their judging activity using the two LiveScribe pens I had brought.

I take out my LiveScribe pens and ask for volunteers, Sam is willing to "wear a wire". We return to the judging room and they find their tables and organise themselves while the stewards were called outside for their briefing.

Sam is judging on the English Pale Ale table where he is partnered with the flamboyantly dressed judge Mike who has travelled from the USA for the competition on his first visit to the UK. He tells Sam and I that he has judged at around 75 competitions in the USA including EPAs but has never been to the UK. Sam is judging for only his second time. Their table is full with 5 judging pairs, next to Sam and Mike are Robin and Matt who have been on the exam prep course. Robin was the judge for Karl's beer in the competition the year before.

I setup the microphone ear-buds on clips in the middle of the table between Sam and Mike, explaining to Robin and Matt it will pick their conversations up as well. I seek to point the microphones in opposite directions and hope this will give good sound for the judging table.

5.4.1 The agency of research tools: challenging the recording of "naturally occurring" talk

The pens were not, and I suggest could never be, passive recipients recording "naturally occurring talk" but were agents involved in performing a research method and particular judging interactions. They were made accountable in practice and participants' understandings of them are displayed in interaction, their agency is also exposed in breakdowns:

```
?        what does that pen do

Rich     it must be er it must be astringen[cy

Sam                                          [yea↑h its one that erm Steve asked me to
         use, ya know the guy that doing all of the, [doing a PhD in (unclear) so its
         one of his toys.

Rich                                                  [(kind of a of like a greasy

Stephen  s'it one of the pens that work on the special paper

Sam      well ah err yeh I'm out of special paper so I'm on standard paper now
```

Transcript 1 (Audio 7): Making the LiveScribe pens accountable

These excerpts show the complexities of audio with parallel judging conversations, the accountability of my undertaking research and the issues of their requirement to write on special paper in order to translate writing on paper into a digital recording of that writing. Another breakdown was the limited ink in the cartridges:

```
Swazi  °OK° OK a recording pen can you shake it to get the ink out
↑cos its  heh heh heh heh heh heh heh
```

Transcript 2 (Audio 1): recording pen breakdown

These pens, together with the transcription of the audio in detailed Jeffersonian format, the synchronised record of writing practices and form completion give detailed sequential data to examine the practices of classification and judging in detail. These are supported by my own documentation practices in written fieldnotes together with images and videos captured using smartphone and digital cameras. Furthermore I am able to draw on the accounts, images and words of other participants at the two competition events who, like me, were photographing, videoing, interviewing and then writing an account of the event and their involvement.

5.4.2 Drawing together

In this chapter I have presented evidence of how a classification system is enacted in multiple ways: as part of another standard and as a set of calculable figures and statistics for matching a recipe and the measurements of a product to these standardised ranges. I showed the complexities of the logistics for material transportation and the ordering practices involved in competition preparation. Finally I introduced the methods developed to record and reconstruct the co-ordination of judging talk, form-completion and writing. It is to these detailed procedures and practices and their performance and translation through the methods assemblage detailed here that I turn to in the next chapter as I continue this exploration.

Figure 42: Photographs taken by one of the stewards and posted on their blog. Reproduced here with their permission and accompanied by their text (with identifying names removed).

6 The Practices of Sensory Assessment part 2: Devices and Conditions

This chapter continues the investigation of “who killed Karl’s beer” through an exploration of its trajectory and entanglements in the messy practices of sensory assessment – further illustrated in the opening blog images (Figure 42). Having ordered and arranged tasted objects and tasting bodies I now explore the devices and conditions through which tasting is done.

6.1 Devices and conditions of tasting: Standards and overflows

With non-human and human elements of the judging competition aligned and related together judges began the next stage of alignment and preparation: checking the style guides for the beers they were set to judge:

> *There were no reference copies of the guidelines – the judge next to me was also lacking a style guide so I lent him my iPod touch whilst I referred to the guide app on my android smartphone. We are not alone – others along our judging table have iPhones and other mobile devices on the table in front of them to refer to the style guides (See Figure 43). Elsewhere a handful of judges had brought printed, ring-bound copies of the style guides and consulted those*

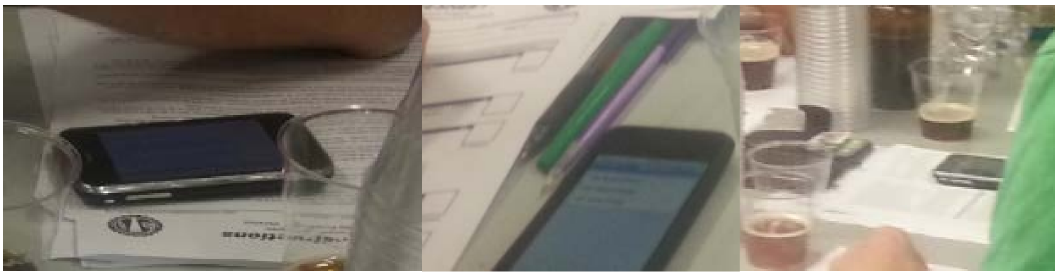


Figure 43: Smart phones in use - referring to the BJCP style guide app to support judging

The stewards returned, identifying and introducing themselves to the judging pairs they were allocated to support. The judge I was partnered with, Paul, and I were being stewarded by Rob, who I previously introduced labelling Karl’s beer.

Judging proceeded in a ritualised way with clear sequences of talk and action, these were relatively consistent across all judges in the room and I turn to consider these shortly. First however it is important to note that while the procedures showed continuities, conversations were markedly variable with notable differences between judging pairs:

> *Whilst my judging of Porters with Paul was marked by silence others around us conversed far more – comparing what they sensed and picked up, their individual scores on elements and trying to negotiate and label what they perceived.*

Keeping this variability in mind I now turn to consider the detailed work of categorisation and evaluation in practice.

6.1.1 Co-ordinating multiplicity, grounding evaluation practices

Judging conversations were task-oriented, co-ordinated and situated with reference to the objects of judging. The first conversation was typically short and occurred with the introduction of the beer to be judged being passed to the judging pair by their steward. This will is evident as I follow Karl's beer, with the judging pair turning their attention to it as the last beer in their flight.

The transcribed sequence below opens at 11m45.07s and finishes at 12m00.03s, each • dot shows a time-stamp used to synchronise the video sources with the transcript in the computer aided qualitative data analysis (CAQDAS) package ATLAS.ti which was used to sequence these two source. The text colouring attempts to differentiate patterns of interaction by judging pair. By aligning stills from the video and the LiveScribe digital writing recordings I show within this interaction how important material elements are to these interactions.

Line #	Transcribed text (From Audio 1) Black text = Graeme/Swazi, Blue text = Brett/Jonny, Green text = conversation between pairs		Sequenced Writing by Swazi (from digital pen)	Sequenced video stills
563	Swazi	what's the next beer? ●		
565	(Graeme)	the one we did? oh the trippel yeah there you go		
567	((Graeme passes papers to Brett))●			

569	Brett	what we did		
571	Graeme	yeah, s'alright we just got one 18 19		
573	Brett	no you actually have two more [you've done		
575	(Graeme)	[err and		

577	Swazi 18019 so <**18 0 19**> and its 18D right	 	
579	(Jonny) so we have to basically (add them)		
581	Swazi a::nd		

583	(Jonny) both trippels		
585	Swazi Can I pop this open this time? I wont do it over the table or the recording equipment |•		
	| ah ha ha ha ha ha ha ha ha ha ha ha		

The transcript notes of actions enclosed in double parentheses such as `((Graeme passes papers to Brett))` simplify, but also make absent, the complexities of their mutual reading, pointing, and sense-making of the material forms. Video stills add something of the richness of interaction and the complexities and switching of modalities going on here, but only a part. This tiny 15-second sequence shows the complexity, and provides illustration, of several matters of concern for this chapter and the broader thesis: the unruly messiness of practice and the simplification of this in its translation into "data". Also made present are the agency of research methods and tools, the relationships of materials to talk, the practical work of categorisation and classification and the importance and sequencing of ensuring the accurate movement of identifying inscriptions.

There are two parallel conversations here: Graeme and Swazi are a judging pair sitting next to judges and professional brewers Brett and Jonny. Together they were judging 28 beers in the category of "Belgian Strong Ales" incorporating 5 sub-styles. These beers were divided between the judging pairs, necessitating co-ordination between the two and then a comparative ranking. This was a similar organisation to that which I experienced judging a flight of 26 Porters which were divided between two judging pairs.

Karl's beer is foreshadowed in line 559 as Swazi asks "OK what's the next", there is however no reply. The intervening turn is a parallel conversation with Jonny (speaker inferred) directing a different question "got one more trippel one?" which draws to a close a preceding turn-sequence asking for copies of score sheets. There is competition for "the floor" with Swazi attempting again to instigate conversation, repeating his previous turn in line 563 – directed at his judging partner Graeme. However, there is no direct reply from Graeme, who is engaged in a conversation with the other judging pair, primarily with Brett.

Graeme asserts in line 571 that “s’alright we just got one 18 19” which is contested by Brett who insists they have two beers left, Graeme’s overlapping talk accompanied by pointing at the sheet closes that discussion through using materials to take the next turn.

Meanwhile Swazi, his queries unanswered, looks at a bottle already on the table and checks the judging ID number on it. He speaks this aloud, echoing Graeme’s earlier accounting for that number. As Swazi speaks the numbers slowly a second time he writes them, almost simultaneously on the judging sheet – shown in the 3rd column where frames from the recording of the digital pen are displayed.

Without these visual data to support this interpretation the text transcript alone shows only a small amount of the interaction and the resources used. Conversations are complex and switch rapidly between members - much of the interaction that is doing essential work here to co-ordinate the turns into the achievement of comprehensibility is lost. Meanwhile, much of the messiness is also abstracted away to produce a coherent re-presentation. Adding greater and greater detail of unclear parallel discussions to the transcript is obviously possible, but would come at the cost of even greater complexity, incoherence, and time.

As Swazi pursues an independent course of action he displays a clear orientation to the presence of me as researcher and the research equipment as he says “Can I pop this open this time? I won’t do it over the table or the recording equipment” as he stands and turns towards the camera smiling then laughing.

Whilst I have sought to explicate the interactions, resources and accounting practices here and considered the manifest-absences in the transcript and how other data contributes to making those present there is also extensive othering. In the video screen shots in the background to the right there is a steward for another judging table engaged in the practices of searching for a beer to be judged, reaching across to bottles and reading down a sheet, his departure bottle-less and viewing the subsequent video frames shows this was unsuccessful. However this practical work of categorisation is othered until I make it fleetingly present here. The point that I wish to focus on (though perhaps ‘presence’ is a better term than ‘point’) is the importance of the judging ID number and making that accountable. In this sequence it is made present for Karl’s beer through a ritualised activity that precedes judging. This is also found with an earlier beer by this same judging pair:

```
Graeme        Got the entry number?

Swazi         Er no, what is the entry number?

Graeme        eighteen oh one oh

Swazi         eighte:::n [oh one oh] OK

Graeme                   [oh one oh]
```

Transcript 3 (Audio 1): Accounting for judging ID numbers

And again the process of writing-as-speaking with the first stroke of the pen occurs during the elongated vowel sound marked by the colons ‘::: ‘ (Figure 44 Stills from the digital pen recording of writing Judging ID numbers on a scoresheet (transcribed audio above))

Figure 44: Stills from the digital pen recording of writing Judging ID numbers on a scoresheet (transcribed audio above)

Other judging pairs also engage in this practice as seen in this sequence from the judging of English Pale Ales (EPAs) where Sam, the judge willing to “wear a wire”, reads out the number slowly and purposefully in line 107, which is echoed by the steward who is keeping track of the scores and beers for the two pairs of judges. Similarly in the following transcript from the EPA judging pairs there occurs the same sort of accounting for correct reading of the JiD by two judges: Sam in line 107 where he also accounts for the category number and letter (8a) and Robin in line 115:

```
Sam          [right eight oh four nine (.) eight a
             (0.9)
St-Col       (eight zero four nine)(isn’t it)

Sam          can you pass me some water please and some crackers. Cheers.

FSt          whats the next one that youre getting in?

Robin        eight oh one two

St-Col       an' is it an eight A again?

Robin        yes
```

Transcript 4 (Audio 2): English Pale Ale judging partners accounting for judging ID numbers

Examining the LiveScribe recording again shows that Sam writes these details on his judging sheet immediately after reading them out aloud – first writing 8A on the line for Style/Category then 8049 in the entry # box (Figure 45):

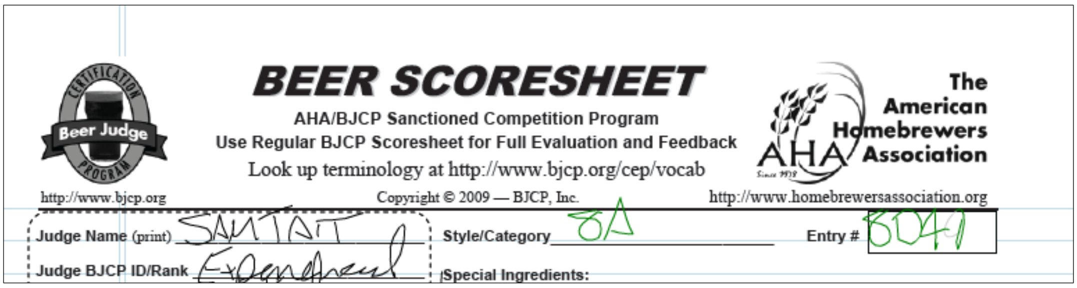


Figure 45: Category information written on judging form

There was one steward for the two judging pairs, Coline, who repeats this back in response to Sam after a pause of just under a second – from which I infer co-ordination with cross-referencing activity of reading or writing. This inference is supported by tagging that echoing statement with a question of “isn’t it”. There is no clear response to this – non-verbal communication is suggested. Likewise the next line shows similar indications where Sam asks someone to pass water and crackers then says “cheers” as a token of thanks clearly suggesting the action has been completed.

Coline (St-Col) then turns her attention to the other judging pair in line 113 asking which sample is required next – expressing this as something the judges are "getting in". This is heard as a question by Robin who responds to the construction and rising intonation (marked by the "?"). His response is a set of four digits. This is heard as an appropriate answer by Coline (there is no expression of surprise) however, her response is a question about categorisation "is that an eight A again" to which Sam affirms "yes". Eight A here refers to another classification, whilst the four digits identifies the bottle, 8a identifies a class of bottles which have been organised in pairs into that grouping on another table.

I have presented evidence of how the materialisation of categories (as printed labels, on printed forms and through writing on judging sheets) is made present in conversation but also overflows these interactions. Categories are not merely linguistic or interpretive – the categorisation devices are material. Language and turns at talk are choreographed with, and mutually constitutive of, physical activity. Conversational turns sequence this and through detailed transcription make it present here, however, much remains manifestly absent and can only be inferred.

6.1.2 Continuities in enactments: Choreographing transformations in the Amazonian rainforest and the beer judging hall

I have now examined the ways in which identifiers are translated from digital to material through printing and sticking labels, then made present and relevant in conversation to ensure continuity and reversibility as they migrate across different locations and modalities. There are strong continuities here with Latour's observations of the work of scientific fieldwork as he follows scientists at the borders of the Amazon rainforest in "Pandora's Hope" (1999). He writes that:

> *once classified, specimens from different locations and times become contemporaries of one another on the flat table, all visible under the same unifying gaze (p.38) [they] find themselves detached, separated, preserved, classified, and tagged. They are then reassembled, reunited, redistributed according to entirely new principles (p.39) … The samples will remain attached to their original context solely by the fragile link of the numbers inscribed in black felt-tip pen*

> *on the little transparent bags.(p.46) … obliged at all costs to maintain the traceability of the data we produce with minimal deformation (while transforming them totally by ridding them of their local context)(p.47)*

I suggest the in the above passage the words "specimens" could be substituted with "bottles" as well as "numbers" for "judging ID numbers" to show the strikingly contiguous description here applied to the practices previously explored.

As I turn to consider how judging is done and the processes and transformations by judges of bottles, samples and sensory assessments to scores and rankings (rather than soil samples to classifications as the pedologist Latour follows does) the onward transformations Latour considers anticipate some of the processes that will shortly be encountered and which I shall return to consider:

> *Having made the passage from a clump of earth to a sign, the soil is now able to travel through space without further alterations and to remain intact through time.(p.51) … In none of the stages is it ever a question of copying the preceding stage. Rather it is a matter of aligning each stage with the ones that precede and follow it, so that, beginning with the last stage. one will be able to return to the first.(p.64) … This is the same reversal of space and time we have already seen many times: thanks to inscriptions, we are able to oversee and control a situation in which we are submerged,(p.65) … An essential property of this chain is that it must remain reversible. The succession of stages must be traceable, allowing for travel in both directions. If the chain is interrupted at any point, it ceases to transport truth - ceases, that is, to produce, to construct, to trace, and to conduct it. … Truth-value circulates here like electricity through a wire, so long as this circuit is not interrupted. (p.69).*
>
> *(Latour, 1999)*

The work I have shown of repetition, cross-referencing, speaking-while-writing and thus making a written inscription accountable all demonstrate the localised orientation of the actors to the importance of maintaining the chain of transcriptions through the judging ID numbers. As I continue this investigation of these practices this written account will also be oriented to this chaining of identity, co-ordination, and transcription.

6.1.3 Standards of sensing: Evaluating colour

Beer judging is ordered by particular sequences of activity: visual assessment occurs first (Figure 46), followed by smelling aromas, then tasting the sample.

> Judging proceeded in near silence – holding up the beer to look at colour which was generally moot for this category where black is the norm as the style guides note … Most of these beers were black, the first a too-pale exception.

Having held it up to look at colour and try to assess clarity it was a deep inhalation to smell aroma – sometimes swirling the glass to try and stimulate it.

Figure 46: Evaluating colour and clarity

Evaluating colour in beer is another point at which situated practices are entangled with standards. In the previous chapter when I introduced the BeerXML standard this also incorporated the “Lovibond” (^{0}L) colour scale. This scale was originally developed by British brewer James William Lovibond in 1885 who published a key text on colour standardisation (Lovibond, 1915). His scales have been largely replaced by the American “Standard Reference Model” which the BJCP use for their colour classifications, however, whilst the SRM model changed the methods by which it measured colour – shifting evaluation from the original method of the Lovibond system of empirical, human, visual comparison with coloured glass squares to evaluation by a photometer or spectrophotometer (ASBC, 1950) - it retained the same divisions and scale from Lovibond such that the two terms can be used interchangeably. By comparison, units in Europe are typically expressed using the “European Brewery Convention” scales. These use the same method as SRM but on a different scale. Comparison scales and tables abound as shown in the table below which also reproduces BJCP style classifications as its examples (Figure 47).

SRM/Lovibond	Example	Beer color	EBC
2	Pale lager, Witbier, Pilsener, Berliner Weisse		4
3	Maibock, Blonde Ale		6
4	Weissbier		8
6	American Pale Ale, India Pale Ale		12
8	Weissbier, Saison		16
10	English Bitter, ESB		20
13	Biere de Garde, Double IPA		26
17	Dark lager, Vienna lager, Marzen, Amber Ale		33
20	Brown Ale, Bock, Dunkel, Dunkelweizen		39
24	Irish Dry Stout, Doppelbock, Porter		47
29	Stout		57
35	Foreign Stout, Baltic Porter		69
40+	Imperial Stout		79

Figure 47: Comparison of brewing colour measurement standards (Wikipedia, 2013)

These scales are materialised and used in different ways within judging practices at the competition. On qualifying as a BJCP judge a standard BJCP branded SRM colour card is sent to the judge.

Figure 48: Standard References "the tools of judging"

The US judge in attendance had brought his with him – along with flashlights and a folder of judging ID stickers, describing these collectively as “the tools of judging” (Figure 48). This was noted by, commented on, and used by, his partner judge and the adjacent judging pair, as seen in the following transcript:

Robin did you have a card with SRM on somewhere?

…

Sam there was one kicking about that was err Mark=

Mark what?=

Sam =your SRM card?

Mark oh what of it?

Robin (roight it)

Sam when you a dead a proper (posh judge like him) with a badge and everything you end up with an SRM card.

Rich (worried about that)

? (unclear)

Steve (BJCP site got heaps of things)

Robin way too dark

? bearing in mind though thats judged on one centimetres depth

Sam is it one centimetres depth?

Mark yeah five centimetres

Robin thats way too dark

? OK

Rich can I borrow your torch a second

Mark sure

Rich thanks

Transcript 5 (Audio 4): Using devices for colour standards in judging

In this playful engagement with the categorisation of judge recognition and ranks, characterised as "a dead proper (posh judge like him) with a badge and everything", there is also a material engagement with one of the associated devices associated with such recognition: that "you end up with an SRM card".

There is work done to check the standardised processes for using the card. Without a visual record I have no record of the accompanying actions but the transcript gives clear indications that a sample is compared prior to line 598 and Robin's judgement that the sample is "way too dark” by comparison with the style guide. There is then work to resolve this and adhere to standardised practices in lines 600-604. Rich then requests to borrow the torch.

The card is designed to be used by holding it next to a standardised sample of beer with a depth of 5cm and comparing these to the printed colour squares. The card has also been reproduced on mobile devices and these were selectively used as well. During afternoon judging (Figure 49) I experimented with that approach as did my partner judge:

> *Looking at one Bock we held it up and I immediately saw it as too light. I checked style guide for SRM and then looked at the app for indication. Steve S did the same and showed me his iPhone screen with a dark brown on display. Adrian, who was stewarding for us, immediately jumped in saying about how a mobile screen was not a good representative with brightness, pixel luminosity etc. I vaguely recall asking him if he’d drank many bocks and then talked about how they were usually chestnut brown. Reading the style guide’s recipe formulation indicated this ‘should’ be a beer that was really rich all-Munich malt with the colour and depth of flavour that should bring whereas the one we had was very light.*

Figure 49: Using iPhones while judging

The two versions of the BJCP style app on different operating systems and devices have slightly different presentations of the information (Figure 50). Their use, contingencies

Figure 50: SRM scale on Android BJCP app (left) and iOS BJCP app (right)

and authoritativeness was challenged by our steward who queried potential display issues that would make these non-standardised, multiple, representations. A standard is only recognised as being as strong as its chain of inscriptions and the authority it can derive from these, a mobile device introduces localised variations and user or device-defined variations. Thus the chain is broken replaced with variability when rendered electronically, however when printed in a standardised form the chain is intact through identical replication supported by branding, and asserted as authoritative.

6.1.4 Writing and overflowing: Disruptions and their categorisation

Judging does not always proceed smoothly. Having established the reference identity for the bottle and recorded this on the judging sheet (with occasional exceptions) and in order to evaluate the colour, aroma and taste the bottle must be opened. This is not just a physical action but also a sensory engagement: the sound indicates and foreshadows evaluations. If there is no hiss of gas escaping the beer will sound flat. At the other end of this continuum lie over-carbonation or infection and a beer that gushes forth. When judging porters I encountered few of these but for the adjacent pair it was a different story:

> *Next to us the other judging pair on porters had problem beer after problem beer, several 'gushers' which foamed up and out of the top and kept on foaming up on opening, Beer spilling on the floor. Several they had were clearly sour, infected or otherwise flawed.*

Carbonation levels are different for different beer styles. "Belgian Golden Strong Ales", the category Karl's beer was entered in, are described as "Very highly carbonated" so would be expected to open with a pronounced pop and hiss…

```
((Swazi holds out the bottle - foam starts to rise and come out the top of
the bottle))

Swazi        ahh we have another gusher
```

Figure 51: Swazi opens Karl's bottle

(Between lines 598 and 602) The foamy head can be seen rising out of the top of the bottle (circled in red). However only a small amount comes out and runs down the side of the bottle.

(Brett & Jonny speaking in background? we had three that we just tasted •)

Aleman   aa↑ah↓huoh

(Brett   and then we pick top three)

Graeme   really?

Swazi   no::, thats o:n thats only a little

Graeme   oh its not too bad

Swazi   thats not too bad

(Brett & Jonny speaking in background? - and then we picked the top 3)

Graeme   I wouldnt count that as a gush •

Swazi   so its just a bit warm that's all

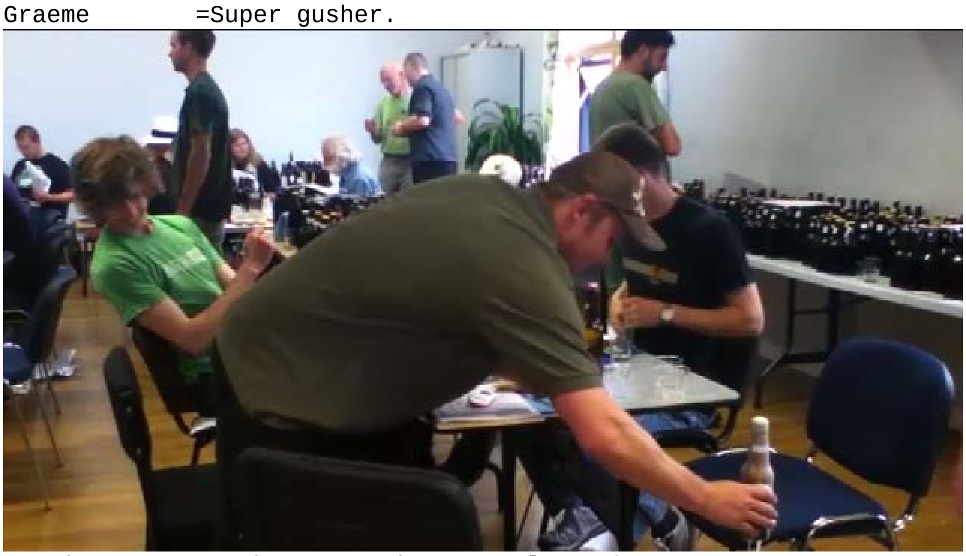
Transcript 6 (Audio 1): Opening Karl's beer

The sequence above shows the moment of opening Karl's beer (Figure 51). It is immediately categorised by Swazi, with reference to their previous beer, as being "another gusher". Their steward "Aleman" gives an exclamation, which sounds cut-off before an assumed following "no" from what would be the expected emotive "aaarrggghhhoh no" but is cut off as the anticipated overflow itself cuts off. Graeme likewise accounts for this asking "really?", Swazi's response shows a hesitance with the extended vowel of "no::" before accepting that the initial categorisation of "another gusher" is not true, there is only a little, with Graeme stating this clearly and Swazi echoing that it's "not too bad". Graeme further clarifies this categorisation work “I wouldn’t count that as a gush” which Swazi concurs with deciding that temperature is the issue.

This stands in clear contrast to the previous beer. Here there is a reverse ordering – the sound of the beer opening is greeted as a good thing by Graeme, only to change rapidly:

```
((click and hissing sound of beer being opened))

Graeme        That's not bad

Brett         Are you getting any alcohol (unclear •)?

Swazi         Wo↑ wo↑ wo↑
```

```
Graeme        woooOh↑ yeah

Swazi         Here we go, we've go we've got a gusher=

Graeme        =Super gusher.
```



```
Swazi         Another one, that was clever hey?
```

Graeme   Thats a proper gusher, isn't it you're not going to just

((silence - 14s •))

Swazi |•
              |oopsy daisy=

Aleman   =is there [enough left?

Graeme   [o::↓oh jes>us

Swazi   (wha what)
              |•
              |You know we we'll. we got complacent there 'cause er we've not
_   had a gusher for a while

Graeme   That's it

Swazi   and er so [...it tends to

Graeme   [full on its err all over the chair

Swazi   ha ha↑

Swazi   OK↑

Graeme   Hmmm OK

Swazi   lets go for it= •

Graeme   =yeah a big tick on the gush •

((Swazi lifts up sample and sniffs it))

Transcript 7 (Audio 1): Reactions to beer 18010 gushing

Figure 52: Graeme ticks the box in the mouthfeel section under flaws for "gushed" (at line 103)

Here the gushing beer does not open as explosively as Karl's beer will subsequently, but gushes and overflows for a long time. This is categorised in increasing terms as "we've got a gusher" by Swazi followed by Graeme categorising it as a "Super Gusher" (line 66) then a "proper gusher" (line 71). However this is accounted for as not being the first but to be expected, with Swazi accounting for this as complacency on their part as judges in lines 84-5.

Having successfully poured two foaming, cloudy samples Swazi occasions the start of "doing judging" in line 100 by saying "let's go for it" with Graeme latching onto this turn and accounting for his first judging action as "a big tick on the gush" – which he marks on the score sheet (Figure 52) in the checkbox under the mouthfeel section as a defined, categorised, flaw. However Swazi neither ticks this box on his scoresheet nor comments on the gushing: judging accounts are non-coherent and non-continuous here (Figure 53):

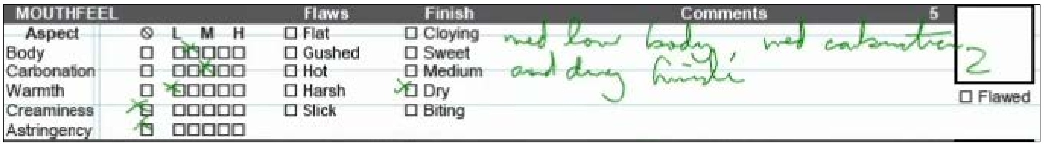


Figure 53: Swazi's judging sheet ticks and comments for the gushing beer 18010

In the preceding transcript I have drawn your attention to the turn at line 101 where Swazi announces "let's go for it" – occasioning judging as an activity and implicitly calling the co-ordination conversational work to an end. In this case it is interrupted when the LiveScribe pen fails to write – the nib having been lost. Once the research-equipment disruption is resolved he again occasions the next process of activity:

```
185    Swazi         Right lets do this. Erm
```

Transcript 8 (Audio 1): Occasioning assessment

Judging then proceeded in relative silence – each judge working through the sequence of assessing colour and clarity before moving on to aroma and taste.

6.2 From situated practice to STS theory: Colour standards in other practices

In the situated sensory evaluation practices explored here that precede evaluating and categorising taste there are striking similarities to those used by the pedologist Latour follows in the Amazon. There the analysis and classification of soil samples involved the same juxtaposition of the sample for assessment with a printed set of standardised coloured segments coded to the Munsell system of colorimetry (Latour, 1999). The situated nature of this sort of achievement and the skills development of colour recognition in these "scientific" and proto-scientific practices also concerns Goodwin (1997) who analysed student geochemists' evaluations of when manganese oxide deposited on acrylic fibres turned "jet black". Rather than these being private cognitive competencies they are situated achievements enmeshed in socio-material practices.

In the practices explored here the *network* of standards is undone by variation in the *apparatus* of mobile devices. The most powerful actant instantiating these classifications and maintaining an intact chain of references is a laminated piece of card. A focus on practices and their intersection with technologies of classifications helps explore and explicate how these are situated achievements, and that a view of technologies needs to engage with the humble devices of printed paper rather than being preoccupied with the apparatus of technologies.

This also illustrates the way that infrastructures of information and standards are "nested … they fit inside one another, somewhat like a set of Russian dolls … " (Lampland & Star, 2009, p. 5) becoming reinforced and maintain continuities across long periods of time. I have shown how the standard reference model reproduced an earlier scale – preserving the divisions but changing the methods to ones that were derived by measuring equipment rather than human judgement, and then further nested within the BJCP style guides. However, "taste" defies such instrumentation and it is to the complexities of crafting objectivity in taste that I turn to explore next. Before those explorations I introduce an intermission to invite you to just such an engagement.

6.2.1 Intermission: Speaking truth to materials: Engaging with your senses

Surely right here I have arrived at the nexus of this thesis: How is tasting done? What are the practices and processes? How and when do judges do tasting? Enough of these bottles and judging IDs – those were just the trailers weren't they? Now the curtain goes up and we see the main feature: how we come to know taste and what tasting is… Or will we ?

This is the part that has faded the fastest and most - yet should perhaps be the core of my data! What did I taste? Smell? How did I record it? However as my first ever real competitive judging this is both a loss and I now think something of an inevitability.

…

Paul was silent in this - working through and ticking boxes, making notes but never seeking conversation nor replying to any of my attempted cautious and infrequent openings.

Only once we'd finished was there a cursory comparison of scores and some conversation.

Perhaps we have indeed arrived at the "core" of this thesis, have we opened the black box only to find it is empty as Winner (1993) suggests? Here things fall apart, and this centre cannot hold. However I propose that we have indeed arrived at a (though not "the") nexus, but it is *how* we encounter it that needs to be examined, changed and transformed.

Where tasting occurs in parallel and in silence, contemplatively but in reference and in relation to a form there is a challenge. The experience of tasting is being translated in these practices. I could turn up the sequential magnification further and examine in details the sequential completion of the judging forms and the ticking of boxes and writing of comments. I have the data to perform that sort of detailed translation[41] but I

[41] In due course I hope to undertake that sort of analysis – but that is for a different paper and performance of this research.

suggest pursuing that path would not support the line follow here of engaging with standards and the accounting for taste – I therefore set it aside as a manifest absence.

More fundamental and relevant to my purposes is a consideration of the translations in both practices – the beer judges engaged in translating sensory experiences to written inscription, and mine as a PhD candidate writing this as a chapter of a thesis. Both share continuities: translating situated sensory actions into written inscriptions. Through explicating the steps of judging translations, and the place of standards, I am enmeshed in doing the same. This text is on a page with standardised margins – set by university regulations. This thesis must "make an original contribution" and there is a substantial normative pressure to render a *clear line of argument*, a single written narrative pathway through this mess and complexity and to other or make absent that which does not fit neatly. In doing so I confront the question John Law poses of the messiness of the practices I encounter – "If this is an awful mess... then would something less messy make a mess of describing it?" (Law, 2004, p. 1). However it is not perhaps:

messiness > less messy

that is the translation that would 'make a mess' of describing it, but the translation from tasting and smelling to writing. I reproduce and mirror many of the practices I describe: writing, selecting, simplifying, ranking, grading, including or excluding aspects for further consideration in pursuit of reward and recognition. However I do not speak truth to the materials that are being engaged with and translated. Michael Guggenheim explores this and I quote him here at length:

> *The central preoccupation of the sociology of translations is to strive for a sociology that gives justice to its objects rather than to take shortcuts into sociological abstractions. The task of sociology is not to explain phenomena away, but to elucidate their empirical existence by following attachments, networks and translations (p67) … The sociology of translation aims to keep the experiences of the amateurs as experiences of amateurs. What it ends up doing, however, is to translate the experiences into the words of amateurs elicited through interviews, into observations from sociological observers and finally into sociological descriptions. What happens in these translations is jumps from one medium to the other. These are jumps from an experience of smell and taste into words and books, and these jumps are not accounted for. (p68)…*
>
> *In the social sciences taste and smell are almost exclusively translated directly into text, as for example when Annemarie Mol eats an apple (Mol, 2008). But even the social scientist actually engaging in eating is an exception. It is far more common, and more acceptable to the moral standards of social science to reproduce and analyse taste and smell descriptions that already exist (Guggenheim, 2011, p. 71)*

His response was to use cooking as a medium of translation – exploring STS themes through a series of dishes for those attending a seminar. In presenting this research I have attempted similar approaches – engaging audiences in tasting practices, which I present visually in the closing vignettes. But you, the reader, are at a distance so I can only act indirectly and "at a distance" (Latour, 1987). I therefore suggest that right now is the moment for you to engage with such exception. So please take this moment to engage with the materials, not the inscriptions; the sensations, not their translations:

Stop reading.

Put this thesis down and go and pour yourself a drink.

I would, of course, propose you should pour yourself a beer and furthermore that you also follow the actants of this chapter by choosing a beer described as a porter, or the signature "Belgian Golden Strong" – Duvel.

Perhaps you don't like beer? That would be a pity as I hope that by this stage of your engagement with this thesis the heterogeneity of beer would be apparent and the idea there *is* one out there that you might like, perhaps even several clustered together and classified as a "style", has emerged. However there are many reasons you may not: perhaps you abstain or have an intolerance to gluten? However, I hope there is a drink, or a taste, that you *are* passionate about and attached to. Think about it then please choose a taste-able object that you have an *attachment* to, an appreciation of: whether that be wine, tea, coffee, hot chocolate or fruit juice.

Now take your time and drink it.

Slow your engagement down.

Look at it – inspect its colour, if it's in a glass look at its clarity.

Smell it, pause and inhale. Sniff again, close your eyes, allow it to invoke feelings and sensations.

Only then take a sip, roll it around your mouth. How does it *feel?*

Finally swallow it – attend to the retro-nasal aromas that come after swallowing. Is there an after-taste? Does it linger?

Any translation of that activity into words, ticks in boxes or scores is a betrayal, a gross over-simplification.

Of course engaging with the translations into texts is easier – but this embodied, physical, passionate, sensual experience of tasting is made absent in the process, and much is othered completely... However it is the engagement you (hopefully) just had which is indeed a nexus for this thesis.

The text of the thesis shall be word processed in double spacing on one side only of good quality A4 paper (210 mm. x 297 mm.)*, leaving a left hand margin of 38 mm., and a margin of 25 mm. on the other three sides.

* **ISO 216** specifies international standard (ISO) paper sizes. Paper in the A series format has a 1: √2≈0.707 aspect ratio

margin of 38 mm

margin of 25 mm

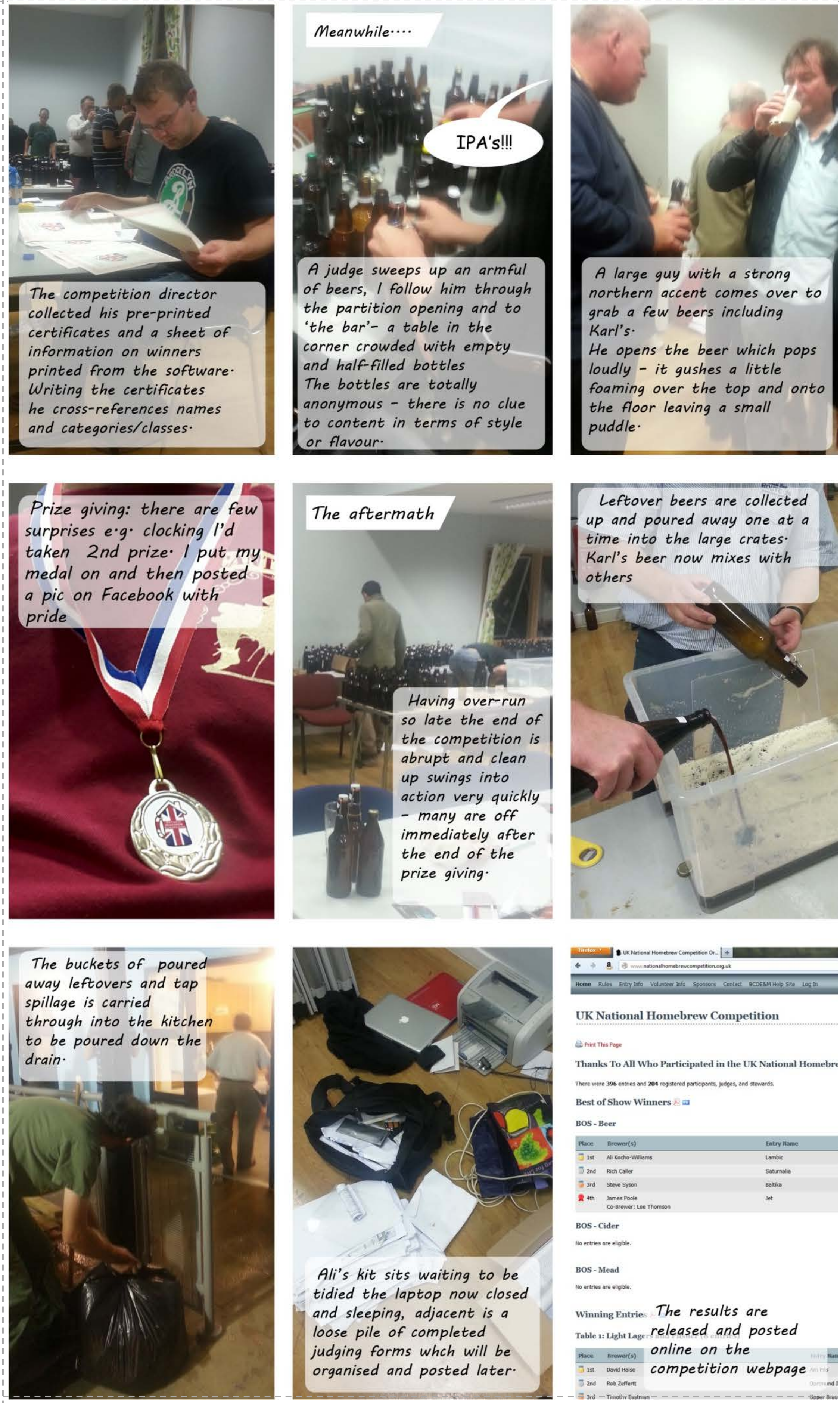


Figure 54: Fume ory of Karl's beer

7 The Practice of Sensory Assessment part 3: Alignments and Evaluations

Having taken a break from written translations and engaged directly through the senses of taste, smell and touch that are the primary concerns here, though rarely engaged in writing or academic discourse, I now return to the exploration of the talk and writing around sensory assessment in judging.

7.1 Devices and conditions of tasting continued: Aligning assessments

In the previous two chapters I guided you along trajectories in this complex network, following an object from inception, through categorisation to its intersection with aligned judging bodies. I stopped at a point of silence – the private, parallel engagements of judges completing scoresheets and evaluations – and invited you to do the same. I now continue this engagement considering initially when and how this silence is broken and for what purposes. I engage in these practices by exploring the use of, and searches for, referential vocabulary terms: their standardisation and the "creative accounting" that transcends and overflows these categories. The focus here is on the key devices and conditions of accountability in this tasting assemblage, the work of aligning assessments and the ongoing work to maintain chains of reference.

7.1.1 Manifest absences: Expressive sounds

When you tasted your drink at the end of the last chapter did you utter an appreciative "mmmmmm"? These are the "gustatory Mmms" (Wiggins, 2002) and their opposites that enact the "social life of 'eugh'" (Wiggins, 2013). Such expressions fulfil an important place in communication of pleasure or disgust around ingestion, however, they were notably absent in the audio I analysed. Of the isolated examples the first was an expression of disgust:

```
447  Robin        uah↓ oo::h↓ I can sme↓ll it from here↑
```

Transcript 9 (Audio 7): Disgust as a breach of silence

And later, from the same judge with an attachment to a different beer, an expression of appreciation marked by a rising intonation:

```
Robin       Oooh↑, oooh↑,
```

Transcript 10 (Audio 7): Expressing appreciation non-verbally

However these absences can be as informative as, perhaps even more than, presences. I suggest that given the frequency of positive assessments of beer in the transcripts these are being actively suppressed and *made* absent. Whereas these expressions, as Wiggins shows, are a ubiquitous part of informal assessments of taste here there is a manifest-absence. This poses the question: where has pleasure, and its expression, gone? If expressing pleasure is excluded, what substitutes from it and when do judges break the silence?

7.1.2 In search of pepper, fake bananas and pear drops: "No box to turn to"

"Breaking the silence" is an over-statement of the parallel practices of judging within the conversations I have recorded and transcribed. As noted previously there were wide variations between judging pairs – some talking about many assessment aspects as they were encountering them and marking them on the scoresheet in ticks or comments, others were silent and separate.

Across all the judging pairs where there were (occasional) sequences of discussion during judging processes they were prompted by the attachment to a particularly pronounced property of the object. There was a pattern whereby moments where sensory engagement and its labelling faltered – the literal "tip of the tongue" – interaction was initiated and others were enrolled to contribute to this search for a word, a clarification or an interpretation, exemplified here:

```
Mark   that doesn't taste like an English ale to me I just taste hop
       I mean I'm getting kind of peppery=

Sam    =yeah↑=
```

Mark spicy
but you know a lot of times you get peppery spicy notes from phenols like
the Belgian yeasts (have) thrown out

Sam yup

Mark but this isn't, it isn't yeast it's more-

Transcript 11 (Audio 5): EPA judging - peppery hop variety search initiation

Simultaneous with line 52 writing practices indicate how this discussion shapes the feedback Sam leaves as Mark speaks (Figure 55):

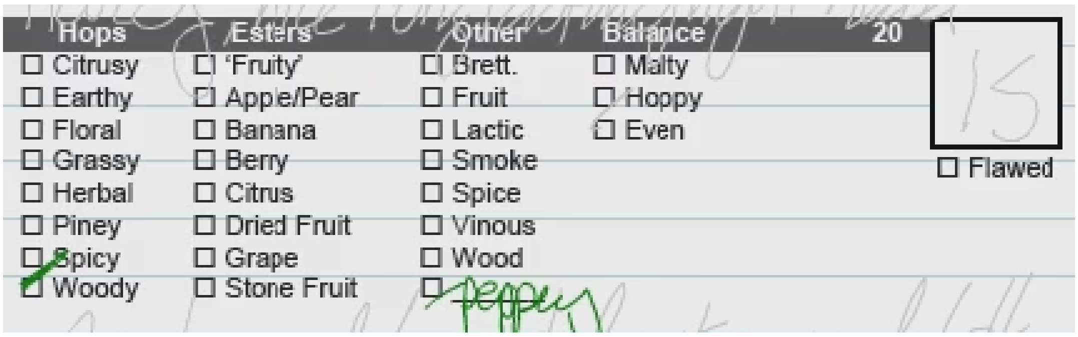


Figure 55: Written feedback and ticks on Sam's judging sheet

Sam ticks "spicy" and then writes peppery where a blank space with a checkbox is left for adding a referential term under "other". This could perhaps be taken as evidence for the need to enforce separation – one judge here "influencing" the other. However, such a simple positioning would suggest repetition which was not found. Instead other search procedures were adopted mutually seeking a term. Another sequence saw a search for a cause – discussing possible ingredients that could give a "slight onion" flavour

I now return to Karl's beer, the actant I have been following previously, and how these search procedures and processes of creative categorial description occur in connection with judging practices:

Swazi |•
|it tastes like its been barrel aged or something↑ its got
like a woody character to it

Graeme I wonder if that's wha I can sme I can smell something
I thought it was like an app:le↑ smell

Swazi yes, yeah, yeah↓, something about •=

Graeme =but it's something different, its not, its like, it smells like freshly cut apple wood

Swazi yeah, yeah thats [it cos to me

Graeme [not actually not actually apple=

Swazi =bu [no

Graeme [but wood

Swazi yeah, yeah, its got this kind of, its almost like a mixture of vanilla, fruit and **earth** •

Graeme |•
|its actually quite a nice aroma

Swazi it is↑ qui(hhh)°te°[its not] bad [he he

Graeme [actually] [em, I

Transcript 12 (Audio 1): The creative co-construction of categories

This shows the creative search procedure for an appropriate category label. There is a search for causes – a process of barrel ageing being proposed. The perceived sensory effect is ascribed to this potential process and again described as "character". However this is insufficient, it is not ticked on the judging sheet where "wood" appears as a checklist item in the divisions for both "aroma: other" and "flavor: other".

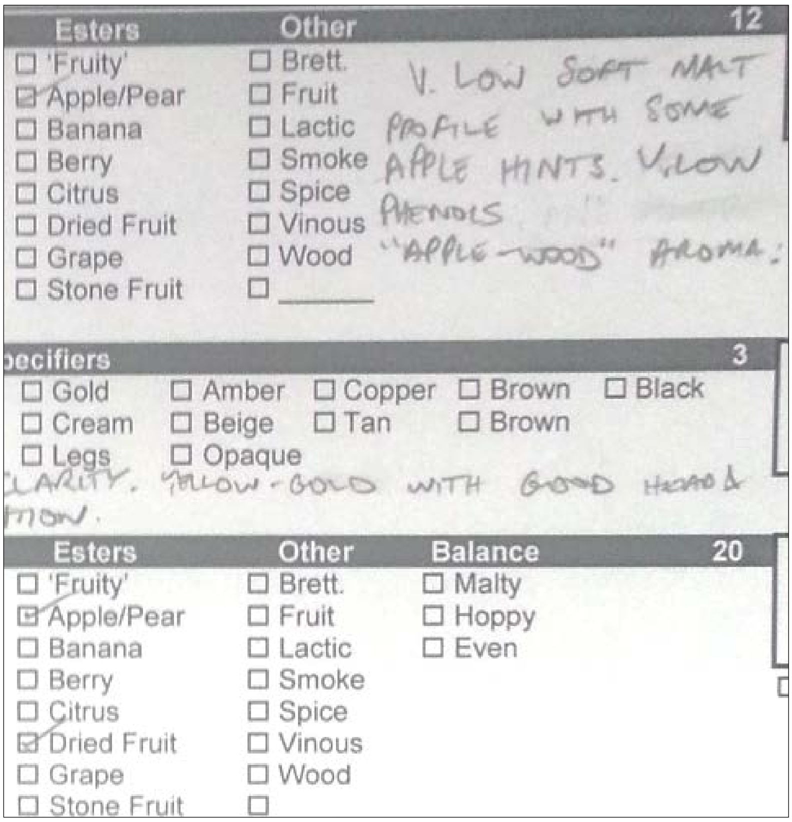


Figure 56: Written comments on Graeme's score-sheet accounting for this search and creation of a compound referential term

Graeme's response acknowledges this, reflexively posing it as a question and continuing the search process now located in the smell of the beer rather than its taste. He proposes a referential term of "apple" (which he ticks on the score sheet (Figure 56) – though exactly when is unclear from the video footage as Graeme was not using a digital pen). This is acknowledged and agreed by Swazi however the dropping intonation is heard as incomplete and insufficient by Graeme who synthesises the two terms to propose that "its something different, its not, its like, it smells like freshly cut apple wood". Swazi enthusiastically agrees with this new compound term and there is work reinforcing it through repetition in lines 770 and 774. This is then written down by Graeme in the comments as "APPLE-WOOD" AROMA. Swazi agrees but then produces his own synthesis of synonymous words (fruit <> apple) and (vanilla <> vanillin <> associated with oak/wood) adding a strongly emphasised "earth" as a final property. However none of this is recorded on the sheet in tick-boxes or comments – the discussion is a mutual seeking of definition rather than accounted for as feedback. As with the previous example there is a process of breaking silence to engage in collaborative searching for and expression of precise descriptive terms that are not recorded as feedback for the participant but are assembled by and for the judge as an account of their sensory experience.

The analytic work of finding appropriate referential labels completed, there follows an evaluative practice of considering that this is "actually quite nice" in Graeme's words, with Swazi a little more circumspect in evaluating it as "not bad". This is followed by a 15 second pause as judging returns to parallel silence. Swazi takes a sip (Figure 57):

Figure 57: Swazi taking a sip of Karl's beer

Then searches on the sheet for a tick-box (Figure 58):

Figure 58: then searching for the tick box

He does not actually tick a box but instigates another discussion and search procedure:

```
Swazi        |•
             |is that an ester↑ or is it (0.9).h something ↓else?=

Graeme       =it's

             (3.3)
```

Swazi |•
|I guess that must be an ester ay=

Graeme |•
|=its an ester, is ye- its it is↑ an ester

Swazi now what I'm thinking? you know the light dried fruit, that dry
like tssss [and dried apricots

Graeme |•
[mm, mm

Swazi as opposed to raisins or (c↓>u<rrants)

Graeme yeah its like a light fruit=

Swazi =a: light fruit

Graeme which which I think is an it is an ester its not=

Swazi =yeah, yeah
(Swazi ticks box under Flavor: esters for "dried fruit")
…

Transcript 13 (Audio 1): Discussion and search procedure

Having ticked the box Swazi then writes (Figure 59):

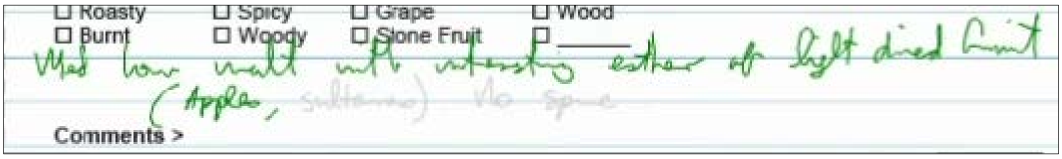


Figure 59: Swazi writing

"Med low malt with interesting esther[sic] of light dried fruit (Apples,"

He then interrupts writing to again check a term

Swazi |Is it currants errrrrr are that are no, |sultanas

Graeme yeah, yeah, that's it is sultanas

Transcript 14 (Audio 1): The search for sultanas

Swazi then writes this term down:

Figure 60: Swazi writing contd.

Here in Figure 60 there are searches and specific terms used to write feedback for the recipient, as an account of judging. The search for specific terms is enmeshed in a network which is not *always* nor *necessarily* about providing feedback and a written account of the experience but this is one potential outcome – the materialisation and preservation of the descriptive terms arising from the search and their use when these descriptions lie outside the standardised check-box vocabulary terms listed. Furthermore this assemblage can be read as a process of co-construction through a heterogeneous network of a tasted object, tasting bodies, a referential vocabulary (both standardised and overflowing those standards) which is constructed through turns at tasting, ticking and talking. This reading is of a de-centred re-configuration of the practice of distributed sensory learning which breaches the work to assemble individual, parallel, isolated judgements.

I have considered episodes where the alignments of parallel silent judging, such as I experienced, are breached and conversation occurs – with a focus on precise description through searches for the best fit of referential and evocative vocabulary items. Having explored this descriptive work I now turn to considering the next steps of conversation and how participants orient to, occasion, account for and co-ordinate the work of producing a singular assessment from their multiple accounts.

7.1.3 Coffee's continuities: the agency of descriptive vocabularies

The interactions, turns and category work here show strong continuities with Liberman's (2013) explorations of the phenomenology of professional coffee tasters and their "practical objectivity". Coffee tasters are also involved in complex juggling of the material elements of tasting and completing scoring sheets, translating experiences into worlds and numbers and engaging with peers to discuss and search for terms to achieve a very practical objectivity in their taste assessments.

Some of the continuities are particularly strong – Swazi and Graeme's search through apple to wood to freshly cut apple wood has a particular resonance with Liberman's observations that:

> *typical account includes a temporally changing description and runs more like this: "I think it's interesting, the flavor profile in this cup. One track is a very floral track. The other track a very freshly cut exotic woods..." (p.220)*

Liberman explores the phenomenology of these search processes suggesting that:

> *the taste descriptors have their life in the tastes to which they direct the tasters' tongues and are more the work of tasting that they accomplish than what they can convey in the abstract….Taste descriptors not only describe the taste that they find, they find the tastes that they describe (p.221)*

Therefore the work seen here of searching for the appropriate boxes and then discussing descriptions is part of the reciprocal engagement whereby:

> *The function of taste descriptors is not merely to describe but also to assist the tasting by directing and expanding the gustative inquiry.*
>
> *A descriptor is not merely the causal result of what is tasted—*
>
> *coffee → taste descriptor*
>
> *Nor is it an imperialism of the objective methodology—*
>
> *taste descriptor → coffee*
>
> *Rather, it is a reciprocal event:*
>
> *taste descriptor ←→ coffee*
>
> *(p.237)*
>
> *There are also evident continuities in this representation with Hennion's (2007; 2004) proposal of attachment as a non-directional, reciprocal engagement between body and tasted object connected with the devices and conditions of tasting and taste description.*

Liberman also explores the resistance to strict standardisation of descriptions (seen for example in the standardised vocabulary project of the BJCP) and how these "introduce a regime of alienation" (p.250) which is resisted so that the task becomes to learn to use such descriptive vocabularies rather than be used by them – showing continuities with the concerns over "the stale language of beer" encountered in connection to the online exam.

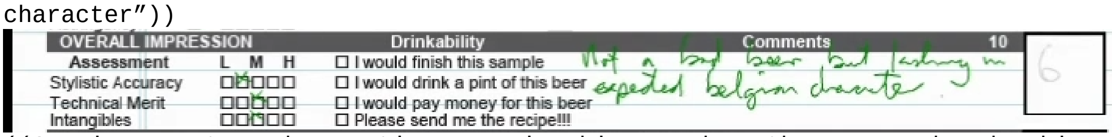
Liberman's engagement closes with a consideration of how these sort of encounters where taste descriptors are searched for enact learning. And this is an important connection to make. For these engagements considered above and which continue below, within judging pairs when they breach the silence, or compare their scores and descriptions are the broad engagement with sensory learning and its interaction with the agency of the classification system, what Liberman observes and explicates is demonstrably enacted in the encounters I consider here, wherein:

> *The scope of what tasters are learning is quite broad, as it concerns not only the meaning of descriptors or the characterization of the coffees but the very system of reasoning and of the practical objectivity that is effective on that occasion (p.252).*

7.1.4 Occasioning negotiation, acknowledging completion: "You ready?" and the preamble to agreeing scores

Having now explored these search routines, their relationships to the infrastructure of taste descriptions and how these interactions enact practical, situated learning I return to explore continuities with the encounters of the previous chapter to occasion talk and ensure the maintenance of the Judging ID as a chain of reference. In the previous chapter the inscription of this signalled a shift to parallel evaluative work in silence. In the transcript below, which comes at the end of individual scoring of Karl's beer (to which I return later), there is a similar pattern in the reverse direction to occasion and co-ordinate the transition from silence to discussion:

```
((Swazi writing comments: "not a bad beer but lacking an expected Belgian
character"))
```


OVERALL IMPRESSION | Drinkability | Comments | 10
Assessment L M H
Stylistic Accuracy
Technical Merit
Intangibles
☐ I would finish this sample
☐ I would drink a pint of this beer
☐ I would pay money for this beer
☐ Please send me the recipe!!!
Not a bad beer but lacking in expected belgian character.
6

```
((Swazi moves towards counting - moving his pen down the page and under his
breath saying))
```

Swazi °ten° •

((Swazi writing total score • "28"))

|•

Swazi |you ready? (c:[oughs)

Graeme [no: not quite

((Swazi leans towards mics and says into the mic on stand))

Swazi testing testing

((Turns round to look at me holding camera recorder and laughs))

Transcript 15 (Audio 1): Completing individual scoring of Karl's beer - co-ordinating transition

Swazi completes his score sheet in relative silence. In line 905, marked as significantly quieter through the convention of the ° symbols, I infer he is subvocalising the summing of his scores before he writes the total figure of 28. As soon as he has written this total he scratches the back of his head and asks "you ready" before looking over at Graeme's score sheet to view his progress. Graeme refuses the invitation – indicating he has not completed the form in line 914. I will return to when he is ready and the comparative accounting work, but first I explore the accounting for the goal-direction of the talk that follows this.

7.1.5 Co-ordinating evaluation, establishing purpose

Through these transcripts and fieldnotes I have presented evidence of judging and scoring being completed individually, largely in silence but occasionally punctuated by search-routines for an appropriate label or description. Having completed individual evaluations and occasioned the next distinct stage and function of talk is the negotiation of an agreed score. The rules of the BJCP system of beer evaluation are accounted for as seen here by the judging pairs for EPAs:

Rich so its the overall score weve got to be within three is it?

Sam? seven

Rich oh yeah within seven ?

146
147 Robin yep okay

Transcript 16 (Audio 2): Accounting for requirements of score range

The way that the aggregate score is to be calculated is also made accountable – again with one of the EPA judging pairs the steward asks about this

165 FSt did you just want them averaged or do you want to assign the score?
166
167 ? we go average

Transcript 17 (Audio 2): Accounting for methods of agreeing scores

7.1.6 Accounting for the "super gusher": Judging turns preceding the evaluation of Karl's beer

Before I return to tracing Karl's beer I turn to look at the talk that accounts for scores and seeks to agree an aggregate for the preceding beer – the "super gusher". As I explored previously with regard to classifying a beer as a "gusher" or not there were both explicit and implicit comparisons between the "super gusher" and Karl's beer that was judged after it. Considering these exchanges sequentially is therefore clearer for making sense of the comparisons drawn in judging talk:

417 Swazi |
418 |right you ready Graeme?
419
420 (2.8)
421
422 Graeme |
423 |yep
424
425 Brett (got to base off) the numbers

Line 426: Swazi looks across at Graeme's score sheet.

Swazi? 39, I get a 35=

Graeme =35

Swazi >I thought it was a good beer<

Graeme yeah, I thought it was nice=

Swazi =I thought it was [fantastic↑]

Graeme [yeh ih th] that was the first [one =

Swazi [and out
of a:ll that had the proper fermenta[tion] character=

Graeme [yeah]

Graeme =yeah and it ha, and I got the pear, I got a little
bit of Pear and then I got the citrus and a little bit[of >°banana°< too

Swazi [**yes**
there was a little bit of citrus and a bit of honey and a
little bit of that banana some people would say pear because
theyre used to pear [drops] whereas I am used to

Graeme [yeah]

Swazi fake bana:na=

Graeme =fake bana↑ he ha ha ha↓

Swazi so, err but th its the [same thing]

Graeme [its the ri]ght it's the right progra-
and it had the phenolics, they were restrained but they were
the:re↓=

Swazi =exactly

Graeme and it was almost in balance, the malt was ni:ce >good beer<=

Swazi =its all good (.) err [only thi

Graeme [yeah yeah only spoiled by a lack of
head=

Swazi =lack of carbonation and the cla↑rity

Graeme I, I thought the carbonation was just really good, I think it
just all came out at once

Swazi and, yeah,↓[yeah e:rr ok]

Graeme [and you know]=

Aleman =and all over the floor=

Graeme =and its all over the f its all the carbonations all↑ over the
floor

Brett which which [err

Graeme [eh its actually quite spritzy, when you get it
in the mouth|*
|●
[its got nice lit]tle tingle from it so I think its OK umm

Swazi [yea::::aaah? ok]

((* Graeme places his hand in front of his mouth and wriggles his fingers))

Line 496-7: Graeme placing his hand in front of his mouth and wriggling his fingers

Graeme |●
(to brett)|Dy wanna try

((Graeme passes the beer sample to Brett))

Jonny positives, lots of positives

Graeme so its, ya know yeah, a good beer

Swazi It was a good beer err: a a strong effort and [thirty

Graeme [n it's the right=

Brett But that=

Graeme =it the right profile=

Brett for that ca↑tegory smelling it thinking, oh yeah↑, thi:s=

Swazi =thats what you expect n it had a nice dry fini:sh=

Graeme =needs ta I mean, the clarity was a gush,

Swazi right, >we've gotta hurry< Next beer

Graeme 39 and 3°5° so 37 yeah

Transcript 18 (Audio 1): Aligning scores for the "super gusher"

This sequence opens with another example of the occasioning turns considered previously. Line 427 shows the sort of anomaly that the audio-only transcriptions which CA was founded upon can struggle to explicate. Swazi gives not one but two scores, first 39, second his own “I get 35”. During the intervening audio line from Brett in line 425 Swazi closely observes Graeme’s writing practices and the final written score, as soon as this was written at line 427 he commences from reading Graeme’s upside down scoresheet (illustrated in the video still). This sort of detailed interaction between two people and *also* sheets of paper and pencils is under-acknowledged in some CA work with the material and the mechanical excluded whilst talk and its transcription is reified.

There is an interplay of assessment categories – Swazi initially suggesting it is “a good beer” which is agreed with by Graeme as “nice” and then substantially revised upwards by Swazi as “fantastic”[42]. There then follows detailed category work: a comparison to both the other beers in this category “the first one of a:ll”, and the normativities of the category description “the proper fermentation character”. As I have explored previously in the search procedures this is also expressed through the anthropometric “character” and related to processes. The phrase “proper” does a lot of work for categorisation – evoking both what the category is and how it is achieved and perceived.

[42] The patterning of such assessments would make an interesting topic for study, this was a path I started on, but set aside and would require a larger corpus, more specific focus and different questions.

There follows the sort of complex referential work that also occurred in the search processes – pear, citrus and banana – each of these are distinct checklist items on the scoresheet. Swazi responds listing off “a little bit of citrus, and a bit of honey and a little bit of that banana”. He has accounted for these perceptions on the judging sheet through placing small X marks in the aroma boxes for “Apple/Pear”

Figure 61: Fake banana flavours: a classic South African "banana flavoured" sweet

and “Banana” on aroma and, as I will show below, in “Banana” and “Citrus” for flavour (Figure 62). The extension and exploration of this in terms of personal experience and greater specificity as “some people would say pear as they’re used to pear drops whereas I’m used to fake banana” enrols personal sensory experiences and particular geographical locations too. “Pear Drops” (a particular type of boiled sweet) are contrasted and then unified with “fake bananas” as “tastes of childhood” with a very specific “fake banana” flavour that Swazi is “used to”. I followed up with him to ask what he was referring to and he explained that “Growing up in RSA (Republic of South Africa) I loved a sweet called "perky nana" bad fake banana marshmallows (Figure 61). The only thing here that tastes like it are pear drops. Which I'm told is ISO amyl acetate[43]”.

Hence “the same thing” which combines together multiple referential objects based on personal experience, memory and shared properties – taste descriptions are something to

[43] Isoamly acetate is a flavour that is used on the Siebel sensory training kit (Siebel Institute, 2013)made available to BJCP registered tasting courses. The illustration on the notes to accompany that kit shows a banana.

be "used to" and to evoke memories and experiences, linked here through association and connection with the specific chemical language and a term used on the beer flavour wheel I presented in chapter 4 as a method for crafting singularity from multiple referents.

In addition to these "proper fermentation" properties - esters from the distinctive yeasts that perform a particular network of 'Belgian character' - Swazi also judges the beer to have "lovely bready malts" in his comment on the scoresheet (Figure 62):

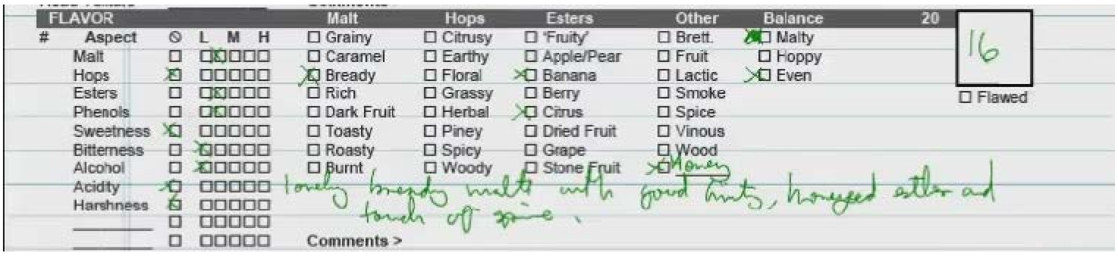


Figure 62: Flavour assessment on beer 18010 preceding Karl's beer

These are accounted for in the talk as "ni:ce" (line 466) – the whole overall assessment is marked by category-fit terms "right", "proper" and all of this held together as "almost in balance" – an evocation of both aesthetic judgement and a throwback to Galenic virtues.

There is then the acknowledgement of flaws – the initial categorisation of this beer as a "super gusher" returns – Swazi describing this as a "lack of carbonation" which Graeme questions suggesting that it was "really good" but "all came out at once" over the floor. The sensation of carbonation is described as both "spritzy" and then physically by Graeme who uses gesture to try and evoke what he means.

There is again interaction with the other judging pair at the table – a sample offered and opinions expressed, it is re-categorised from the "super gusher" to "a strong effort", again "the right profile" is taken as a clear orientation of the assessment to the category criteria. The orientation to the ongoing task in hand take priority in line 521 and then the immediate and unproblematic arithmetical agreement of a mean score of 37. I therefore turn to the "Next beer" of line 521 and re-connect with the trajectory of Karl's beer.

7.2 Accounting for the selected actant: The assessment and agreement of scores for Karl's beer

I have now introduced the restrictions and goal-direction of talk in the examples and excerpts above in order to facilitate following Karl's beer, the last in Graeme and Swazi's "flight" of beers. Its trajectory here is again performed through the transcribed negotiations and actions of talk.

Between the previous segment of the transcript of judging Karl's beer (Transcript 15, p.169) where Swazi had completed his work and was awaiting Graeme to finish his form through adding his scores, and the segment below, there was a brief interlude. During this Swazi turned to engage me in conversation from where I was standing behind and to the right of him, then turned to the adjacent judging pair to clarify the rules for the subsequent ranking of their entries in the "mini best of show". The transcript begins after that interlude as Graeme completes his form and adding of his scores:

```
Graeme      |34↑

Swazi       28 err[rm

Graeme            [I actually quite like that beer

Swazi       I did, I quite, I did quite li:ke it but I thought it was
            a little bit la↑cking and then [in the::

Graeme                                     [it needs a bit more [ester and

Swazi                                                           [yes
            and also I found the malt a little bit wrong, er, I: I expected
            more of a bready| malt and it came through [as more of     ] of err
                            |•
Graeme                                                 [>a bit grainy<]

Swazi       a bit grainy exa[ctly=]

Graeme                      [yeah ] [yup

Swazi                               [yes, you know errr i it it was ni:↑ce
            and I I I did actually really like that interesting ester it
```

was unU:sual=

Graeme =yeah, its very, it was [very unusual

Swazi [very unusual

Swazi but it was lacking in: the there we the the↑ the: spi:cy phenol was kind of [missing and erm no]

Graeme °[yeah your right° it was because it wasnt] yeah it was completely missing, it wasn't that it was low it was just not there at all=

Swazi =exactly, yah, erm so for that I just had, you know, it was to:o far removed from the style for me to get it any=

Graeme =yeah=

Swazi =any better of a score, despite finding quite interesting ummm it just, you know, if if I tasted a good↓ quality er Golden Strong it would kick the butt on that one=

Graeme =yeah

Swazi you know. So anyway it doesn't contend so it doesn't matter and were [within seven] so we [ge] we can give it=

Graeme [thirty one] [so]

Graeme =thirty [one

Swazi [thirty (0.6) thirty one

(0.8)

Graeme yeah

(2.7)

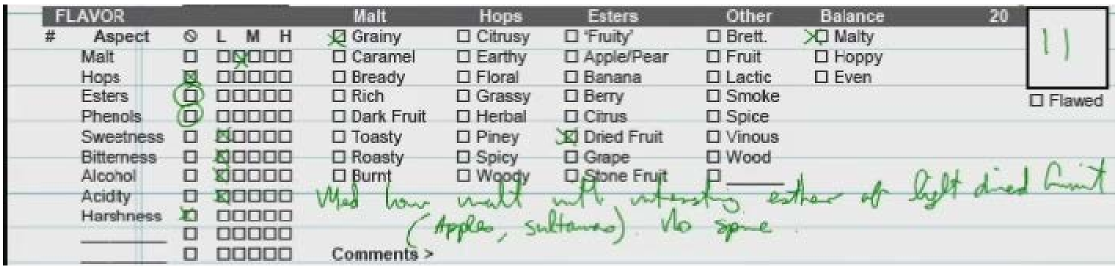
|

Swazi |Ok erm, right. Out of our beers lets have a look on there, there's the best the best three

Transcript 19 (Audio 1): Agreeing the scoring for Karl's beer

Graeme opens this sequence in line 1042 with a number - his total score. Swazi hears this as an appropriate reply to his “you ready” enquiry previously encountered in line 912 of Transcript 15 above, and responds in the same way giving a number. The two experiences of the beer, the discussions around experiences and the searches for terms have been translated into the same numeric register, facilitating and simplifying the co-ordination and collapsing into a single agreed score. Typically – as evidenced by the prior interactions – this is an average. These negotiations make up the largest part of the recorded and transcribed conversations so I quote these at length to both reflect and adequately explore this aspect of talk-in-interaction.

The discussion turns on the “fit” of the sensations of the beer to the expectations for the style. Here Karl’s beer has a malt profile but one that is “bready” rather than “grainy”. This has been accounted for through ticks in the columns and boxes of referential terms the score sheet (Figure 63):



FLAVOR # Aspect	⦸	L M H	Malt	Hops	Esters	Other	Balance	20
Malt	☐	☐☐☐☐☐	☐ Grainy	☐ Citrusy	☐ 'Fruity'	☐ Brett.	☐ Malty	11
Hops	☐	☐☐☐☐☐	☐ Caramel	☐ Earthy	☐ Apple/Pear	☐ Fruit	☐ Hoppy	
Esters	☐	☐☐☐☐☐	☐ Bready	☐ Floral	☐ Banana	☐ Lactic	☐ Even	
Phenols	☐	☐☐☐☐☐	☐ Rich	☐ Grassy	☐ Berry	☐ Smoke		☐ Flawed
Sweetness	☐	☐☐☐☐☐	☐ Dark Fruit	☐ Herbal	☐ Citrus	☐ Spice		
Bitterness	☐	☐☐☐☐☐	☐ Toasty	☐ Piney	☐ Dried Fruit	☐ Vinous		
Alcohol	☐	☐☐☐☐☐	☐ Roasty	☐ Spicy	☐ Grape	☐ Wood		
Acidity	☐	☐☐☐☐☐	☐ Burnt	☐ Woody	☐ Stone Fruit	☐ ______		
Harshness	☐	☐☐☐☐☐						
______	☐	☐☐☐☐☐						
______	☐	☐☐☐☐☐	Comments >					

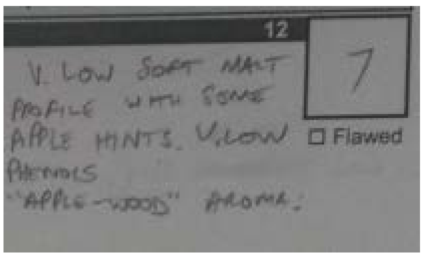
Med low malt with intensity esther of light dried fruit (Apples, sultanas) No spice

Figure 63: Flavour assessment for Karl's beer on Swazi's score sheet

With “grainy” checked and substantiated with the comment “Med low malt”. I suggest that the previous beer with its “lovely bready malt” has situationally redefined what is looked for as “proper” for the category and is non-continuous and non-coherent with the “official” BJCP category definition for a Belgian Golden Strong Ale that it should display:

> **Flavor:** Marriage of fruity, spicy and alcohol flavors supported by a soft malt character. Esters are reminiscent of pears, oranges or apples. Low to moderate phenols are peppery in character. A low to moderate spicy hop character is often present. Alcohols are soft, spicy, often a bit sweet and are low-to-moderate in intensity. Bitterness is typically medium to high from a combination of hop bitterness and yeast-produced phenolics. Substantial carbonation and bitterness leads to a dry finish with a low to moderately bitter aftertaste. No diacetyl.

The previous assessments of the “fantastic” beer contrast sharply with the assessments of properties lacking in Karl’s beer (lines 1071-1076) where a cautious assessment by Swazi that “it was lacking in: the there we the the↑ the: spi:cy phenol was kind of



12

V. LOW SOFT MALT PROFILE WITH SOME APPLE HINTS. V. LOW PHENOLS "APPLE-WOOD" AROMA.

7

☐ Flawed

Figure 64: Graeme's comments on the aroma of Karl's beer

[missing" is amplified by Graeme who suggests that yeah it was "completely missing, it wasn't that it was low it was just not there at all=". The spicy phenol character becomes the defining property through absence (it even appears to be erased on Graeme's sheet aftet eh words "V. Low Pnehols" - Figure 64). This absence comes to define that it was "to:o far removed from the style for me to get it any= … =any better of a score". The fit to the style, albeit a style where some of the properties seem to be situationally defined by the previous beer rather than an archetype, becomes the core assessment. This is further emphasised by Swazi's assertion that "if I tasted a good↓ quality er Golden Strong it would kick the butt on that one=". The beer has merits, but its fit (once again!) is a poor match.

A new binary category is created in line 1089: "a contender". This is a situated *filter* standard of beers that hold the potential to "go through" to the mini-best of-show and from there, if they achieve the localised *Olympic* standard of coming first in this class, then that *Olympic* standard is transformed to a *filter* for entry into the final best-of-show selection. In the best-of-show judging a final *Olympic* standard is used to define the overall winner of the competition along with 2nd and 3rd places. The previous beer, the super-gusher, was accounted for as "the first one of all that had the proper fermentation character" and is implicitly in this category, whilst Karl's is explicitly categorised failing to pass the *filter* for entry into this situationally created group. Now classified as "not a contender", Swazi accounts for being within the given requirements for their two scores as "we're [within seven]". [44]

This requirement to be within seven points of each other accounted for, an average score is agreed as an arithmetic mean of their two scores. There is a notable pause as this is

[44] If scores show greater variation there is a requirement for further discussion and consideration and an option for arbitration, however this arbitration process did not occur within my transcribed data.

negotiated in line 1096, Swazi pausing between saying “thirty (0.6) thirty one”. The pause is open to several possible interpretations: either a decision and opening the floor to Graeme to choose rounding down, the result of interruption and overlap echoing thirty too quickly, or from undertaking calculation. Graeme’s next turn after a pause accepts and confirms the final score of thirty one bringing that process to a close showing the first interpretation as the one he orients to as a participant in the interaction. The score is then written on the flight summary sheet and attention turns to organising the next stage of assessment: the comparison across the two judging pairs in the “mini best-of-show”.

However, before I move on to trace the beer’s trajectory after failing to pass through this filter I wish to dwell here a little longer. I previously suggested that the individual tasting experience was the centre that could not hold. In contrast I suggest that it is in these preceding sections that there is a more accountable nexus for the matters of concern for this thesis. It is in the work to relate, account for and refine a set of sensory evaluations and their translation into a written account that themes from the online exam around standardising vocabularies come together with the explorations of the material gatherings and orderings of practice: the alignment of bodies, numbers, tick-boxes, words and category-based standards. And it is through the way they materialise, orient, record and are extended that the attachments of Hennion (2007; 2004), and the reciprocities between taste descriptor and taste experience described by Liberman (2013) are being *done*, and *displayed*, in tasting practices. It is through these learning is enacted: the learning of “descriptors that provide more specificity to a precise flavor than do the descriptors that are presently in a taster’s quiver” (Liberman, 2013, p. 266).

7.3 Tracing trajectories: Where do these objects go?

I have now “followed the actors”, primarily following the trajectory of Karl’s multiple digital-material hybrid beer from its inception, through transportation, (mis)categorisation and judging at a prior competition to its re-classification and entry into the practices examined here. With the magnification progressively turned up I have presented detailed evidence of how categorisations are materialised and contingently established, and the work required for ensuring the traceability and chaining of identifying inscriptions both as material labels, in conversational turns and as co-ordinated work. This work inscribes them anew through translating the sensory engagement with the material object into ticks and comments on a judging sheet.

Figure 66: Co-ordinating digital and material relations, gathering the contenders

7.3.1 Tracing scores, rankings and ID numbers

Throughout judging the completed pairs of judging sheets, accompanied by a cover sheet, were taken by stewards to the judge director Ali (Figure 65). He then keyed the scores for each beer based on its table and then judging ID number. These are displayed on screen in a table with judging ID number, category and then a numeric entry field for the score (Figure 66). Once the information was transferred from paper to software the three sheets were then placed in a box. There was no ordering – scoresheets were simply piled face-down in the order they were handed over, there was no way to then retrieve or amend them, they were

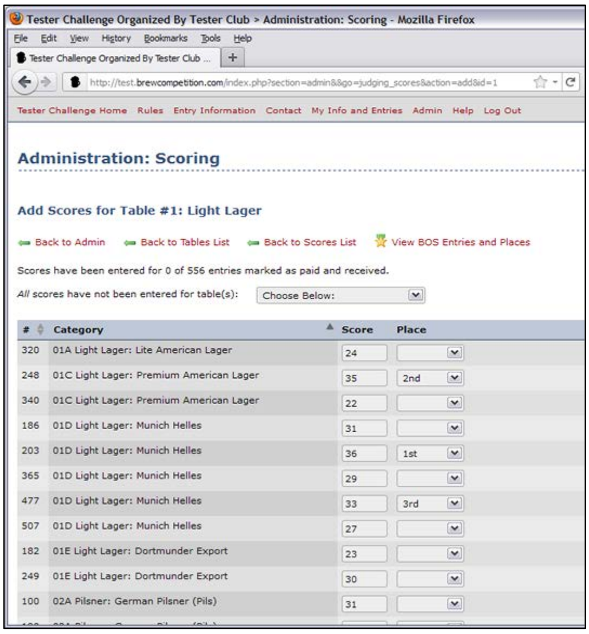


Figure 65: Entering score and ranking in BCOEM software

completed and no further written record would be made of any beers. However, the trajectories of these documents were only on temporary hold. After the competition they would be ordered, grouped and posted to competitors as feedback, a path that would itself involve orderings, enrolments, standards and breakdowns but remains as a network of manifest absences as I cut the network of tracing here.

As well as this co-ordination and transposition of the numeric scores and rankings there are accompanying physical and material ordering practices. At the feet of the judging director was a crate in which were placed the unopened partner bottles of the beers that had reached the *Olympic* standard and been ranked top in their flight. These were now physically separated from the other beers, reserved for the final ranking process: the "Best of Show" comparison of beers from different flights.

7.3.2 Cutting the network, choosing the paths

I could at this stage follow other actors, seeking to chart the progress of category winning entries and exploring how a network of practices acts to choose the winners. However as Strathern (1996) explicates, an analyst must always "cut the network" somewhere and exclude as well as include data. Star (1991) is one of those who criticises early actor-network approaches for privileging accounts of powerful "executive" actants and excluding or misattributing agency and network assemblage to "winners" such as Pasteur. This would be tempting here – the trajectory of a bottle classed as "special" and debates over what constitutes "world class examples" of a style are fascinating insights into categorisation practices and normativities *(seen in Audio 1, lines 192-268 and Audio 4, lines 416-510).* The material orderings of the ranking practices and discussions over filter and Olympic standards in the Mini-Best-of-Show and Best-of-Show discussions are also fascinating encounters. However, to maintain a narrative thread and keep within the standards and word lengths and to explore my research questions, as I am obliged, these remain othered for this performance. Therefore I turn instead to examine the trajectories of Karl's beer – both its score and the bottles - as they fail to pass through the "contender" filter. This tracing illuminate other practices usually othered if one applies only *Olympic* standards to focus exclusively on the winners.

7.3.3 Retracing trajectories: Reconstructing the path of Karl's beer

I have now considered the ongoing co-ordination work between digital and material beers, and the importance of maintaining traceable inscriptions as a standardised system of notation for this choreography. I traced Karl's beer from its digital inception through material manifestations, maturation and its matriculation[45] as a numbered entry in this competition. I have followed the work of ensuring that this enrolment and registration are maintained. Having passed through the process of judging and been classified as "not a contender" for the mini-BoS, the opened bottle was returned to the table next to its unopened partner.

Judging then had a short break for lunch – judges were hungry with this as a repeated topic of conversation. Hot dogs were served from the kettle BBQ, slathered in mustard – breaking most of the conventions of "appropriate" plain food but devoured by all.

In the afternoon the judging room was transformed with a sound-proof dividing wall pulled across separating judging from an impromptu bar area with kegs and taps and a table crammed with bottles (Figure 67). Non-judging entrants and other spectators, partners and friends stood around here and spilled outside on a pleasant, sunny day on the cusp of

Figure 67: View of the social room and soundproof divider

[45] To claim this as "matriculation" is to reclaim the Latin origins of that word to mean "registered" or "enrolled", and for the aesthetic purposes of alliterative writing.

late summer and early autumn. The table was kept supplied with non-progressing beers being brought through from the judging tables as flights concluded:

> *Robin calls out that the IPAs are finished and we should take some through to the bar in the other room. He sweeps up an armful of beers clutched in hands and wedged under his arms. Those he grabs span the end of the IPA section and some of the Belgian strong ales – Karl's beer among them.*
>
> *I follow him through the partition opening and to 'the bar' – a table in the corner crowded with empty and half-filled bottles.*
>
> *The atmosphere in the other room was more like a free-wheeling lucky dip – sniff a bottle or hold it up to look at colour, pour it out, try and then chuck or throw away. There were some discussions as people tried to work out styles from sensation rather than expectation or guide.*

Categories break down as beers cross the threshold from the organised, category-focussed, judging room to the public bar (Figure 68). Here people are just enjoying drinks, gustatory "MmmMMMs" and "aaahhhs" abound along with "Eughs" and "yucks". There is revelry in the surprising and the unexpected, anything disliked is poured away whilst playing and debating "guess the style" is a frequent activity. This is perhaps the epitome of the category-less drinking and evaluation on minimal criteria that is positioned as the "personal whim" that categories exist to control and create a standard for entrant and judge. However,

Figure 68: (Dis)organisation of the bar - taps held on by cramp and non-progressing bottles jumbled on the table

this situation is equally as constructed by, and created as a by-product of, the very system that constitutes this as its other. With beers stripped of not only identifying marks but also classifications and the expectations they bring there is a double-blind[46].

Robin called out the arrival of the new beers he carried as “IPAs”[47] however the bottles were more heterogeneous than just that flight and included Karl’s beer. It was grabbed by one of the attending entrants awaiting the prize-giving.

> *A large bald guy with a strong northern accent comes over to grab a few beers including Karl’s. They talk about loving IPAs.*
>
> *He opens the beer which pops loudly sounding more like a champagne bottle being corked than a beer opening it is greeted by a few with the rousing pub cheer usually reserved for a broken glass of “WA-HEY”. It gushes a little, foaming over the top and onto the floor leaving a small puddle. They sniff then sip.*
>
> *Did they comment on the beers non-IPA-ness? I can’t recall now and made no note. This feels like a major missed opportunity – this was tasting without the expectations or comparisons of the controlled judging table.*

The sound of a beer opening explosively and issuing forth is less of an obstacle here, there are none of the materials of judging, recording and writing to endanger, just a floor. While I adopted a role of observing the methods and tasting, seeking to record what I could but in the messiness of this environment, the reaction became as inscrutable as those of judging. My fieldnotes reflections capture this omission, however, as I had not secured participation

[46] Were I undertaking fieldwork again I would have sought to spend more time here as I did in the ordered practices the other side of the dividing screen. However, through following Karl’s beer into this space I at least encountered this different space: following the actors takes the ethnographer on unexpected paths.

[47] IPAs, India Pale Ales are highly hopped, strong, bitter beers. While Karl’s entry was similarly coloured and strong it had lower hopping and a distinctive yeast aroma that is one of the signatures of “Belgian style” beers.

consent or permissions from audience members in advance [48] that consideration curbed any intervention.

Figure 69: Karl's beer poured away as the competition is cleaned up

While this alternative, category-breaking, un-scored engagement was peripherally encountered it was, however, not the beer's final destination. Its ultimate demise would not come until after prize giving – another set of practices which are left here as manifest absences as they were not ones in which Karl's beer would be entangled. Having foamed so much on pouring some was left in the bottle – which was either not good enough or not IPA enough to be finished.

Figure 70: Cleaning the bottle for re-use back at home

Once judging was finished these remaining dregs were poured out (Figure 69) along with all the other bottles, mixing with other leftovers in the plastic buckets used earlier for transportation and putting beers on ice. These were then carried to the kitchen and poured down the drain. The bottles were bagged up, recycling bins filled to overflowing with the mass of empty glassware taken to a car to be transported to a recycling centre. Some grabbed up boxes and crates of unopened beers to take home. I actively sought out the flip-top bottles

[48] these were followed up and given later

of Karl's beer to reclaim them, take them home, then clean them for re-use in the future (Figure 70).

7.3.4 Who killed Karl's beer?

The answer to "Who killed Karl's beer" becomes elusive, the "who" presupposing an anthropocentric agency and "Karl's beer" suggesting singularity. The questions stemming from that formulation become like those in a game of Cluedo: "was it the judges, in the judging with their scoresheets?"; "the audience, with their glasses in the bar?"; "the steward, with the bucket, in the kitchen?".

Any attempt to define such a death are highly complex and multiply layered as explored by Grint and Woolgar (1992), and always entangled with technologies and standards. Having failed to pass through the filter and progress it was de-categorised but enjoyed again. There were multiple attachments and multiple experiences. It lives on as a number in a database and in images and a thick description here. Its digital-self persists as a recipe in BrewPal and an XML file, and within those two lie the possibility of rebirth and recreation. Perhaps no-one *killed* Karl's beer – but several people became *attached* to it.

7.4 Falling apart and drawing together

If the last section seemed to come to an abrupt halt that is no mere accident, it reflects and seeks to evoke the abrupt end of the competition. Having run over by several hours from the published schedule and with partners and several small children in attendance (glancing not at watches but smartphone screens) the departures and dissolution was swift. The only categorisation work to be done was disposal method: liquids down the drain, glass to recycling, everything else to the bins. I have already followed the pouring away of beers, recycling of bottles and dispersal of people. Once it was all over the last judges standing adjourned to a

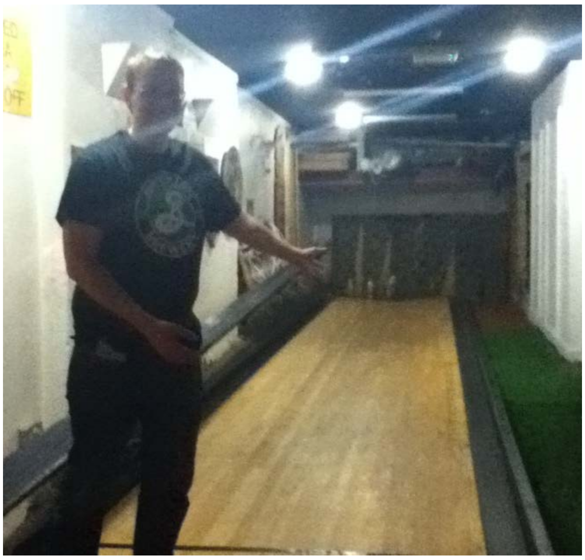


Figure 71: The post-event skittles game

nearby pub taking unused competition glasses for their stocks then playing a game of skittles (Figure 71).

7.4.1 Drawing together

In this chapter I have continued to explore in detail and at various levels of magnification the work, achievement and interactions of standards, sensing, categorisation, description, ranking and ordering in the practices of beer judging. I considered how the information infrastructure of the style guides and their material manifestations are enacted and drawn on as a resource in the search for precise sensory description. I showed the way attachments are formed between heterogeneous assemblages of bodies, objects and standards; how these breach conventions of isolation and silence, and creatively construct sensory engagements and learning. I also showed how this activity is often left unaccounted for in the written records and feedback. Finally, I explored the situational construction of categories and filter standards and critically considered the challenges of cutting the network and choosing which traces to follow. Concluding the search for “who killed Karl’s beer” recast that not as a killing but the formation of multiple attachments and traces enabling recreation.

I now turn to consider how these practices are further ordered and standardised in the tasting exam. I have given detailed consideration to the silences and voices in judging and in particular the negotiation and co-construction of descriptive language. These explorations will now serve to highlight both continuities and disjunctures when ostensibly “the same practices” are performed in the same physical location, with many of the same people, but construct something different: “an exam”.

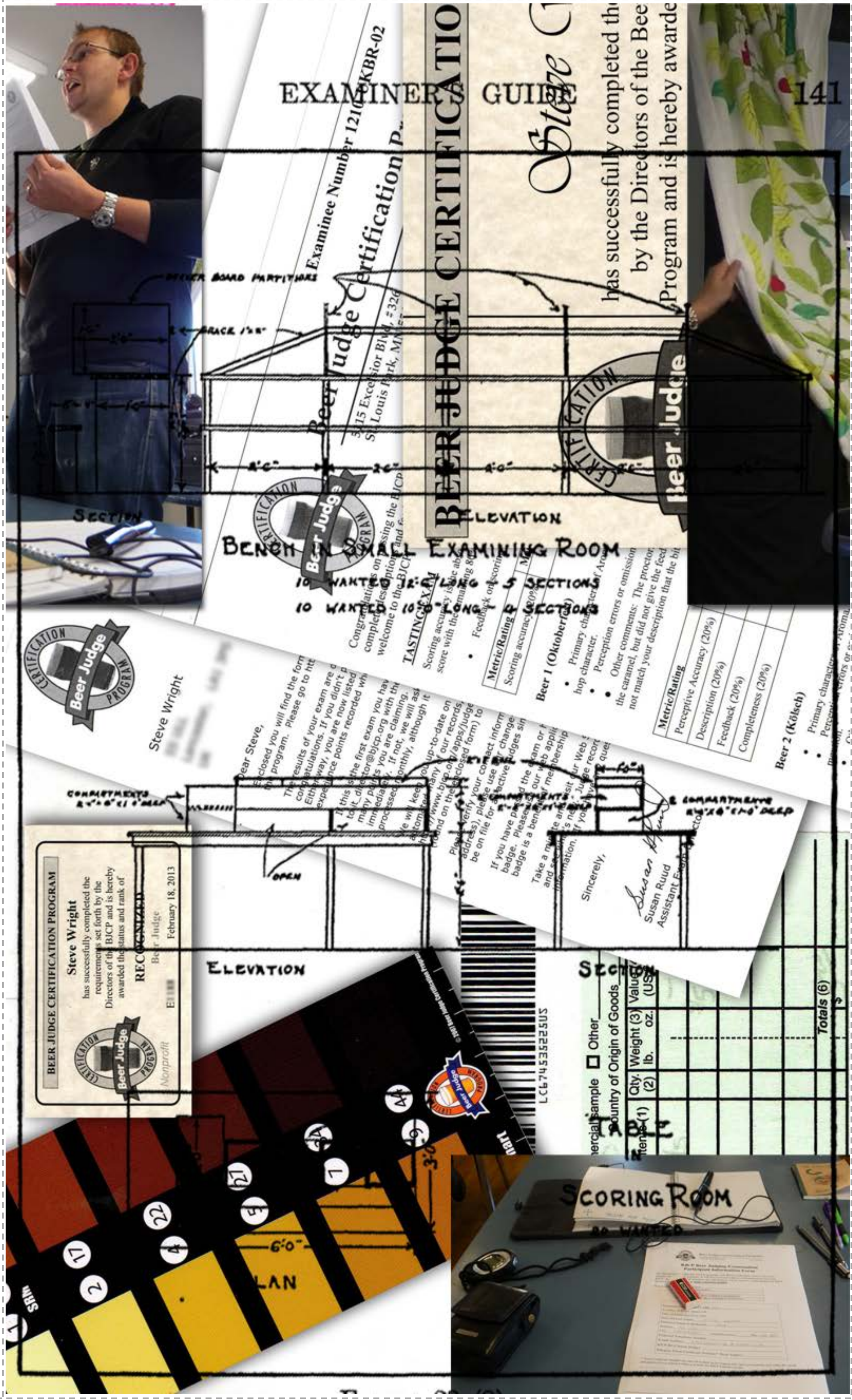


Figure 72: Montage of materia al elements from the tasting exam

8 Crafting Singularities in the Tasting Exam

In this chapter I engage with the final stages of my fieldwork: the tasting exams, and their associated materials and material orderings, which were assembled visually and juxtaposed in the opening montage (Figure 72). The exam I participated in occurred three weeks after the competition judging explored in the previous three chapters and was held in the same location. I continue the detailed examination of the sequential and categorial work done to assemble a very particular alignment of devices and materials in this testing situation, exploring how these create specific conditions of tasting: an exam.

Previously, in my consideration of the online exam, I gave only brief acknowledgement of the environment in which I took the test. With no empirical evidence of the settings in which others took their tests I left that aside, focussing instead on the physical layout of the screen, the format of the questions and the language used - these were the material relations assembled and empirically available for consideration and in that exam. Next, in examining the practices of competition judging, I brought a greater focus to the alignment of bodies and tasted objects which I continue to explore here. In particular, as I begin, I give consideration to the physical environment and the continuities and discontinuities with previous practices and alignments. I consider these orderings of the examination room as material-semiotic relationships which help to consider how assessment, knowledge, learning and tasting are assembled and how these construct this as the context of “a tasting exam”. I then explore the alignments of the tasted objects and the sequential and categorical work surrounding them, before turning attention to the entangling of bodies and objects in the practices of examined tasting. Drawing this together I shift away from the temporal ordering to look at the work that is required to create singularity and enforce “perspectivalism” (Law, 2004) through an exploration of the assessment of heterogeneous accounts generated from the configurations of the exam.

8.1 Aligning bodies

We move as a group from the picnic table though the community centre and in to the same set of rooms as used for the competition three weeks earlier.

Several expected participants have dropped out – two due to having bad colds hampering their ability to smell or taste and another now too busy with his increasingly successful and expanding commercial brewery.

Robin drags tables around causing incredible grating, thud-a-thud-a-thud noise until the person in the adjacent room comes through to complain and ask us to be quieter as they are teaching a group behind the "sound proof" divider.

Figure 73 shows the initial configuration of the tables in the room. The continuities with the alignments of judging bodies in the competition setting are particularly clear (see Figure 41, p.127).

Figure 73: Initial configuration of tables in the examination room

However this ordering was almost immediately changed and reconfigured.

The room is re-arranged symmetrically. Extra tables are brought in whilst others are turned, dragged and moved to line them up with Ali directing us to leave space between judges so we can't see each other's papers. This is achieved by placing 6 long narrow rectangular banquet-style tables in a row with gaps between each long and a single seat positioned at each end facing each other but now at a significant distance, separating and aligning the judges.

Figure 74 shows this reconfiguration in progress, tables are turned, spaced and chairs redistributed.

Figure 74: Reconfiguration of judging tables in progress

The collective work continues to achieve the exam director's requirement to leave space between judges so we can't see each other's papers.

Figure 75: Final configuration of the judging room

In the final configuration (Figure 75) traces of the earlier alignments remain – there are still two rows of judges facing each other but now separated by the length rather than the width of the banquet tables and with space between each table. Physical space is added, interrupting the potential for reading each other's papers (or passing notes or whispering). However by merely increasing distances but preserving the face-to-face orientation non-verbal communication remains possible – as I will show.

8.1.1 Tracing connections: Alignments enacted at other sites

The latter configuration was subsequently re-used in a second tasting exam that occurred six months after the one explored in detail here (Figure 76).

Figure 76 Configuration of the tables at the second tasting exam

This also enables tracing these configurations to other sites through two images of BJCP tasting exams being taken in the USA (Figure 77)[49].

Figure 77: Two BJCP Tasting exams in the USA

These images show further different configurations – the one on the left is similar to those in the two tasting exams I attended, whilst the one on the right resembles a more typical

[49] These images were posted to the BJCP facebook page and are reproduced here with the permission of the photographers. They were posted on a thread about light levels for assessing colour and clarity in the exam as distinct from the focus take here on the way rooms are, or should be, configured.

alignment of standardised testing with examinees spaced apart and facing the same way in rows. I shall turn to consider these images shortly, but first I return to the fieldwork setting of this chapter.

8.1.2 Further ordering through instructions

After the tables were reconfigured and we had all sat down Ali (who was acting as exam, assistant, director and proctor: preparing, distributing and judging the 6 examination beers) spoke so as to direct activity in the exam. He talked us through the papers and counted us off – allocating a number to each examinee to be written on each exam sheet – and also emphasising the importance of clearly identifying which of the six beers was being judged in the appropriate place on the forms. As with the judging IDs in the competition, the inscribing of numbers act here to form a similar reversible chain of association for the assemblage of people, papers and the beers to be assessed.

Whilst other aspects of the exam are subject to detailed regulation and standardisation – a seven-page document details the requirements from passing the filter standard of the online exam I explored in chapter 4, through to beer categories for the six exam beers, methods for adulteration and even paper sizes for printing. There are explicit prohibitions against the use of the smartphones I presented as so prevalent when exploring the devices and conditions of judging practices in chapter 6, or any other electronic devices beyond basic calculators. However, *no* details of the room setup are included. Let me briefly explore this manifest absence and how material relations assemble approaches to learning and assessment before I return to the interactions and practices of the tasting exam.

8.1.3 "Reading" these configurations as a material-semiotic assemblage: Entangling divisions of learning and assessment

Why focus on this apparently trivial detail of the configuration of mere tables and chairs? Considering the material arrangements as a set of signs that can be read and considered is to draw on ideas from semiotics. In semiotics "words do not point directly to a referent, but form part of a network of words. They acquire their meaning relationally…"(Mol, 2010, p. 257). This is extended so that "…in ANT this semiotic understanding of relatedness has been shifted on from language to the rest of reality." (Mol, 2010, p. 257). This idea suggests the configuration and ordering of bodies, beers and tables in these images together with the sequential orderings of their re-configurations, can be productively read and associations traced through to their relational attachments to meanings.

Here I have presented evidence of the contingent and creative aspects of practice and their rapid establishment as 'a competent performance' to be reproduced: firstly in the reproduction of the alignments and configuration of the competition, secondly in the re-configured alignments in the tasting exam and additionally in their re-use in the second tasting exam. In each of these there also remain traces of earlier configurations.

The material ordering ensures judging bodies are isolated and tested individually suggesting there is a significant, though largely unexplored, material ordering to notions of formality vs informality in assessment and to the orderings that perform and materialise Fox's (1997) dichotomy of traditional cognitive theory (TCT) vs situated learning theory (SLT).

The manifest absence of literature exploring such material orderings in examinations seems striking compared to the iconic status of these images in popular use. Whilst there is a significant body of work on the impacts of the school environment[50], exams are only used as a *resource* for measuring impact not as a *topic* in their own right. Explorations of the socio-material in education such as Stephen Fox (2009), Sørensen (2010) and McGregor (2004) do not engage with configuring standardised tests or the exam hall. This space and its configurations are also absent from journal special issues that explore "space, place and materialities of education" (Burke, Cunningham, & Grosvenor, 2010)

[50] a comprehensive recent review by Higgins, Hall, Wall, Woolner, and McCaughey (2005) draws much of this together

or "materialities, textures and pedagogies" (Fenwick & Landri, 2012). Considerations of the development of school furniture by Moreno Martinez (2005) and Depaepe, Simon, and Verstraete (2014) bring a relevant historical exploration of the development of the furniture and its establishment as an icon of *schooling* but these do not extend to their arrangement for *testing*.[51] I had to search back to the early days of standardisation and introduction of multiple-choice testing where Yoakum and Yerkes (1920) give a detailed consideration of the design, assembly and ordering of the furniture for testing and configuring rooms for examinations which largely persist in images of testing today.

Where there are engagements with the configuration of the examination room these take a Foucauldian focus on discipline and enacting a panopticon of surveillance (Gallagher, 2010), with Buzzelli and Johnston (2002) asking:

> *What is the arrangement of desks in an exam hall - be it for the SAT, GRE, TOEFL, or any other kind of standardized test - but the spatial organization for purposes of control that one finds in prisons? For a person sitting in an examination room taking an SAT, Foucault's suggestive comparison between prisons and schools makes perfect sense. (p65)*

Whilst control is a key aspect I suggest that these configurations are there for more than just the purposes of control as they also enact and materialise models of learning and assessment.

It is the contrast between this relative absence of engagements in academic research and educational theory against the regularity with which the image of the exam hall and configuration of desks and bodies is used to signify "examinations" or "testing" that prompted these investigations. A web image search for terms such as "standardised tests" or "exams" retrieves multiple instances of the use of an image of the exam room in news stories, standing in as a signifier of "doing exams" as per the image below (Figure 78)[52].

Such images of atomised student bodies isolated behind desks unable to communicate stand in for what exams are – the individual is materially separated from their peers. Individual knowledge is to be tested through this assemblage

Figure 78 Signifying "standardised tests"

[51] Other engagements may exist, however database searches and seeking to extend those though personal communication with experts in this particular sub-field such as Martin Lawn drew a blank.

[52] Image taken from http://en.wikipedia.org/wiki/Standardized_test (accessed 15th Jan 2014)

which materialises and performs not *only* discipline but also traditional cognitive theory through spatial arrangements.

Returning to the context of these standardised tests I suggest the place of improvisation in the assemblages I have illustrated is important: over-specification would *severely* restrict where and when these exams could be taken. Thus non-specification recognises and enables this. However there is assumed common-sense to configure a room as "an exam room" which shows the power of TCT in ordering such arrangements and their material performance. Configuring an exam room is thus one of the moments where educational theory and understandings of appropriate and correct performance and assessment are made material, but their workings are naturalised and black-boxed.

And it is to how that sort of black-boxing is done in practice that I now turn.

8.2 Aligning objects

> Every great magic trick consists of three parts or acts. The first part is called "The Pledge". The magician shows you something ordinary: a deck of cards, a bird or a man. He shows you this object. Perhaps he asks you to inspect it to see if it is indeed real, unaltered, normal. But of course... it probably isn't. The second act is called "The Turn". The magician takes the ordinary something and makes it do something extraordinary. Now you're looking for the secret... but you won't find it, because of course you're not really looking. You don't really want to know. You want to be fooled. But you wouldn't clap yet. Because making something disappear isn't enough; you have to bring it back. That's why every magic trick has a third act, the hardest part, the part we call "The Prestige".
>
> - Christopher Priest in *The Prestige* (Nolan, 2006)

Having explored the material alignment of tables, chairs and bodies I now turn to the practices situated within those material orderings in the examination. I consider in particular the methods of concealment and revelation therein. Six beers are to be introduced to the examinees – the pledge – each examinee must inspect and assess them. With most there is a "turn" such that they breach the style guide standards in some way, however it is only after the examination ends that there is the revelation – the prestige – when the trickery of adulteration is revealed. This is performative with the contact senses opening up and exposing how multiplicity is done in practice, and singularity is crafted in its accounting.

In the corner of the room Ali and Mike have setup their 'proctoring table' with score sheets, ring-bound paper copies of the style guide and the paraphernalia of a judging table: crackers, water, glasses.

Figure 79 shows a view of the proctoring table. The role of the proctor is an essential one for this assemblage and one I shall continue to explicate through its relationship to and juxtaposition with the practices of examinees.

The exam was time-limited with six beers to be judged in 90 minutes, with the clock started once the first sample was ready. A requirement was that the beers would be anonymous, the recommendations specifying:

> The six exam beers must be unique styles; … When using classic-style commercial examples, insure*[sic]* that the brands chosen actually do reasonably represent the style named on the label. Two of the beers should have distinctly noticeable faults or characteristics. [BJCP Exam Procedures, p3-4]

Figure 79: View of the proctors' table

These are the guidelines, the plans. My interest, however, is in the situated actions that seek to achieve these, so I return now to that picnic table that preceded entering the exam room:

Ali arrives carrying a closed box of beers from Beers of Europe. I ask him how these have been prepared given the guidance for a double-blind procedure of an exam organiser preparing the beer not a proctor. However Ali has prepared the beers himself describing this as "not ideal". He had confirmed this with the BJCP who condoned it due to the remoteness and lack of qualified judges

Robin arrives and immediately pretends to open the box up and look in greeted by everyone there with admonishments of 'woah don't look in there'.

This proto-scientific practice derived from experimental method mandates double-blind samples, and a common mixture used for all individual samples which should be "blended and decanted from a pitcher" [Exam Procedures, BJCP (2012, p. 4)].

Figure 80a: Ali moves the box of beer bottles behind the curtain

Figure 80b: Ali holds the curtain to obscure pouring the samples

Figure 80c: Ali emerges from hiding with a pitcher from which to pour samples

Assembling the singularity of "the same beer" requires work – and the construction of this as an exam requires that work be hidden. The situated actions to achieve this extend the anonymity earlier afforded by the cardboard box and now enrol a curtain, a pitcher, bottles and an opener and, for one sample, a syringe and bottle of $C_3H_6O_3$ (see Figure 80a-c). However sound was only slightly muffled – the first beer opened with the pop and click of a swing top.

Ali emerges from the curtain behind me holding a full jug of dark amber foamy beer. He walks to my table at the head of the room and announces the category while pouring a sample into my glass

"First beer, 3b Marzen slash Oktoberfest"

He places the glass in front of me then moves from table to table filling other glasses. I immediately start writing on my scoresheet

For now I will focus not on the writing but consider these ordering practices of preparing and distributing samples. These settled into a routine: glasses are set out on the table, the sample prepared behind the curtain, taken around the room and poured out for each participant along with samples for the two proctors. Assessment proceeded in silence, the proctors having the occasional whispered short discussions. As the 15 minute deadline for each sample approaches Ali returns to duck behind the curtain and prepare the next sample. The other proctor, Mike, collects in glasses and these are taken to the kitchen, rinsed and brought back in a washing up bowl.

Each beer is announced with a single simple statement (time stamps from video recording):

```
00:09:42 first beer, 3b Marzen slash Oktoberfest
00:29:30 beer number two 6c Ku:rlsch
00:46.01 beer three eight b best bitter
01:04:40 right beer four (pause) 18B Belgian Dubbel
01:23:28 right beer five 13 F Russian imperial stout
01:35:13 sixth and final beer 14b American IPA
```

After the announcement the beer is poured and samples distributed. Orienting to breaches and breakdowns draws attention to the interruption to this routine with beer three:

Ali starts pouring a sample for me then puts the jug down abruptly and leaves the room mumbling something under his breath (it sounds like "impossible") he yanks open the door, leaves rapidly and (out of my eyesight or that of other candidates, but recorded by the video camera) half-runs to the kitchen.

However, what occurred here would only be revealed after the exam finished, it seemed at the time only that there was an issue with the sample or too few glasses or something else mundane. This was an unexpected "turn", we would have to wait until the exam ended for the "prestige", I jump ahead now to highlight here what would be almost lost in the mundane organisation of payment for the exam costs:

> *Money is held out in hands and proffered to Ali*
>
> *Rich jokes [of beer 3] he "thought it was an improvement on London pride actually" Ali replies to say "I nearly dropped the glass cos I'd spilled lactic acid on my hands, and like the oils on my hands were dissolving"*

And so the disruption is revealed and captured by the audio recording. Ali had rushed out to rinse his hand as he had spilled lactic acid on it. Why? And what does lactic acid do to a bottle of London Pride? I now turn to explore this entangling of bodies and tasted objects.

8.3 Entangling bodies and objects

I have previously introduced you to the ordering of the room and rhythm and repetition of the practices for anonymising, creating and distributing samples to be tasted and assessed. I now move to explore the relationships and engagements between examinees and these examination objects and the production of written accounts describing and assessing the attachment formed with each beer. After considering the production of these accounts I will move on to consider how the evaluative judgements they contain are subsequently assessed and graded. In particular I will focus on the third and fourth beer samples - the adulterated beer and out-of-style beers respectively – and how these expose, interfere in and construct the relationships that are then accounted for and assessed.

8.3.1 Breaches and disruptions: Visceral reactions and a community of disgust

I resume from immediately after the earlier disruption when Ali abruptly abandoned the distribution of samples and left the room to wash his hands.

Ali returns - his hands looking wet - and finishes pouring the sample for me.

Ali pours me a beer

I hold the glass up examining it for clarity and colour I pause seeming to weigh up what I plan to write then start to complete the appearance section. I then lift the glass again to inspect colour and clarity (Figure 81).

Figure 81: Assessing colour and clarity

I make a quick note on the LiveScribe pad then take a deep sniff (Figure 82), before I cup the beer in my hand repeating the sniff –swirl - sniff - write pattern.

Figure 82: Sniffing the sample

I sniff the beer repeatedly putting my nose over it and inhaling - each time seems to bring more confusion rather than clarity. I continue to fill in the aroma section. I lift the glass to take a sip.

My reaction is visceral (Figure 83):

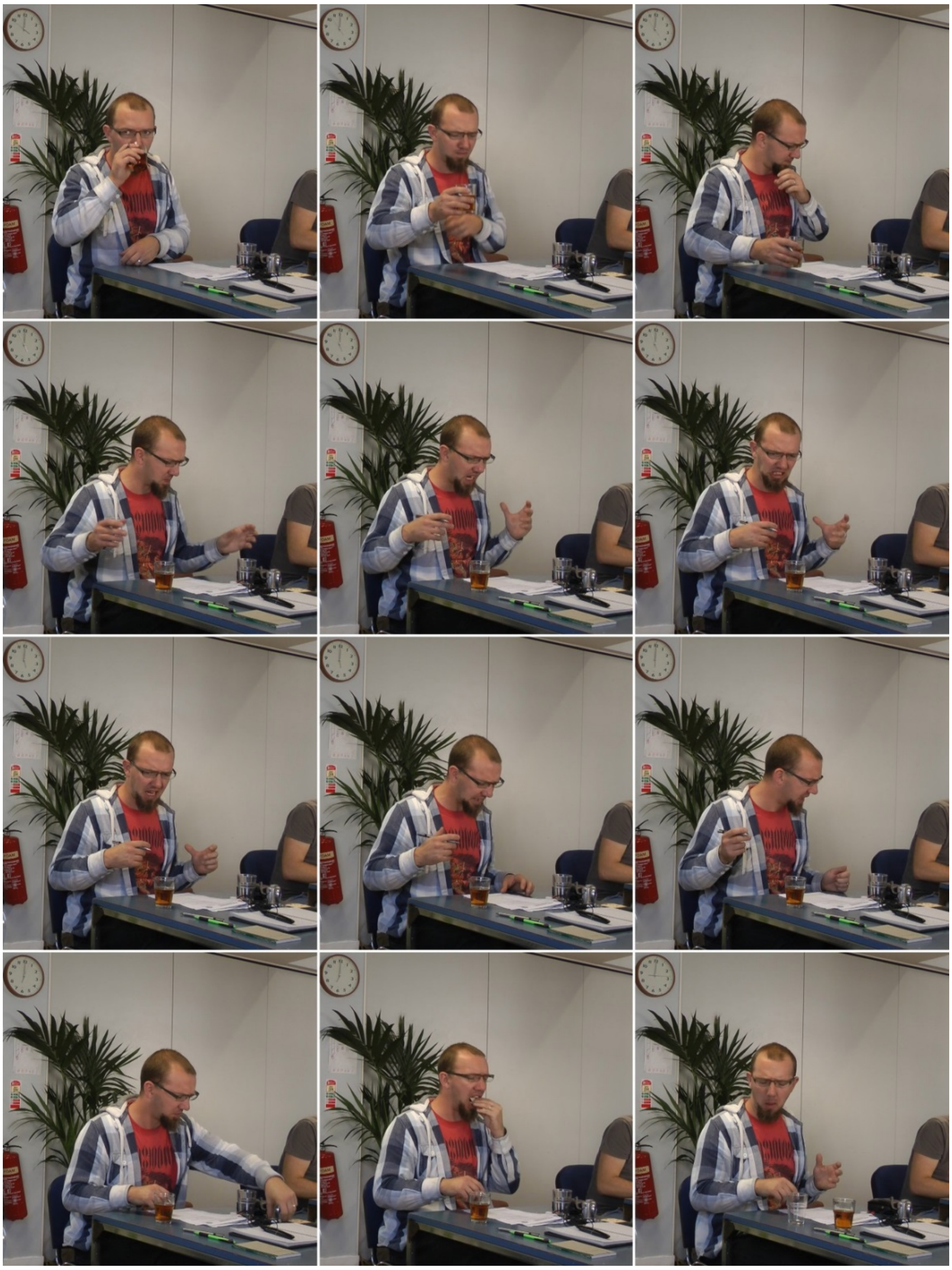


Figure 83: disgust reaction.

My body becomes rigid - arms and fingers tensing. I look up and around, grabbing a cracker immediately. It's totally unexpected, totally disgusting. Eating more crackers and looking around for water. I pick the glass up again and smell it once more shaking my head slightly.

The aroma had no hint that it was totally disgusting. I have a sense of relief the flawed beer was so totally flawed it was immediately obvious - so sour and nasty.

It's clear and aroma OK.

Having erased what I wrote for aroma I take the glass again and sniff deeply from it.

I take a more cautious sip, chewing it, mouthing "that one" and marking it by ticking a box on the flawed section. Another sniff and tiny sip then ticking more flaws another tiny sip and more writing.

I start to write deliberately and in capitals in the flavour section.

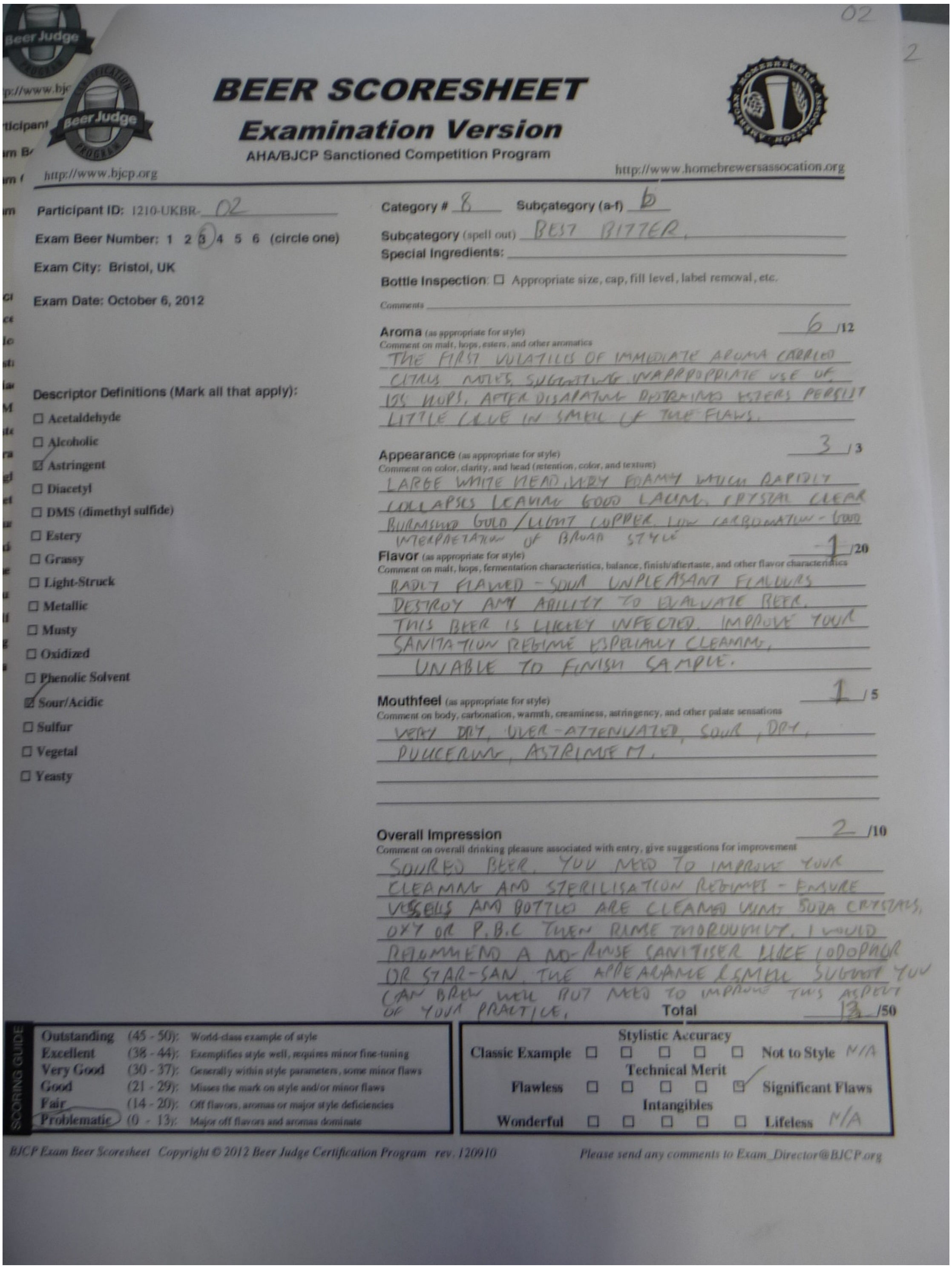
I see other people in the room pulling faces and making involuntary sounds of revulsion. There is a sense of immediate relief - THIS is the flawed beer, the bad one, the one we need to describe as wrong and give solutions. As I look across the room Mike make's eye contact and pulls a face of disgust - mouth pulled back in a grimace and nose a little wrinkled.

The disturbance in the room as each person tasted the beer returns to the heads-down calm and orderliness of writing detail perceptions on the form. Heads down, pencils on paper, concentration. There are still blown and harsh outbreaths - little puffs of restrained disgust.

The account above presents a thick, detailed report of the experience reconstructed from fieldnotes and video recording. I relate how the configuration of the room still enables non-verbal communication (of the sort that is poorly captured in CA transcripts but can be richly evoked through fieldnotes). That communication *happens* is not enough though: it is actively sought out through eye contact and facial expressions, as Wiggins (2013) shows "eugh" has a social life - it is not a personal, private sensation but an interaction in a meshwork among tasting bodies and the agencies of tasted objects that provokes and seeks new connections being formed through sharing.

8.3.2 Accounting for tasting: Writing the experience

I turn now to the account I write – the notes above have given some insight into its creation, rewriting and reformulation. Segments were erased and altered. As exam rules mandate using pencils I was prevented from using the LiveScribe pens thus am limited to the using the final account, whilst the procedural and sequential processes of its creation are literally erased (Figure 84).



02

2

Beer Judge

Beer Judge Certification Program

BEER SCORESHEET

Examination Version

AHA/BJCP Sanctioned Competition Program

http://www.bjcp.org

http://www.homebrewersassocation.org

Participant ID: 1210-UKBR-02

Exam Beer Number: 1 2 3 4 5 6 (circle one)

Exam City: Bristol, UK

Exam Date: October 6, 2012

Category # 8 Subcategory (a-f) b

Subcategory (spell out) BEST BITTER.

Special Ingredients:

Bottle Inspection: ☐ Appropriate size, cap, fill level, label removal, etc.

Comments

Descriptor Definitions (Mark all that apply):

- ☐ Acetaldehyde
- ☐ Alcoholic
- ☑ Astringent
- ☐ Diacetyl
- ☐ DMS (dimethyl sulfide)
- ☐ Estery
- ☐ Grassy
- ☐ Light-Struck
- ☐ Metallic
- ☐ Musty
- ☐ Oxidized
- ☐ Phenolic Solvent
- ☑ Sour/Acidic
- ☐ Sulfur
- ☐ Vegetal
- ☐ Yeasty

Aroma (as appropriate for style) 6 /12

Comment on malt, hops, esters, and other aromatics

THE FIRST VOLATILES OF IMMEDIATE AROMA CARRIED CITRUS NOTES, SUGGESTING INAPPROPRIATE USE OF US HOPS. AFTER DISSIPATING REMAINING ESTERS PERSIST LITTLE CLUE IN SMELL OF THE FLAWS.

Appearance (as appropriate for style) 3 /3

Comment on color, clarity, and head (retention, color, and texture)

LARGE WHITE HEAD, VERY FOAMY WHICH RAPIDLY COLLAPSES LEAVING GOOD LACING. CRYSTAL CLEAR BURNISHED GOLD / LIGHT COPPER. LOW CARBONATION - GOOD INTERPRETATION OF BROAD STYLE

Flavor (as appropriate for style) 1 /20

Comment on malt, hops, fermentation characteristics, balance, finish/aftertaste, and other flavor characteristics

BADLY FLAWED - SOUR UNPLEASANT FLAVOURS DESTROY ANY ABILITY TO EVALUATE BEER. THIS BEER IS LIKELY INFECTED. IMPROVE YOUR SANITATION REGIME ESPECIALLY CLEANING. UNABLE TO FINISH SAMPLE.

Mouthfeel (as appropriate for style) 1 /5

Comment on body, carbonation, warmth, creaminess, astringency, and other palate sensations

VERY DRY, OVER-ATTENUATED, SOUR, DRY, PUCKERING, ASTRINGENT.

Overall Impression 2 /10

Comment on overall drinking pleasure associated with entry, give suggestions for improvement

SOURED BEER. YOU NEED TO IMPROVE YOUR CLEANING AND STERILISATION REGIMES - ENSURE VESSELS AND BOTTLES ARE CLEANED USING SODA CRYSTALS, OXY OR P.B.C THEN RINSE THOROUGHLY. I WOULD RECOMMEND A NO-RINSE SANITISER LIKE IODOPHOR OR STAR-SAN. THE APPEARANCE & SMELL SUGGEST YOU CAN BREW WELL BUT NEED TO IMPROVE THIS ASPECT OF YOUR PRACTICE.

Total 13 /50

SCORING GUIDE

Outstanding	(45 - 50):	World-class example of style
Excellent	(38 - 44):	Exemplifies style well, requires minor fine-tuning
Very Good	(30 - 37):	Generally within style parameters, some minor flaws
Good	(21 - 29):	Misses the mark on style and/or minor flaws
Fair	(14 - 20):	Off flavors, aromas or major style deficiencies
Problematic	(0 - 13):	Major off flavors and aromas dominate

Stylistic Accuracy

Classic Example ☐ ☐ ☐ ☐ ☐ Not to Style N/A

Technical Merit

Flawless ☐ ☐ ☐ ☐ ☑ Significant Flaws

Intangibles

Wonderful ☐ ☐ ☐ ☐ ☐ Lifeless N/A

BJCP Exam Beer Scoresheet Copyright © 2012 Beer Judge Certification Program rev. 120910

Please send any comments to Exam_Director@BJCP.org

Figure 84: My completed score sheet for beer 3: the lactic-acid adulterated Best Bitter

These notes, like the tasting practices they document, are broken down, separated and sequenced on the form. These categorisations act to both reproduce and fix the sequence of empirical examination. The final written section for "overall impression" creates a space for entangling these into a synthesis which is then to be quantified and scaled on the charts and scale items beneath.

For "Flavor" I write sparsely, giving little or no description - stray into feedback:

> BADLY FLAWED - SOUR UNPLEASANT FLAVOURS DESTROY THE ABILITY TO EVALUATE BEER. THIS BEER IS LIKELY INFECTED. IMPROVE YOUR SANITATION REGIME ESPECIALLY CLEANING. UNABLE TO FINISH SAMPLE

Mouthfeel is likewise sparse:

> VERY DRY OVER-ATTENUATED, SOUR, DRY, PUCKERING, ASTRINGENT

Overall impression continues the feedback

> SOURED BEER. YOU NEED TO IMPROVE YOUR CLEANING AND STERILISATION REGIMES - ENSURE VESSELS AND BOTTLES ARE CLEANED USING SODA CRYSTALS, OXY OR P.B.C. THEN RINSE THOROUGHLY. I WOULD RECOMMEND A NO-RINSE SANITISER LIKE IODOPHOR OR STAR-SAN. THE APPEARANCE/SMELL SUGGEST YOU CAN BREW WELL BUT NEED TO IMPROVE THIS ASPECT OF YOUR PRACTICE

I give the beer an overall "courtesy" score of 13 – I choose this as the recommended norm for a flawed beer, a "courtesy score" wherein the complex and ideas of assembling "a community" through a value of "courteousness" are translated into a number that is positioned as high enough not to cause offence.

8.3.3 Dubbel, dubbel, toil (and trouble?)

The next beer I consider both connects back to, and enacts anew, other matters of concern for this thesis.

Ali emerges from behind the curtain to announce:

"Right beer four (pause) 18B Belgian Dubbel"

I Feel confident now - have 'lucked out' on styles I know well.

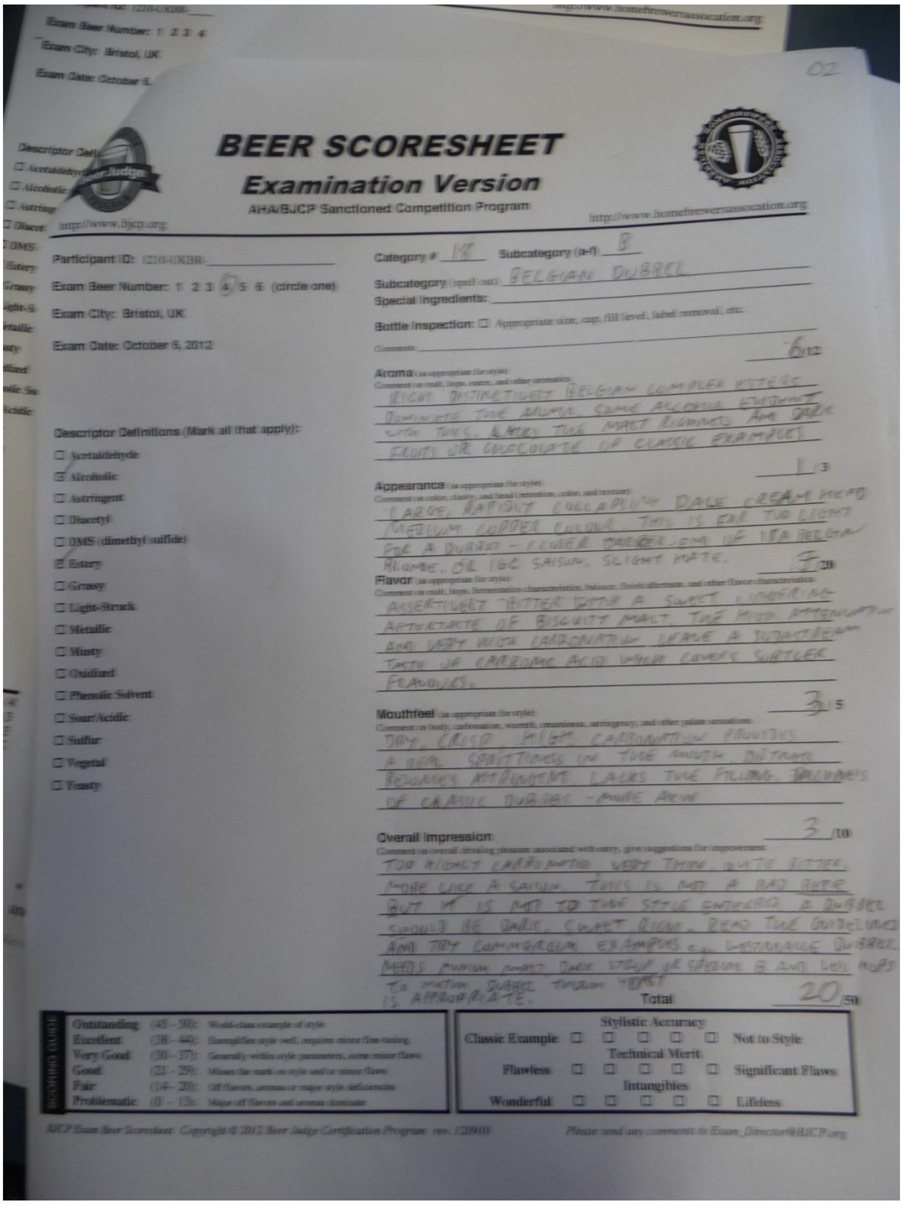
This was of course the category that I had entered Karl's beer into erroneously in the 2011 nationals, with the feedback of being good but out of style: Coincidence / synergy? It suits my ideas for narrative threads well!

I turn my sheet over as Ali passes me a sample and … my first observation is that the beer was immediately and obviously too pale "for style".

I lift it up to further examine colour and clarity, writing more in that section. I inspect it visually again before sniffing deeply, ticking some of the descriptive definitions boxes. We return to the routines – cupping – sniffing - tasting – though more rapid in the transitions this time.

In front of me the table is marked by what looks like an Olympic symbol of shining rings marking where the glasses have been placed.

My final picture of the scoresheet is somewhat blurred (Figure 85):



BEER SCORESHEET
Examination Version
AHA/BJCP Sanctioned Competition Program
http://www.bjcp.org http://www.homebrewersassociation.org

Participant ID: 1210-UKBR-
Exam Beer Number: 1 2 3 4 5 6 (circle one)
Exam City: Bristol, UK
Exam Date: October 6, 2012

Category # 18 Subcategory (a-f) B
Subcategory (spell out) BELGIAN DUBBEL
Special Ingredients:
Bottle Inspection: ☐ Appropriate size, cap, fill level, label removal, etc.
Comments

Aroma (as appropriate for style) 6/12
Comment on malt, hops, esters, and other aromatics

Appearance (as appropriate for style) 1/3
Comment on color, clarity, and head (retention, color, and texture)

Flavor (as appropriate for style) /20
Comment on malt, hops, fermentation characteristics, balance, finish/aftertaste, and other flavor characteristics

Mouthfeel (as appropriate for style) 3/5
Comment on body, carbonation, warmth, creaminess, astringency, and other palate sensations

Overall Impression 3/10
Comment on overall drinking pleasure associated with entry, give suggestions for improvement

Total 20/50

Descriptor Definitions (Mark all that apply):
☐ Acetaldehyde
☑ Alcoholic
☐ Astringent
☐ Diacetyl
☐ DMS (dimethyl sulfide)
☑ Estery
☐ Grassy
☐ Light-Struck
☐ Metallic
☐ Musty
☐ Oxidized
☐ Phenolic/Solvent
☐ Sour/Acidic
☐ Sulfur
☐ Vegetal
☐ Yeasty

Stylistic Accuracy						
Classic Example	☐	☐	☐	☐	☐	Not to Style
Technical Merit						
Flawless	☐	☐	☐	☐	☐	Significant Flaws
Intangibles						
Wonderful	☐	☐	☐	☐	☐	Lifeless

Figure 85: Score sheet for beer 4, the Belgian Dubbel

I now examine this account in detail, in order to return to it when considering how this account is subsequently mobilised, assessed and graded.

The topmost section for "Aroma" was not the first I completed (which was appearance) I wrote:

> RICH DISTINCTIVELY BELGIAN COMPLEX ESTERS DOMINATE THE AROMA SOME ALCOHOL EVIDENT WITH THIS. LACKS THE MALT RICHNESS AND DARK FRUITS OR CHOCOLATE OF CLASSIC EXAMPLES

My Flavor description is relatively extensive

> ASSERTIVELY BITTER WITH A SWEET LINGERING AFTERTASTE OF BISCUITY MALT. THE HIGH ATTENUATION AND VERY HICH CARBONATION LEAVE A SODASTREAM TASTE OF CARBONIC ACID WHICH COVERS SUBTLER FLAVOURS.

I describe the mouthfeel incompletely, with an unfinished sentence as:

> DRY, CRISP, HIGH CARBONATION PROVIDES A REAL SPRITZINESS IN THE MOUTH. DRYNESS BECOMES ASTRINGENT. LACKS THE FILLING RICHNESS OF CLASSIC DUBBELS - MORE AKIN

And for the overall impression I seek to synthesise this together and provide feedback.

> TOO HIGHLY CARBONATED, VERY THIN, QUITE BITTER, MORE LIKE A SAISON. THIS IS NOT A BAD <u>BEER</u> BUT IT IS NOT TO THE STYLE ENTERED. A DUBBEL SHOULD BE DARK, SWEET, RICH. READ THE GUIDELINES AND TRY COMMERCIAL EXAMPLES e.g. WESTMALLE DUBBEL NEEDS MUNICH MALT, DARK SYRUP OR SPCIAL$_{[sic]}$ B AND LESS HOPS TO MATCH A DUBBEL THOUGH YEAST IS APPROPRIATE

The overall score I give is 22, to fit it into the "major style deficiencies" category. The continuities of this feedback with the experience of entering Karl's beer in the first national competition (p.117) should be evident.

8.3.4 "The prestige": Closing down and revealing the trick as the exam concludes

For reasons of space and narrative coherence I have chosen to focus on only two of the examination beers in this chapter, introducing the rhythm of practices around those and the writing of accounts of the experience. With the final beer samples distributed everyone had completed their evaluations and many sat waiting for the end. I again edit this segment to maintain focus on the beers selected in this chapter.

> *Ali draws it to a close:*
>
> *"OK if you'd like to stop writing"*
>
> *After collecting all the forms in Ali returns to the front and asks "you want to know what the beers were?" there is a chorus of "yes" in response. Ali, speaking again in a loud 'teacher voice' raising it over the babble announces*
>
> *"Beer number three was horrible" laughs and agreement sounds "that was London Pride with the recommended amount of 6ml of lactic acid per half litre added to it … err … I thought that was really interesting as you couldn't smell it very strongly" (multiple overlapping "no's") but you could taste it"*
>
> *(unclear)*
>
> *"yeah you could smell it later on but you couldn't smell it initially"*
>
> *(speaking over a cacophony of reactions)*
>
> *Ali: "AND BEER NUMBER FOUR WAS a two third one third split of Chimay tripel with Chimay Dubbel"*
>
> *There is a reaction around the room of "aaarrrhhhh"*
>
> *Ali: "too alcoholic and too light"*
>
> *A clear "YESSS" from someone who evidently 'got' that.*

After this "prestige" – the revelation of the trick we had all worked to describe, interpret and assess - Ali turns to operational matters: collecting money, cleaning up (during which came the exchange considered earlier about lactic acid on the hand). The exam complete, the room was rapidly disassembled and many of us left to go to the pub – talking to each other about what we'd written and self-evaluating our expectations and responses.

Ali took all the papers into his car along with the boxes of now-empty bottles and other paraphernalia. He digitally photographed them and emailed them as well as posting the paper originals to be distributed to graders in the USA. It is to those practices and the assessment feedback that I now turn and explore in detail considering how these different evaluations construct approaches to assessment here and the work that exposes.

8.4 Assessing the papers: The contingent achievement of singularity

Having explored the material ordering and sequential organisation of the creation of written accounts of the tasting exam I now turn to explore what happens to these accounts and how they are assessed. In doing so I connect this to the literature and theorisation therein to consider how the work to achieve singularity continues through the assessment process. Of particular interest is how the phenomenon of tasting particularly exposes and makes visible this work, and where the limits, breaks and gaps are in this crafting through which multiplicity becomes visible.

8.4.1 Materialising certification and feedback

The delay to receive notification is substantial - I finally receive notification of my score in mid-February: 3 ½ months after taking the exam. The results arrive by post containing several documents (Figure 86) that materialised that I had passed and was now ranked as "recognised":

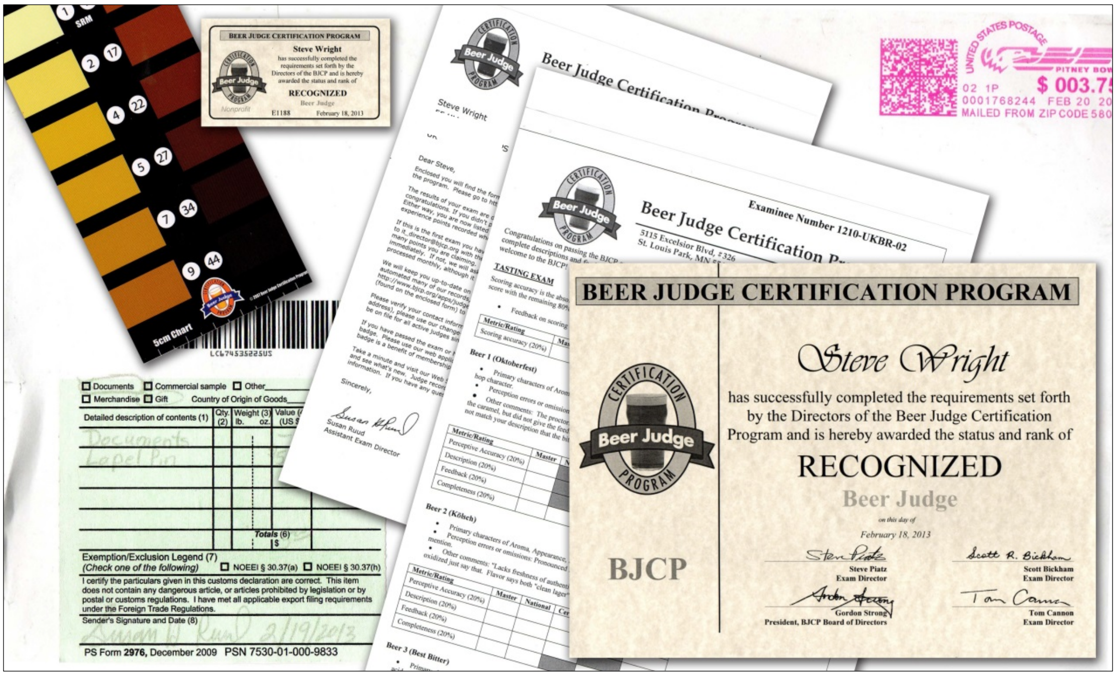


Figure 86: the materials of certification

Included were 4 pages of feedback. The front page gave my overall grade, which was the first thing I read, showing a passing grade of 71. I felt an *enormous* sense of relief at passing – my fear was that had I failed any account would be dismissed as 'sour grapes' criticism in line with comments about critical voices explored in the third opening vignette. Furthermore, it could undermine an assertion of having demonstrated Garfinkel's (1996) unique adequacy requirement and "deep competence in that type of work." (ten Have, 2004a, p. 154). Accompanying the grade were details on interpreting scores and feedback and a table of overall assessment, along with a selection of "recommended study" texts and practices (Figure 87).

Date of Exam: **October 6, 2011**
Location of Exam: **Bristol, UK**

INTERPRETING YOUR SCORE AND FEEDBACK

Your exam has been graded by two National or Master judges and their scoring and comments reviewed by both an Associate Exam Director and the Exam Director. This three step process ensures that the assigned scores are consistent with the following criteria:

- <60: Displays weak tasting skills, and the scoresheets will generally have unacceptably low levels of completeness, descriptive information and/or feedback. This examinee will be an Apprentice judge.
- 60s: At least two of the six exam beers are accurately evaluated. Demonstrates the minimum acceptable communication and judging skills expected of a Recognized judge.
- 70s: At least three of the six exam beers are accurately evaluated. The scoresheets should have reasonably good completeness, descriptive information and feedback, appropriate to the Certified judging level.
- 80s: At least four of the six exam beers are accurately evaluated with the high quality scoresheets expected of a National judge.
- 90s: At least five of the six exam beers are accurately evaluated and the scoresheets have Master levels of completeness, descriptive information and feedback.

The following sections summarize your performance on the exam, and feedback on individual beers is given on the following page. When reviewing this information, keep in mind that your final score was assigned only after an assessment of the entire exam. Since our understanding of brewing science and beer styles is constantly evolving, it may be possible to argue a few technical and stylistic details; however, your final score is not likely to change since your exam has already undergone several hours of evaluation by the most experienced judges and graders in the BJCP. Questions or appeals should be directed to the Exam Director.

Perception	Master	National	Certified	Recognized	Apprentice
Descriptive Ability	Master	National	Certified	Recognized	Apprentice
Feedback	Master	National	Certified	Recognized	Apprentice
Completeness	Master	National	Certified	Recognized	Apprentice
Scoring Accuracy	Master	National	Certified	Recognized	Apprentice
Failed to add, or incorrectly added taste portion?				YES	NO

TASTING EXAM SCORE

71

RECOMMENDED STUDY

- *Homebrewing Vol. 1,* Al Korzonas
- *Dave Miller's Homebrewing Guide* or *The Complete Handbook of Home Brewing*, Dave Miller
- *How to Brew*, John Palmer (http://howtobrew.com)
- *Beer Companion*, Michael Jackson
- *Classic Beer Style Series*, Brewers Publications
- *New Brewing Lager Beer*, Greg Noonan
- *Principles of Brewing Science*, George Fix
- *Designing Great Beers*, Ray Daniels
- Troubleshooting Special Issue, 1987 *zymurgy* (vol. 10, no. 4)
- BJCP Study Guide
- Tasting/Judging Experience
- **BJCP Style Guidelines**

Figure 87: Page 1 of the feedback sheet

Below this was an overall rating across five criteria: Perception, Descriptive Ability, Feedback, Completeness and Scoring Accuracy. These are explicitly shown against BJCP ranks of master / national / certified / recognised / apprentice with my overall assessments lying between “recognised” and “certified”. Following this was feedback on the written accounts and sensory descriptions encountered above. I now turn to these evaluations of those accounts in detail.

8.4.2 Crafting singularities from multiple relative accounts

The details of how assessments are standardised and agreed is provided in exhaustive detail in the materials for examiners. The descriptions I provided are evaluated against four key sources: three local accounts and one fixed reference. The primary local accounts are the two written evaluations of “the same beers” written by the proctors, a third document is the beer information sheet with details on the beers used and adulterations applied (which would normally be the account of the exam assistant but in this case this was Ali acting as both director and proctor). These accounts are local, specific and relative to the examinee accounts. The fourth point of reference is a fixed one - the descriptions and expectations of the style in the style guides. Evaluating these against each other is therefore open to different interpretations: as triangulation on a single fixed beer, or as relative and multiple accounts of multiple attachments and engagements with objects that are enacted differently in each localised set of practices. The tensions between these open up interesting empirical opportunities to explore the work done to achieve singularity, or resolve multiplicity.

The first, overall, criteria for evaluation was a comparison of my scoring with the proctors agreed scores. The graders’ guide includes a table of calculated variances and points associated. The feedback I received included the following introduction and feedback:

> Scoring accuracy is the absolute difference of your scores compared to the proctors ' consensus scores. Overall accuracy is 20% of the tasting score with the remaining 80% of the tasting score coming from the details of what is written on the score sheets.
>
> • **Feedback on scoring accuracy:** Your scores deviated by quite a bit on the Dubbel, RIS, and AIPA, almost 20 points on the last beer.

Metric/Ratio	Master	National	Certified	Recognized	Apprentice
Scoring accuracy (20%)					

There are continuities here with the competition judging – the graders guide specifies that "A variance of less than seven points is required to earn at least 60% of the possible scoring accuracy points for an exam beer i.e. the expected scoring deviation between BJCP judges at a competition". The feedback notes that on three of the beers I "deviated by quite a bit" from the localised numerical score accounting of the proctors. My scores are therefore being relationally evaluated – not against a fixed standard of the style guides as was the case in the online exam, but against a localised, negotiated account created by the local authorities of the proctors and their scores.

8.4.3 A "stop-press" moment: Evoking STS literature and the temporality of cutting networks

By introducing new data and entitling this as a "stop press" I intentionally evoke Woolgar and Cooper (1999) and their introduction of a bus ticket as an appendix to their critique of Winner's (1980) "Do artefacts have politics". When I first wrote this I worked with the data I had: photos of my scoresheets and the feedback from the BJCP. I did not (then) have copies of the proctors' sheets. Subsequently I was sent these and was able to introduce them. As I now work through correcting, proofing and working with the draft I face a dilemma: how to introduce new material? On my right screen I can look across to the scanned image of the "proctors' consensus scores". On these sheets I see that the two beers considered here scored 15 for the lactic-acid dosed best bitter and 32 for the out-of-style Dubbel.

Cutting the network, as Strathern (1996) explores, is always a complex issue in data gathering, description and analytic engagement. However this is not just a question of distance and space: but also of time: for how long and when does one freeze the data? When and why should it be thawed out? This is the "uncoding of ANT" that Thompson (2014) investigates, arguing that different realities are being crafted with the data that informs empirical research. Acknowledging this temporal dimension makes data an example of the "fire objects" considered by Law and Singleton (2005) – which jump form, changing suddenly and unexpectedly. What I had left as embers when I wrote the first draft now spark back into life, inviting a re-crafting, re-working and new enactment of the nearly-fixed account as it is illuminated and re-configured by that fire.

As I explore these evaluations I will present a different mode of assessment from the online exam and a very particular practice. Where the online exam has a fixed frame for its evaluation – questions and answers defined in advance using the stabilised information infrastructure of the style guides and encoded as correct or incorrect - here evaluation is against relative, localised, negotiated accounts (created simultaneously with the accounts under assessment) which are co-ordinated with that stabilised infrastructure.

8.4.4 Best not to be bitter? Non-coherent accounts and creating the singular

I will start this investigation of the crafting of singularity by exploring the lactic-acid adulterated best bitter through comparing the local accounts (mine, the proctors and the beer information sheet) and fixed reference point (style guides). Here is the feedback I received:

Beer 3 (Best Bitter)

• Primary characters of Aroma, Appearance, Flavor, and Mouthfeel correctly identified: Sour/acidic but no mention of lactic vs. acetic acid.

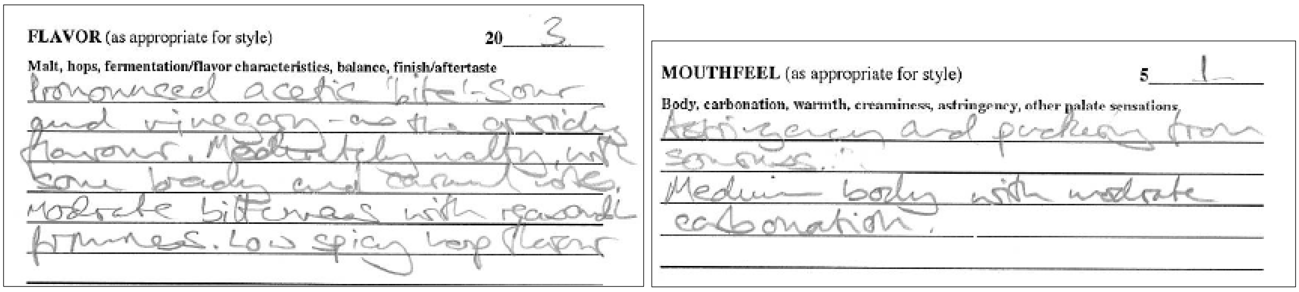
• Perception errors or omissions: Citrusy hops and astringency.

• Other comments: Flavor section consists mostly of feedback rather than a description.

Metric/Ratio	Master	National	Certified	Recognized	Apprentice
Perceptive Accuracy (20%)					
Description (20%)					
Feedback (20%)					
Completeness (20%)					

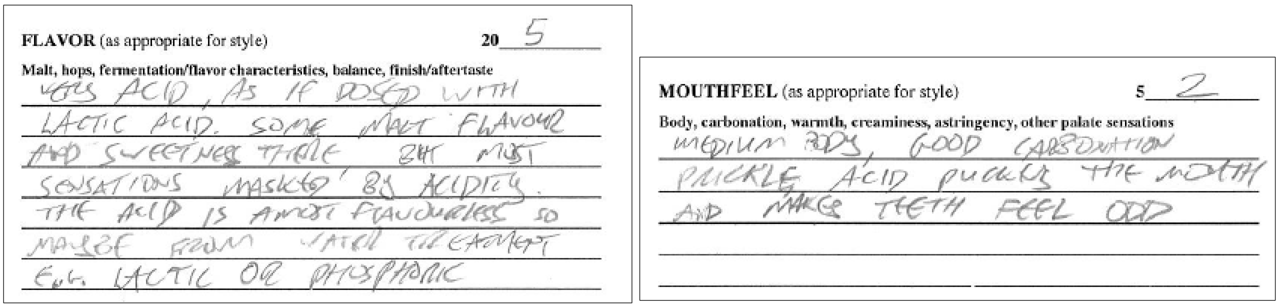
The qualitative evaluation here is composed of the three criteria: Primary characters of aroma, flavor and mouthfeel, perception errors or omissions and other comments. It is stated that I identified the primary flaw of sour/acidic, but that I didn't mention the character of the acidity as lactic (the sourness of off milk or yoghurt) vs acetic (the sourness of vinegar).

When compared to the relative local accounts of the proctors (Figure 88, Figure 89) there are discontinuities:


FLAVOR (as appropriate for style) **20** 3
Malt, hops, fermentation/flavor characteristics, balance, finish/aftertaste
pronounced acetic 'bite'-sour and vinegary - as the overriding flavour. Moderately malty, with some bready and caramel notes. Moderate bitterness with reasonable firmness. Low spicy hop flavour

MOUTHFEEL (as appropriate for style) **5** 1
Body, carbonation, warmth, creaminess, astringency, other palate sensations
Astringency and puckering from sourness. Medium body with moderate carbonation.

Figure 88: Proctor #1 (Ali) assessment of adulterated best bitter


FLAVOR (as appropriate for style) **20** 5
Malt, hops, fermentation/flavor characteristics, balance, finish/aftertaste
VERY ACID, AS IF DOSED WITH LACTIC ACID. SOME MALT FLAVOUR AND SWEETNESS THERE BUT MOST SENSATIONS MASKED BY ACIDITY. THE ACID IS ALMOST FLAVOURLESS SO MAYBE FROM WATER TREATMENT E.G. LACTIC OR PHOSPHORIC

MOUTHFEEL (as appropriate for style) **5** 2
Body, carbonation, warmth, creaminess, astringency, other palate sensations
MEDIUM BODY, GOOD CARBONATION PRICKLE ACID PUCKERS THE MOUTH AND MAKES TEETH FEEL ODD

Figure 89: Proctor #2 (Mike) assessment of adulterated best bitter

Instead of the proctors' sheets contributing to a triangulated singularity they create more multiplicity. Proctor 1 describes a "pronounced acetic 'bite' sour and vinegary – as the overriding flavour" and also describing "Astringency and puckering from the sourness" in the description of mouthfeel. Proctor 2 describes "Very acid, as if dosed with lactic acid. Some malt and flavour and sweetness but most sensation masked by acidity. The acid is almost flavourless so maybe from water treatment e.g. lactic or phosphoric". For mouthfeel he describes "acid puckers the mouth and makes teeth feel odd".

There are multiple non-coherent accounts here: of acetic acid vs lactic acid, of flavourlessness vs vinegaryness and of "acid" vs "astringency".

From these a singular assessment is created of my, similarly non-coherent, account (p.204). Whilst I make "no mention of lactic vs. acetic acid" – given the diversity of the proctors' accounts which would be judged as more correct? This challenge is acknowledged in the guidelines for graders which specify that the goal is to "evaluate these exams as objectively as possible" and noting that:

> Scoring by the proctors is sometimes variable, so consensus scores may be adjusted if there are biases that adversely affect most of the examinees. … Without tasting the beer, the graders cannot determine if the flaw was actually present, but they should check the exam administrator's comments on the exam beer for more clues.

Here I present evidence for the agency of the third local account. The record of the adulteration in the exam administrators account is taken as the singularity - the beer was adulterated with lactic acid therefore it must taste of lactic acidity. Localised accounts become subservient to "hard facts" in service of the grader's task to attempt to synthesise different accounts and establish a rubric for assessing them "objectively".

8.4.5 Crafting singularities in the tasting exam feedback: The seductiveness of a pre-defined explanation

My first reading of the feedback from the exam especially that "Sour/acidic but no mention of lactic vs. acetic acid" once I had been sent the differing proctors' accounts was that I had finally latched onto an almost perfect example of the need for the "fully relativist sociology" Latour calls for:

> *the sociology of the social remains 'pre-relativist', while our sociology has to be fully 'relativist'. In most ordinary cases, for instance situations that change slowly, the pre-relativist framework is perfectly fine and any fixed frame of reference can register action without too much deformation. But as soon as things accelerate, innovations proliferate, and entities are multiplied, one then has an absolutist framework generating data that becomes hopelessly messed up. This is when a relativistic solution has to be devised in order to remain able to*

> *move between frames of reference and to regain some sort of commensurability between traces coming from frames traveling at very different speeds and acceleration.* (Latour, 2005, p. 12)

Entities had multiplied and the absolutist framework of the online exam has apparently collapsed – a relativist frame was being constructed and assembled to establish "a rubric for the evaluation of the descriptive ability of the examinees" between different accounts that were being translated into feedback and evaluation. Furthermore, I had in my hands empirical evidence of actors' accounts that were non-coherent. If I juxtaposed these with the "perfect quotes" above and below I could link these assembled accounts to the literature to support a clear position. The following quote seemed to encapsulate what was afoot in these accounts:

> *If we think performatively, then reality is not assumed to be independent, priori, definite, singular or coherent. Rather the logic is turned upside down. If reality appears (as it usually does) to be independent, prior, definite, singular or coherent then this is because it is being done that way. Indeed, these attributes or assumptions become examples, among others, of collateral realities.*
>
> *But what is it, 'to do'? Where are the collateral realities being done? The response is that they are done in practices. Practices enact realities including collateral realities. This means that if we want to understand how realities are done or to explore their politics, then we have to attend carefully to practices and ask how they work.* (Law, 2012a, pp. 156-157)

However, on closer examination and re-evaluation this seems to be to move too quickly and to latch too rapidly onto non-coherence and a "neat fit" to some nice quotes, obfuscating or marginalising the agency of standards. Where incoherence proliferated there were rules and methods for crafting singularity. I explored earlier the effort required to achieve a singular tasting sample in a jug, and above the ongoing work to assemble a singular rubric. However, when non-coherence in "authoritative" accounts (the proctors' judging sheets) occurred the standards of the classification system and records of the tasted objects act to black-box this non-coherence and become a spokesperson capable of delivering a singular rubric for judgement and ranking. This re-interpretations provides a different but still neat conclusion tying empirical data to an ontological argument, and re-introducing the agency of standards. However, such a neat account becomes itself singular and closed – perhaps *too coherent* for explicating non-coherence, and again to jump too quickly to a singular conclusion, albeit a conclusion that is about relativity and multiplicity.

There is a continuity here in the non-coherence of tasting accounts with the challenges in the tasting lab where measuring instruments such as electronic tongues or gas chromatographs are less sensitive than human panellists, such that the human panels are delegated the final arbitration of description (Mann, 2012). These laboratory practices are partially replicated in the tasting exam, and it the notebook of experimental adulterations that is delegated the greatest agency to black-box other accounts. However, in arguing that these processes and their multiplicity are black-boxed I must also acknowledge that such a singular interpretation is itself only one performance and any singularity I achieve in this interpretation is as contingent as the crafting of the singularities that I am concerned with here.

8.4.6 Looping back: Knowledge asymmetries and the de-localisation of knowledge

Having considered the way that multiple accounts were brought together previously I now turn to the evaluation for the "out of style" Belgian Dubbel:

Beer 4 (Belgian Dubbel)

• Primary characters of Aroma, Appearance, Flavor, and Mouthfeel correctly identified: Light body.

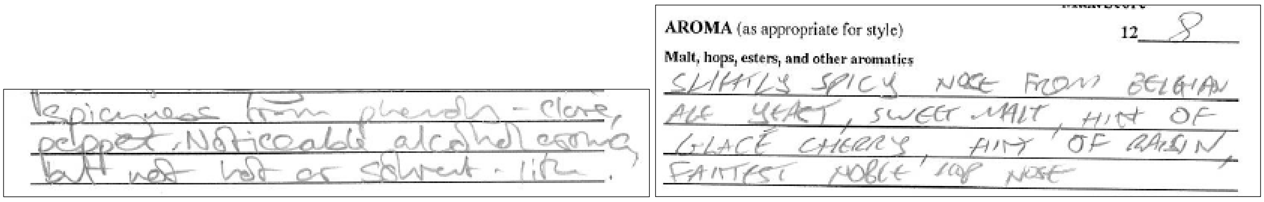
• Perception errors or omissions: Assertive bitterness, biscuity malt, carbonic acid, and astringent.

• Other comments: "Belgian esters" is vague, try to find a more descriptive term such as peppery, citrusy, clove-like, bubblegum, etc.

"Read the guidelines" is not constructive feedback - if the brewer understood why it wasn't to style they would not have entered it, your job is to tell/interpret it for them. Carbonation was noted under flavor but is part of mouthfeel.

Metric/Ratio	Master	National	Certified	Recognized	Apprentice
Perceptive Accuracy (20%)					
Description (20%)					
Feedback (20%)					
Completeness (20%)					

Here I present evidence of continuities with the previous case – errors of perception are implicitly assessed against the local accounts of the proctors. There is also evidence of several powerful normativities with stronger connections to my explorations of the construction and standardisation of vocabulary in the online exam in chapter 4. The term "Belgian esters" is criticised as vague. Instead a referential vocabulary is *mandated* – it *must* be related to other smells with several candidates suggested “peppery, citrusy, clove-like, bubblegum”. Two of these: “clove, pepper” appear on proctor #1’s sheet whilst proctor #2 uses the more generic “spicy” (Figure 90):


Spiciness from phenols - clove, pepper. Noticeable alcohol aroma, but not hot or solvent - like.

AROMA (as appropriate for style) 12 8
Malt, hops, esters, and other aromatics
SLIGHTLY SPICY NOSE FROM BELGIAN ALE YEAST, SWEET MALT, HINT OF GLACÉ CHERRY, HINT OF RAISIN, FAINTEST NOBLE HOP NOSE

Figure 90: Proctor #1's (left) and #2's (right) comments on aroma of Dubbel

So where do the candidate terms come from? Aroma is described in the style guide through the customary referential vocabulary in terms of

> Moderate fruity esters (usually including raisins and plums, sometimes also dried cherries). Esters sometimes include banana or apple. Spicy phenols and higher alcohols are common (may include light clove and spice, peppery, rose-like and/or perfumy notes). Spicy qualities can be moderate to very low. …

The descriptions used by proctor #1 are very closely aligned to this standardised vocabulary whilst proctor #2 suggests the “glacé cherries” – suggesting that these local accounts are produced not just from the attachment of the proctor to the object but also from a similar attachment between the proctors and this network of standardised descriptions.

Additionally it is the primary feedback that I suggest is of interest here:

> “Read the guidelines" is not constructive feedback - if the brewer understood why it wasn't to style they would not have entered it, your job is to tell/interpret it for them

I have presented earlier that this is *not* necessarily the case in judging and entering beers in the UK context, as recounted in tracing the origins of Karl’s beer in the first competition. The feedback “if the brewer understood why it is not to style they would not have entered it” strongly asserts a symmetrical mastery of the styles information and application between entrant and judge. The additional recommendation to try classic examples to get a feel for the style is not commented on, nor the suggestions on recipe formulation. The feedback I provided was based on experience, examples and a local context where awareness of the styles is asymmetric – but such localisation is excluded in the evaluation, standardisation is implicitly universalised through this rather than considering local variation. Through this exploration the style guides and the referential vocabulary standards make a strong reappearance, with continuities to earlier explorations in this thesis.

8.4.7 Drawing together: The route travelled through the exam practices

In selecting the examples presented here I have also excluded other beers and the variations and non-coherence between the accounts of those (for two I was far closer in scores and descriptions, for the other two further off).

In this chapter I have explored the practices of the exam and highlighted continuities with both the online exam and the practices of judging. I presented the ways the space was materially arranged to make it recognisable as "an exam". This extended some of the previously Foucauldian engagements such as Gallagher (2010) and Buzzelli and Johnston (2002) with the material ordering of exams as being more then just *disciplinary* technologies for surveillance, but also enactments of cognitivist models of individual learning and individual assessment. The policing of the boundaries also acts to ensure that sources that could be used for reference and support for "descriptive ability" were excluded – no copies of the style guide were allowed in the exam as electronic or printed. I considered the sequential and material work that was done to craft anonymised singular and common tasting samples and the limits of this. I showed how I and others created accounts of our experiences and how these were co-ordinated, materialised, collected and made mobile.

I then presented evidence from the diverse accounts generated in these practices are choreographed to enable the creation of a rubric for assessment which is related both to a singular information infrastructure - the relatively fixed guidelines (at least fixed if and when the controversies and dissenting voices explored in chapter 4 are othered) and to localised multiple accounts which are then made singular through category work as “correct identification” or “errors/omissions”.

What tasting exposes in particular here is the problem of creating “an authoritative account” with the local and relative also enrolled along with the distant and fixed information infrastructure. The requirements for the choreography of these two are explicitly set out and done in practices which are empirically detectable – even when hidden behind a curtain.

The text of the thesis shall be word processed in double spacing on one side only of good quality A4 paper (210 mm. x 297 mm.)*, leaving a left hand margin of 38 mm., and a margin of 25 mm. on the other three sides.

* ISO 216 specifies international standard (ISO) paper sizes. Paper in the A series format has a 1: √2≈0.707 aspect ratio

margin of 38 mm

margin of 25 mm

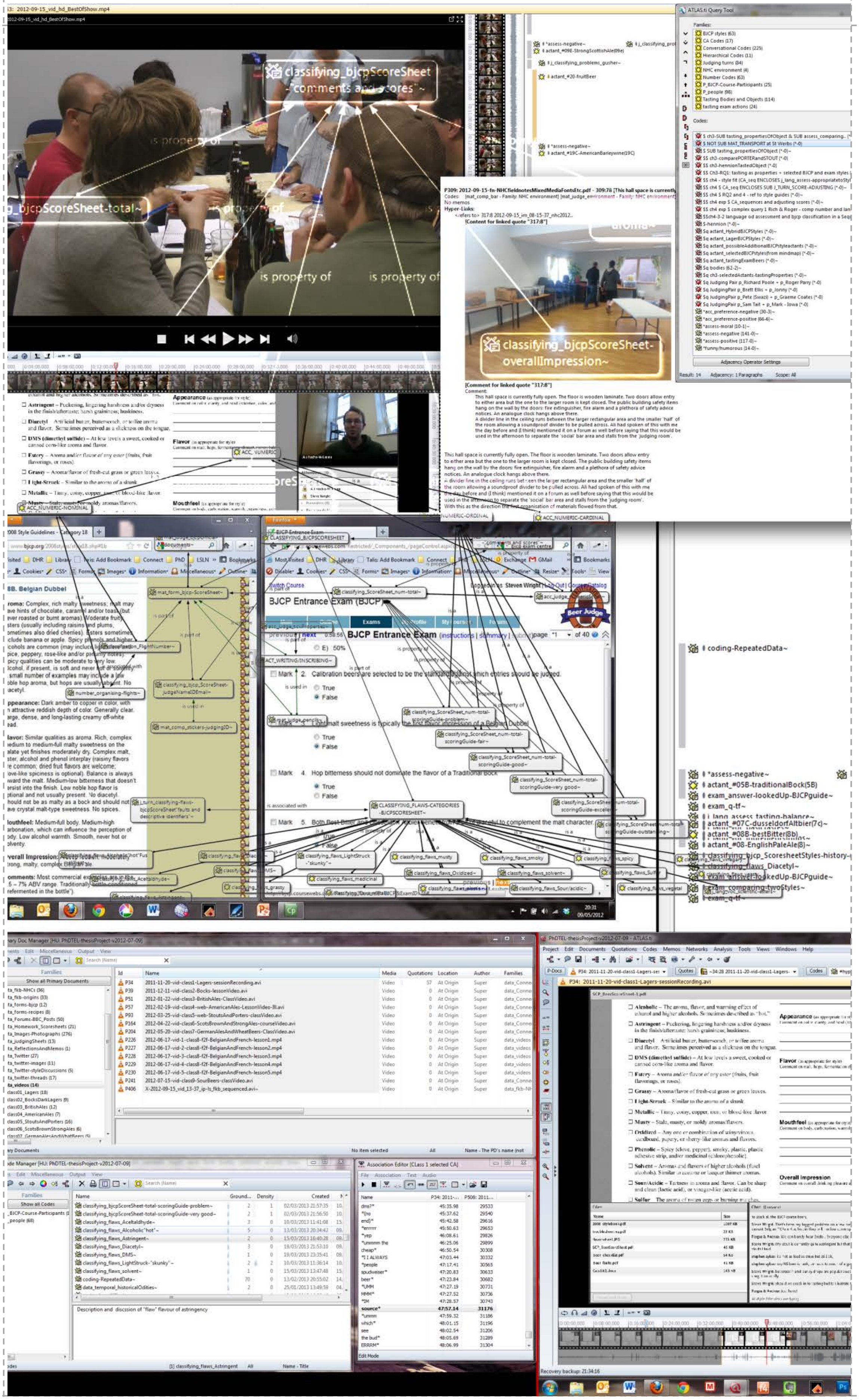


Figure 91: Montage of the manifest absences of analysis

9 Coda

I open again with a montage (Figure 91), assembling and representing some of the manifest absences of data analysis and translations into codes and queries. In seeking to render a clear line of narrative through this thesis I have had to make many choices about what to make present through inclusion and what to exclude as manifest absences. The montage overlays and juxtaposes the overlaying and juxtaposition of codes and connections made in the software package ATLAS.ti. Through appending this meta-data to primary data (fieldnotes, videos, audio and accompanying transcriptions) I sought to tame, order, co-ordinate and trace connections in the assembled evidence. This is another story, that of seeking to swim upstream against more-or-less-explicit support for, and prompting towards, undertaking approaches derived from grounded theory, seeking ways to resist that and also engaging with the agencies and breakdowns of this CAQDAS package. Rather than seeking to "transcend 'mere description'.... [through] the coding of data fragments [by] 'fracturing' the data … [thereby supporting] 'transcendence' through rising to the conceptual level" (ten Have, 2004b, p. 144 - my parentheses) I sought to enable coded actants to multiply, rather than be refined or merged; and to maintain a critical view of the categorisations and classifications I was deploying. This was supported by an actor-network sensibility in paying particular attention to the agency exposed through several substantial breakdowns, and the work to document and collaborate with the vendor's technical support to repair them. These, however, are stories for a different performance rather than in seeking to explore the research questions of this thesis. Initial explorations are as tutorials (Wright, 2013), articles on the official ATLAS.ti blog (Wright, 2014), and as interventions in methods training and support.

9.1 A recapitulation

Before re-considering the research questions I shall pause to recap and briefly review the journey thus far.

The opening vignettes of chapter one introduced some of the methods for tracing connections used in this thesis. I started from a toast in the Whitehouse garden through to the methods for recreating and describing the beers that the President was drinking and had been “home brewed”. I then explored how material practices and assemblages for brewing are shared and distributed along with approaches, techniques and a language for sensory evaluation through a magazine. This language is regulated and standardised along with methods for engaging in calibration of palates through materials, forms and methods which act at a distance. Finally, I traced how the BJCP classification system constructed in the USA has assembled histories, vocabularies and brewing methods and has then travelled and been reproduced on a pump clip to describe a beer in the UK. This movement and reproduction thus contradicted the views of some of the “great amateurs” who work to assemble rival histories and facts and had positioned the BJCP classifications as having no meaning in the UK. Finally I turned to explore how such criticisms are considered and dismissed by the BJCP president and the importance for exploring the “correct use” of the standards as well as their extensions for my empirical engagements and methods.

Following the vignettes I set out in chapter two the work of previous explorations that relate to this enquiry: defining questions to guide the journey, engaging with literature and contingently defining some “travelling companions” to take along with on the journey. These travelling companions also brought with them a retinue of relations and connections with the settings, topics and themes of the thesis. In this coda I re-use that structure in order to re-examine what the questions have performed into being, and how those travelling companions and their retinues of relations have informed, supported, been altered by or been cast aside through empirical engagements.

The empirical approaches introduced in the opening vignettes were extended in the phases of fieldwork. Preceding those, in chapter 3, I engaged with the challenges of context and introduced the classification system of the BJCP style guides as an information infrastructure. I introduced some of the ways in which it has been materialised, extended and made interoperable with other elements of brewing practices: as code, as books, as apps and as forms. I skated across the surface of the more conventionally positioned aspects of “technology enhanced learning” from my fieldwork where web conferencing software was used to co-ordinate a “blended learning” exam preparation course. In developing this broader conceptualisation of technologies beyond devices I drew on STS scholarship that explores *standards* and *classification systems* as technologies, and took a focus on the intersection of these with *practices* of *assessment* and *certification.* With this as the focus I set aside the exam-preparation course to explore instead three sequentially ordered settings where these intersections occurred: the online exam, judging in competitions and the tasting exam.

In chapter four I explored the practices, language, structure and translation of statements about styles and classifications into test items in the online exam. Enrolling further STS scholarship I explored the historical contingencies and their intersection with changing scientific practices that moved chemistry away from the empirical and elemental and towards instrumentation and experimental measurement. I drew in particular on the work of Stephen Shapin and his exploration of the effects these had in ‘orphaning’ taste as a sense for scientific enquiry and how this would shape the cultural histories of the taste of wine (2012b), and the place of dietetics and taste more broadly (2011a, 2011b). Through this exploration of how these processes created the space for construction of a language of connoisseurship, and led to the assembly of "sciences of subjectivity" which developed and formalised tools and vocabularies for achieving intersubjectivity, I explored some of the origins of the language and approaches to taste description that are formalised into test items. I engaged in tracing some of these origins, their standardisation, systematisation and translation into testable "matters of fact".

Within that body of work Shapin makes a call that:

> What would be good to have are ethnographies – contemporary and historical – of how taste judgments come to be formed, discussed, and sometimes shared. Such ethnographies would look a lot like those produced by laboratory studies of science, concerned with how fact and theory judgments come to be formed, discussed, and sometimes shared. (Shapin, 2012a, p. 177)

This praxiographic inquiry (which takes practices as its focus rather than just the "ethnos" of the people) makes a contribution to that call, in particular through the engagements in chapters five, six and seven where I explored the material assemblages, orderings and movement that brought bottled beers together for the very particular practices of taste judgements in the contemporary judging of homebrewed craft beer.

In the practices of judging I presented evidence for how taste judgements come to be formed, discussed and shared through referential and evocative vocabularies. Through detailed examination of turns at talk I made explicit how categorical and sequential features order, and occasionally breach or disrupt, the rule-bound sequencing and categorical marking of judgements on scoresheets. I also considered how numbers have a significant agency in translating and making mobile different sensory accounts to enable and simplify processes of standardisation through comparison, ranking and filtering. I developed original methods for recording digital writing and accompanying turns at talk, and noted how this was an active agent in the construction of the interactions, assemblage of data and translation into transcripts rather than a passive intermediary recording ‘naturally occurring talk’.

The fulcrum of the thesis was an invitation to you as the reader to engage in attachment through contact senses and tasting – to engage in the sensory experience beyond the written word and grapple with the absences performed through translating such a multi-modal, contact sensory experience into words and numbers. This marked the mid-point in a thesis that has sought symmetry in both the application of methods to human and non-human objects and agencies and the presentation of that engagement.

In chapter eight, the final empirical exploration, I presented the ways in which material and sequential orderings create a very particular setting for tasting: a blind tasting exam. I explored how this reproduced and performed anew particular models and approaches to learning and assessment – materialising what Steve Fox (1997) describes as *traditional cognitive theory*. This assemblage stood in contrast to the practices of judging from the preceding three chapters with their breaches and connections between people and the apparatus of technical devices that instantiate the classification system through books and smartphone apps. I also explored the ways in which the language and descriptions of the style guide are used to create a singular rubric for assessment and how this supersedes the multiple, non-coherent local accounts created by the proctors and test-takers.

9.2 Returning to the research questions

To guide and focus this investigation I asked several questions, I now revisit those in the light of the data that I have presented:

9.2.1 How are tasting bodies, tasted objects, devices and conditions of tasting done in the practices of beer judging?

I have assembled evidence of how tasting bodies, tasted objects and the devices and conditions of tasting are performed very differently in the different practices I have explored:

the online exam, the situated practices of judging and the tasting exam. Singularities are contingently achieved but are always and only contingent, the work to achieve this is erased from the authoritative accounts. I have proposed that these sets of practices are methods assemblages which craft singularities and their exposure demonstrates the productive interference of my methods assemblage to expose that work. Exploring the sub-questions explicates and expands this broad concept:

9.2.2 How are bodies, objects and the devices and conditions of tasting aligned and arranged to enact assessments?

In the online exam bodies were made absent – they appeared only fleetingly as fragile, imperfect measuring instruments with binary choices about good conduct. Tasted objects were performed as finely graded sets of appropriate terms phrased through a largely referential vocabulary that also incorporates terms describing ingredients and processes. In this construction the vocabulary displays both contrasts (such as the prevalence of technical vocabulary and ingredients terms) and continuities (such as the broadly referential approach to describing taste and its representation on wheel devices) with the language of wine, and also non-coherence in its standardisation and development. The objects are also translated into numbers developed for the purposes of creation and reproduction of beers which now act to create numeric juxtapositions and comparisons of these division categories. Translated from guidelines for creation they become "facts" for testing. Tasting as a contact sense, as an attachment between a body with an object, is othered.

In the situated practices of judging, bodies, objects and the devices and conditions of tasting are done relationally within complex orderings of the material and the human elements of the assemblage. The classification system becomes an efficient physical sorting and ordering methods assemblage grouping, aligning and co-ordinating bottles and bodies into a heterogeneous, temporary, collectivity. They are done as a centre of calculation and judgement. Yet there are always breakdowns and breaches – localised re-orderings and explorations, searches for creative terms and ways to describe sensations not included in the ordered tick boxes. The classification system both orders and tames “the intangible” – translating it into Likert items – but also gives space for it to be made present within restricted spaces where it is manifested in creative interpretations and expression through written comments. The searches which breach the silences mark attempts to label and interactively construct understandings of ingredients or processes that created flavours. These explorations, this sensory labelling and learning, are sanctioned and excluded from accounts as speculation – the ideas, explorations and learning for those making judgements must be translated into matters of fact, speculative questions are made manifestly absent.

The tasting exam was performed through a different spatial and temporal ordering, through silencing participants and giving voice to the proctor alone. Through cutting the network, isolating bodies from access to the information infrastructure, traditional cognitive theory is done again: performing a simulation of judging that stands as a proxy for individual ability in the situated practices of judging. However, this isolation also creates multiple incoherent local accounts and the style guide is used as a resource to order these – making absent the non-coherences among these accounts of attachments between bodies and tasted objects.

9.2.3 How is an information infrastructure used as a resource in the situated practices and interactions of sensory evaluation and assessment?

The information infrastructure acts as a continuous point of reference and ordering. Objects are done through its classifications then translated into mobile records which have been mediated through its standardised vocabularies and numeric descriptions. These act to craft fixed points of reference from incoherent local accounts, choreographing the diverse data sources to enable ranking against set criteria that supplement and supersede non-coherence in relativist localised accounts.

Significant agency is delegated to the classification system to craft singular accounts and a rubric for assessment. This in turn crafts an imperative to ensure that it is not being merely copied and reproduced by bodies as intermediaries – as an open book exam could allow (and as I used for some of the online exam). Instead, the body must become a hybrid of both mediator and intermediary between the sensory experience and this information infrastructure:

> An intermediary, in my vocabulary, is what transports meaning or force without transformation: defining its inputs is enough to define its outputs. … [For] Mediators, on the other hand … their input is never a good predictor of their output; their specificity has to be taken into account every time. (Latour, 2005, p. 39)

The role of body-as-mediator is to specifically translate the sensory experience into the language of the categories and relatively standardised referential vocabulary to describe the individual experience and provide a judgement as a number. However, I suggest the assessment of how successful this has been can be understood as an interpretation of the distance between this individual local account and the way that the style guide achieves the same translation. This positions the style guide as an intermediary: a faithful and authoritative account of the sensory experience of a beer and the ways it is differentiated from other styles. The closer the account created in the examination is to this intermediary language of the style guide the better the candidate has done.

I have presented evidence for how this agency of the classification system supersedes the multiple, non-coherent local taste realities and accounts of them to create a singular rubric for assessment. One potential implication from this is that an exam entrant with a well-attuned palate, whose body had not succumbed to the fragility of illness but who uses a descriptive vocabulary from a different era, or in a different register, would not be highly scored. By contrast another entrant with a fragile body, whose channels for forming an attachment with the tasted object through taste and smell were significantly impaired could do better if they had access to the information the assessors have: the sheet about beer preparation and the language of the style guide. This suggests the taste exam assesses much *other* than tasting and discrimination ability, rather it tests knowledge of the language of the style guide. That the tasting exam must be a “closed book” exam, that separation from the language of the style guides is required, is indicative of their powerful agency here. It is not just a referential vocabulary that must be used but this *particular* standardised referential vocabulary. Rote-learning the style guides and having a basic ability to taste and smell could be evaluated far higher than a discriminating palate but a different register for expressing it. Through this the agency of standardisation (and assessment in terms of that standardisation) becomes a more powerful assemblage than sensory acuity combined with creative descriptions sought in the conversations around the beers tasted and the specification of precise terms that breach rather than merely replicate “The stale language of beer”.

This reading also suggests an agency for replication and reproduction of the classification system through the processes of examination. These assessments isolate the individual, and test ability to replicate (i.e. act as an intermediary for) and reproduce their classifications in practice. Through this the network is extended and made more durable by a process of accretion. This expansion also prefigures extension beyond the boundaries of these “correct settings” to become an ally in arguments over styles such as those encountered in the blog discussions of the 3rd introductory vignette.

9.2.4 How are the categories assembled and used to accomplish evaluative tasting through practices?

Categories are multiply assembled: in the online exam they are translated into comparable statistics. In the organisation of judging and the tasting exam they become physical groupings and alignments of bottles, sequential orderings of transfer to judges as ‘flights’ and through the practices of judging they are performed as filtering and ranking standards. Within this maintaining traceability is a central concern achieved through detailed work to ensure faithful translation of identifying numbers, without betrayal, as well as selected cutting of networks through other numeric translations to achieve anonymity (and thereby enact continuities with the practices of field and laboratory sciences).

The experience of sensory attachment is translated into ticks and supplemented by turns-at-talk to search for and elucidate other terms. Much of this work remains hidden – unrecorded on sheets or in authoritative accounts. The work to fix them as singular is done through materials and interoperability standards. However, in the practices using these materials and standards the objects are multiple, fluid and dynamic, negotiated and re-created. The complexity of the work to create a singular account and rubric for assessment in the tasting exam exists in a similar, albeit scaled down and simplified form, in the practices of judging. Multiple accounts are simplified into a single number, these are compared and a negotiated outcome achieved – however the remainder of the accounts are left multiple. Where these numeric comparisons are too incoherent - the multiplicity of these individual attachments too different, too apparent – there is work to re-grade and to bring the two into closer alignment, outside this numeric mode multiplicity is left untamed.

The classification system and other devices standardising taste terms explored here show continuities with devices for co-ordinating taste in other practices such as the “Wine Aroma Wheel” (Noble, 1990). A device like this supplies “the categories and the words at the time: it is, therefore, what might be called an intersubjectivity engine” (Shapin, 2012b, p. 81). The “other” to these devices is the “hedonistic event, where judges would pick beers according to their own personal preferences. The outcomes would be totally arbitrary and would depend on the background and whims of those who judge the beers” (Strong, 2011, p. 156). I have presented how this constitutive other was constructed in the competition with the transport of bottles out and the entropy as they moved from the judging room to the competitors bar, ordered categories breaking down into disordered pleasures.

However, rather than being presented in the terms Shapin uses for achieving *intersubjectivity* these devices and conditions are positioned as crafting *objectivity* through a common, standardised framework. This is explored by Liberman (2013) who proposes that there are two forms of objectivity at play in these experiences and their categorisation – the first a “real objectivity” of an actual existing taste of coffee (or in this study the existence of a real beer with a taste), whilst the second is socially constructed and seeks to remove these traces of the subjective experience (the construction of an “objective” assessment constructed through the calibrations, standards and their enforcement that seeks to position the tasting body as “a measuring instrument” (Muniesa & Trébuchet-Breitwiller, 2010)). The systems and standardisations such as that of the BJCP explored in this thesis interfere in this as “the monologue of a formal system and the myopic thinking it fosters are continually disrupted by the object that is actually there and insists upon being experienced” (Liberman, 2013, p. 223). These achieve a curious reversal as:

> By giving priority to the formal measurements and by routinizing the experience of the real objectivity of tastes, elevating the former to the status of what is objective and considering the latter to be something subjective, tasting methodologies reverse the status of the actual affairs, so that what is subjective (the devised system of categorization and its artificial unities of meaning) is accepted as objective and what is objective (the actual taste) is relegated to subjective status (p.228-9).

I suggest that these ideas are all at play in the empirical explorations but that such a reversal is also a redistribution of agency. This has continuities with the processes seen in the changes of chemistry explored by Roberts (1995) away from the body of the sensuous chemist towards a redistribution of that agency to instrumentation. However, tasting cannot be done this way leading to the proliferation of devices and conditions that redistribute agency, which were explored empirically in practices in this thesis: the detail and language of the style guide, its translation into and materialisation as tick-boxes and their use in conversations. These enact a shift of agency from an individual forming an attachment with a tasted object and a search for an appropriate medium to translate, express and communicate that, into a standardised system for recording binary choices through ticks, or rankings through Likert items. The increasing detail and criteria perform a specific version of objectivity – where the ideal sensing body would be a mere intermediary between object and system. The greater the specificity, the greater the objectivity, the greater the standardisation, the greater the redistribution of agency away from tasting body. Other configurations with less detail in terms of style guide and score sheet would allow greater space for interpretation and variation, constructed as an undesirable subjectivity. This is a core challenge for many classification systems – making recordable, comparable and mobile an account of individual or collective actions does not passively *record* the work of practice but *mediates* and *redistributes* agency. This points towards the unintended consequences of classification systems, and the importance of exploring their unintended consequences as well as their intended or "correct" uses. I have explored, presented evidence and through drawing this together now suggest that in constructing this complex system for categorising beers and judging them there is a shift in agency away from the attachment between tasting body and tasted object and towards a mediating role for the style guide, and evaluation of the attachment between tasting body and standards, and the tasted object and those standards. Mastery for both body and object then being the ability to display the terms of the classification system rather than explicate, evoke or describe a passionate attachment.

9.2.5 How do members orient to and use tools which instantiated these classification systems?

The complexity of this mediation and its regimentation into numeric ranges, binary choices and itemised scales then enrols other actors which are well adapted to reproduction and categorisation of such detail in the *apparatus* of devices and tools. It is a point of reference right through the trajectories and lives of many home brewed beers. The information infrastructure acts to classify what a beer is when it is designed and "born digital". It makes this transportable through interoperable code standards and web interfaces and also acts through devices to enrol other nested standards for measuring and comparing colour, bitterness and strength. However, much is othered in this. At the design stage categories that are not enumerated are excluded from matches: the constitutive other of the "specialty" categories is not presented as a match for a recipe. Mobile devices are not authoritative in the practices of judging – colours displayed on screen are interpreted as being variable, becoming mediators rather than intermediaries for the standards. Thus it is standardised, branded printed colour cards that have the authority to act as intermediaries and thereby spokespersons for these standards, whilst also being enrolled to act as a symbol and materialisation of the certification and approval to make those judgements.

Formal assessments seek to cut the network of interoperability. In the online exam time is limited to prevent complete cross-referencing. In the tasting exam bodies are isolated from each other and from the apparatus of devices that could act as intermediaries for the language and numbers of the standards.

9.3 In dialogue with the travelling companions

Having considered the contribution of the empirical evidence of this investigation in relation to the questions that guided it, I now turn to explore the transformative agency of those engagements in connection with the travelling companions taken along on this praxiographic journey.

9.3.1 First travelling companions: Technologies as tools and more

In taking technology along as a travelling companion I drew upon STS scholarship and in particular Winner's (1977) typology, seeking to substantially broaden the scope and interpretation of "technology" beyond the level of the *apparatus* that is the focus of most TEL research to encompass the *techniques*, *organization* and in particular the *network* of the classification system.

This has proved productive and I have described some of the ways in which information is organised and made interoperable and how this acts to extend and redistribute agencies through enabling transportation, replication and acting at a distance. In this configuration the use of mobile devices is an interesting point to explore but is only one part of a much larger network. I have explored how that network is an important set of connections to study, and how STS scholarship provides methods and approaches that are well attuned to tracing these connections.

While the information infrastructure that has been explored here is perhaps 'small beer'[53] in terms of seriousness or social problems, I propose there are resonances and continuities with other areas of education. Information infrastructures, in the forms of key skills frameworks and key performance indicators, permeate pre-compulsory, compulsory and post-compulsory education settings and institutions. I suggest that the approaches used here to undertake an ethnography of infrastructure (Star, 1999) have application in such settings, and exploring them as a redistribution of agency is a useful way to consider and productively interfere in them. This would position the introduction of mobile devices for educational professionals not as the singular object of a TEL study focused on the device and its

[53] Perhaps surprisingly "small beer" is *not* in the classification system, however it is a historic style detailed in the early 18th Century as "a low-alcohol drink for immediate consumption" – see Pattinson (2008a, 2013)

‘affordances’ (or whichever other link is being made between technology and learning), but instead as part of a much larger, often hidden, network of connections. Studying situated practices that use these *apparatus,* without connecting them to the *network,* would be limited in terms of the agencies and connections that are important, as this research demonstrates.

9.3.2 Second travelling companions: Standards, classifications, certifications and information infrastructures

Busch’s (2011) typology of standards have provided a useful system for organising and explicating the agency of different standards. Influenced by work deriving from actor-network sensibilities and other explorations situated within STS, particularly Bowker and Star (1999), he applied these symmetrically to the categorisation of both humans and non-humans. These symmetrical engagements are notably different from earlier anthropocentric considerations of the use of categories in interaction. While I have drawn influence from Sacks’ (1966, 1967, 1972b; 1992) work on Membership Category Analysis (MCA) to explore category work in turns-at-talk this has been more as a sensibility and analytic influence than as a sustained involvement. However, I hope that through highlighting the openings that a symmetrical considerations of category work to explore not only the categorisation of people by people, but also the categorisations of things by people, and people by things in sequential and categorial interactions with a broadly-drawn view of technologies can be translated into a more sustained engagement and potentially productive extension of MCA.

Exploring the information infrastructure has not only engaged with the use of *apparatus* in situated practices but also provided a method for connecting local practices (including turns at talk, form-filling and creating chains of reference to achieve anonymisation) to the *network* of standards. This enabled an exploration of how locally situated and produced material-semiotic orderings are connected and made transportable to other locations. It is this pragmatic/praxiographic orientation that connects together specific offspring of the origins of ethnomethodology – conversation analysis and membership-category analysis – with ethnomethodology as a intellectual antecedents of ANT.

9.4 The retinue of relations revisited

These then were the substantive conclusions of this thesis: however there are other networks that have become entangled through the encounters, and it is to those that I now turn.

9.4.1 First retinue: Taste and tasting

Bourdieu's work explored taste as a means of distinction: reinforcing and reproducing class structures and boundaries through accruing or being excluded from cultural capital. Such an approach has been extensively challenged through the formulation a new "post-critical" sociology of taste and art. Schwarz (2013) outlines this approach which contests 'distinction' as the primary concern of appreciation through three linked concerns: (1) aesthetics and the content of art, (2) interest in the material and corporeal aspects of art tasting and (3) interest in the acts of tasting. Where Bourdieu appears to position these as (1) an illusion, (2) an irrelevance and (3) a "mere screen for non-material, symbolic 'contents'" they form the basis for developing a "new sociology of art" which, like the engagements of this thesis, is "inspired by actor-network theory and the growing recognition of the power of the material within anthropology" (Schwarz, 2013, p. 418).

The amateurs involved in this study are passionate, reflexive, critical and display their competence through the talk around, and situated actions of, tasting. Through accepting exhortations to take them seriously and treat them respectfully their critical engagements with categories and judgments seem a far cry from the characterisation of real ale enthusiasts in the work of Karl Spracklen. He moves rapidly to interpret the attachments to real ale as being merely "a marker of good taste and distinction. In choosing to drink real-ale, one chooses to reject the lagerisation of the mainstream, the instrumentality of commodification and modernity." (Spracklen, Laurencic, & Kenyon, 2013, p. 15). The encounters in this thesis displayed tasting as skilled, passionate, critical, reflexive attachment rather than taste as distinction or social marker. I suggest the reading of other attachments through a Bourdieusian prism make absent this agency and skill, replacing them with distinction and class. This is clear when the activities of whisky-tasters and collectors who "visit Scotland in search of authentic whisky distilleries"(Spracklen, 2011, p. 47) are described as having "been tricked by a 'make-believe' Scottishness and a marketing sleight-of-hand into thinking they are making a discerning choice" (Spracklen, 2012, p. 48). Once again an attachment to the object of tasting is erased, the tasters are dupes, tricked by marketers rather than active agents in selecting their attachments. I suggest that the descriptions and engagements of this thesis, drawing in particular on both Liberman's and Hennion's work, allow a rejection of such rapid turns to "distinction" and explanations of "class" and instead invite a more serious engagement with the skilled, situated, attachments of amateurs which are far from the denigrated autodidacts betraying their "anxiety about the right classification" as "victims of educational entitlement" (Bourdieu, 1984, p. 329). There are moves to display distinctions, however these are the distinctions from interactions with the tasted object rather than as markers of class as these skilled amateurs collaboratively searching for "new ways of describing tastes they may have developed … They recognize that there is always that "something more" in a flavor that they may have missed, and they are eager to learn what it is, how to recognize it and how to describe it." (Liberman, 2013, p. 266)

However, I do not wish to entirely adopt the stance associated with Bruno Latour and ANT theorists and reject such approaches outright. Bourdieu's work, and in particular his critical engagements with the exclusiveness and exclusion of 'the academy' shows important potential. When proposing my methods and approach I asserted that an engagement with the empirical was the appropriate way to conduct this investigation and rejected Hampton's (2012) proposal that artistic enquiry "provides the best opportunity to accurately study the experience of drinking wine, because what an individual goes through, and why a wine drinker is drawn to others, cannot be adequately documented by any other means" (p.857). This rejection has, I believe, been adequately demonstrated through describing and re-constructing in detail the skilled and descriptive engagements of beer judges with their experiences and judgements whilst also explicating the agency of standards in these activities. I now extend this rejection further to encompass Hampton's additional assertion that "Wine is unique. No other consumable product comes close to the appeal of wine" (p.856).

This 'vinocentrism' permeates other academic work – where investigations of the linguistic properties of wine talk (Lehrer, 2009) philosophical books exploring wine (e.g. Crane, 2007; Scruton, 2007; Sweeney, 2008) and the editorials and articles in special issues of philosophical journals are dedicated to the aesthetics of wine (Perullo, 2012) but not other drinks. These often adopt essentialist interpretations that assert the superiority of wine, for example Todd (2012) proposes that "some objects may simply possess certain properties that, in interaction with particular physical and/or cultural characteristics of human beings, provide more expressive potential than others, and which might allow wine, for example, to be a more expressive object than, say, beer" (Todd, 2012, pp. 112-113). I interpret these as serving to position wine as an appropriate object for academic enquiry whilst excluding beer as less distinguished. In this Bourdieu's critical engagements and examinations of academia may have a particular perspicacity not for othering the reflexive achievements and expertise of great amateurs and positioning these attachments as merely 'taste'-as-distinction, but instead for exploring 'research-about taste'-as-distinction.

9.4.2 Re-connecting with the second retinue of relations: rethinking sensory learning and situated practice

I suggest that the journey presented here, and the practices I have presented and explored, can be understood as a de-centred, re-configuration of the practice of distributed sensory learning. This is achieved through the co-construction within a material-semiotic network of tasted object, tasting body, devices of a referential vocabulary and through sequential conditions of turns at tasting, ticking and talking. And it is in the relational construction of these that learning is enacted. It is not only the broad learning of the meaning of descriptors and characterisations of tasted objects, but one that extends beyond this to:

> the very system of reasoning and of the practical objectivity that is effective on that occasion. They learn all of these things by demonstrating in their talk and actions how such a system is to be employed; that is, what gets exhibited are not only the categories and their meanings but the praxis for applying them. (Liberman, 2013, p. 266)

Whilst the previous engagement with the second travelling companion explored and demonstrated the agency of classification and standards on the practices of assessments and the certification of judges it has had less to offer on these relationships with *learning*. There is perhaps something to reconsider in terms of the tensions between actor-network theory and ethnomethodology here, which Lynch's encapsulates as "the Wittgensteinian and ethnomethodological hostility to vernacular theorizing has to do with a sensitivity to the violence that is done when, for example, "smart" machines are treated as substantive equivalents to "smart" students. " (Lynch, 1996, p. 250). Whilst the ANT-derived methodological approaches and sensibilities have proved useful for exploring the relevance and importance of such agencies and their effects on formalised assessment and the limits they place on practices, it is this sort of ethnomethodological / phenomenological / Wittgensteinian critique that highlights the limits of these approaches for a more direct engagement with learning. An alternative approach that explored this data by drawing on the phenomenological roots of ethnomethodology which inform Liberman's engagement could help explore that aspect further and connect more strongly with learning theorists such as Dewey. However such an engagement would have less freedom of movement to explore the assemblage and agency of classifications and their translations into technologies of assessment which are the contributions of this engagement.

9.4.3 Re-specifying the third retinue: re-defining situated practice as the crafting of methods assemblages

I set out with a definition of situated practice from Gherardi (2009) that it was "not only work, but also the (re)production of society. In this sense, practice is an analytic concept that enables interpretation of how people achieve active being-in-the-world" (p.536). My suggestion is that the material-semiotic view of practice developed from the fieldwork encounters requires a re-definition that links practice more closely to the notion of a methods assemblage and the crafting and choreographing of realities. I have presented detailed explorations of how the different performances and alignments of tasting bodies and tasted objects and their ordering "becomes a relational and performative effect of practices" (Law & Lien, 2013, p. 394). An extension of this is to reconceptualise practices as:

> detectable and somewhat ordered sets of material-semiotic relations. To study practices is therefore to undertake the analytical and empirical task of exploring possible patterns of relations, and how it is that these get assembled in particular locations. It is to treat the real as whatever it is that is being assembled, materially and semiotically in a scene of analytical interest. Realities, objects, subjects, materials, and meanings, whatever form they take these are all explored as an effect of the relations that are assembling and doing them. Practices, then, are assemblages of relations. (Law, 2012a, p. 157)

To bring together practices and methods assemblages helps to consider the infrastructures of this investigation not just as bundles of distributed practices but also as methods assemblages that are crafting realities.

9.5 Speaking back to typologies: The question of a “community of amateurs”

The typology I derived from Hennion has provided both a rhythm and a set of ordering principles for this investigation. I have explored the performance and assembly of attachments between tasting bodies, tasted objects and the devices and conditions of tasting, however I posed the fourth element as a question: do these assemble a “community of amateurs”?

I earlier suggested that within explorations of learning the term “community” seems to carry a similar amount of problematic baggage as the term *taste* can bring with it in the broader field of sociology. Community is all-to-frequently asserted in uncritical and idealised modes as an anthropocentric and unexplicated aggregate. While it may not carry the hierarchical baggage of those other categories of sociology such as “the institution” or “class”, in their exclusion it carries other implications of stability and continuity. Can I really say that in this fieldwork I have seen Hennion’s proposal of “a community of amateurs”? A principle of an actor-network approach and account is not to invoke *a priori* "social" categories. Instead of asserting there is a community of amateurs, implicitly suggesting links to a “community of practice”, it is to see practices as ongoing achievements, and collectives as contingent, emergent effects of those practices. It becomes a question, not a statement: "is there collective work being done? How is it reflexively described by those doing it?", rather than “what practices are an existing, defined, 'community' doing?”

In the transcripts of the situated practices of judging I presented moments where connections were made between adjacent pairs. They were formed through sharing materials – passing a sample for another judge to try, or using a standardised colour card. These connections were material but also fleeting. Any “community” of judging was assembled through the bringing together and ordering of materials AND people. The bottles were as aligned and ordered as the judging bodies. However, such strict ordering is rarely associated with the term community which implies less regimentation. Values that could be ascribed to assembling a community – such as giving constructive feedback - were also regimented and translated into numbers, for example where “courteousness” is achieved through a minimum score of 13.

Within the questions of the online exam the term "community" did not appear. Across all the assembled documents and guides for prospective and qualified judges encountered and explored throughout fieldwork the term community appears only once in the Judging Procedures Manual: "Judges represent the BJCP and should be able to explain the *program* to potential judges and others in the homebrewing *community*".

I suggest that rather than the term “community”, which is used as vaguely in the BJCP guides with reference to “the homebrewing community” as it is in Hennion’s accounts of a “community of amateurs”, it is instead the term "program" which merits consideration. Program captures the complexities, calculations and efforts to introduce standardisation well - there are inputs of liquids and people, transformations and translations using standardised languages resulting in outputs of numbers, rankings and referential words. There are priorities of efficiency, consistency and objectivity. Within this complex methods assemblage a *program of judging* describes and situates these better than a *community of practice* or a *community of amateurs*. This should come as no surprise: taking the great amateurs seriously means that we should *expect* the reflexive accounts of the members to serve better in defining and interpreting their attachments than the pre-defined aggregates of sociology.

9.6 This methods assemblage as a way to intervene, not just a way to think about method

> S: But that's exactly my problem: to stop. I have to complete this doctorate. I have just eight more months. You always say 'more de-scriptions' but this is like Freud and his cures: indefinite analysis. When do you stop? My actors are all over the place! Where should I go? What is a complete description?
>
> P: Now that's a good question because it's a practical one. As I always say: a good thesis is a thesis that is done. But there is another way to stop than just by 'adding an explanation' or 'putting it into a frame'.
>
> S: Tell me it then.
>
> P: You stop when you have written your 50,000 words
>
> (Latour, 2005, p. 148)

And so I draw to a close of this text, this performance of the data, its assembly and its explication, its reproduction and its review. But if I am to take seriously the idea that working with an actor-network sensibility should be "a way to intervene not a theory of what to think" (Fenwick & Edwards, 2010) this is insufficient. There needs to be intervention, action and attempts at interruption. Thus I seek to close this thesis symmetrically: I opened with vignettes, and I now close with further vignettes (Figure 92, Figure 93) that represent first steps, performances and experiments to make interventions and develop some of the ideas and assemblages of this thesis in practical situated actions working with tasting.

10 Closing Vignettes

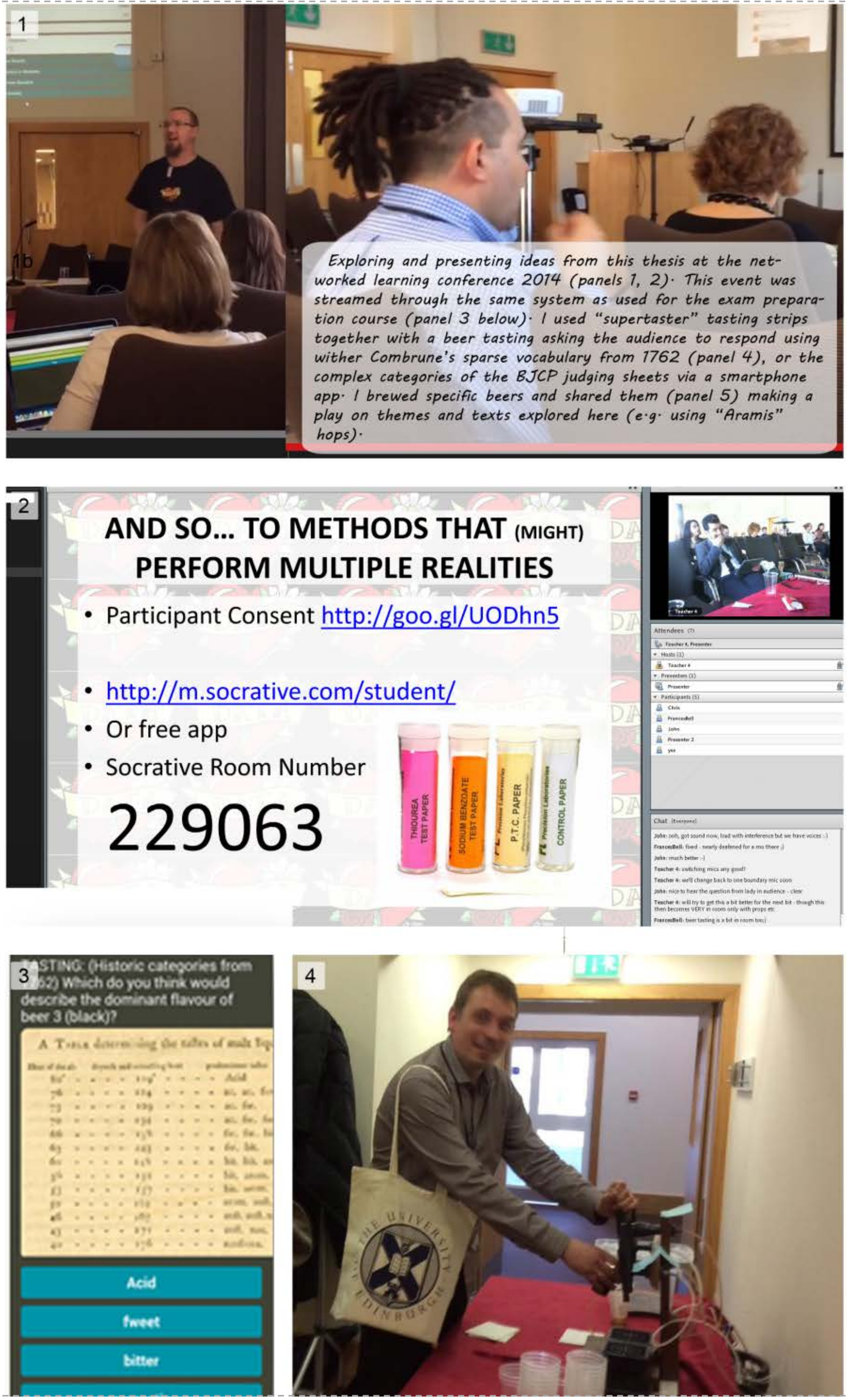


Figure 92: Explorations and engagements at the Networked Learning Conference, 2014.

Figure 93: Performative engagement with local coffee roaster and craft beer seller J. Atkinsons & Co.

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12 Appendices

Exceptional permission with the support of my supervisor, Head of Department and approved by the Dean of Graduate Studies was given for the inclusion of transcript details and full transcripts in the thesis, outside the word count. Transcripts are available online.

12.1 Appendix 1: Transcription notation

The following symbols are used in the transcriptions derived from Jefferson (1984, 2004)

12.1.1 Standard Jeffersonian notation used in the transcripts	
[text]	Square brackets indicate the start and end points of overlapping speech.
=	Indicates the break and subsequent continuation of a single utterance.
(# of seconds)	A number in parenthesis indicates the time, in seconds, of a pause in speech. *(Note: Little used here due to complexity of audio and overlapping pair talk.)*
(.)	A brief pause, usually less than .2 seconds.
↑ or ?	Indicates rising pitch or intonation.
↓	Indicates falling pitch or intonation.
-	Indicates an abrupt halt or interruption in utterance.
>text<	Indicates that the enclosed speech was delivered more rapidly than usual for the speaker.
<text>	Indicates that the enclosed speech was delivered more slowly than usual for the speaker.
°	Degree symbol indicates whisper, reduced volume, or quiet speech.
CAPITALISED SPEECH	Indicates shouted or increased volume in speech.
text	Indicates the speaker is emphasizing or stressing the speech.
:::	Indicates prolongation of sound.
(text)	Speech or speaker which is unclear or in doubt in the transcript.
? text	Unclear speaker indicated by ? in left margin.
((fieldnote))	Annotation of non-verbal activity.
((italicised note of writing activity))	Used in transcripts of audio 1 and 2 for indications of written activity on the form

12.1.2 Modifications and other non-standard transcription notation

Given the multi-modality of the data and some of the complexity of parallel talk the following adaptations and extensions have been added to the transcriptions.

Black = Primary judging pair	The person using the recording device is indicated in black text
Blue = Adjacent Judging Pair	Blue text indicates an adjacent judging pair
Green = between pairs	Green text indicates group talk between the primary and adjacent pairs
Burgundy = another person	Burgundy text indicates talk between a pair/s and others e.g. stewards
Orange = other judges on table	Orange indicates another judging pair
'	Abbreviated/swallowed sounds (e.g. a glottal stop)
,	Used as per conventional transcription – indicating short pauses. *Does NOT indicate intonation!*
*	Used to note a point of interest and connect to a ((fieldnote)) or image.
•	Indicate where anchor points were inserted in the text for synchronising transcripts with audio and video. The • is inserted by ATLAS.ti on transcripts from a time stamp. .syn files are included in the accompanying webpages. These are included both the show the performativity and translations of analysis software and for reference to re-introduce these synchronisation points and ensure they match with those displayed in these transcripts. If not synchronising they could be removed or ignored.
|• |text	Indicates position of anchor on following line

12.2 Appendices 2-8: Full copies of transcripts (available online)

Video files of the LiveScribe pen writing with accompanying audio, video of the participants engaged in beer drinking, full transcripts and audio are all available on request from the author (subject to giving appropriate details of ethical use and reproduction).