

# Social Studies of Science

<http://sss.sagepub.com/>

---

## The sciences of subjectivity

Steven Shapin

*Social Studies of Science* 2012 42: 170 originally published online 30 January 2012

DOI: 10.1177/0306312711435375

The online version of this article can be found at:

<http://sss.sagepub.com/content/42/2/170>

---

Published by:



<http://www.sagepublications.com>

**Additional services and information for *Social Studies of Science* can be found at:**

**Email Alerts:** <http://sss.sagepub.com/cgi/alerts>

**Subscriptions:** <http://sss.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

**Citations:** <http://sss.sagepub.com/content/42/2/170.refs.html>

>> [Version of Record](#) - Mar 13, 2012

[OnlineFirst Version of Record](#) - Jan 30, 2012

[What is This?](#)

## The sciences of subjectivity

Social Studies of Science

42(2) 170–184

© The Author(s) 2011

Reprints and permission: [sagepub.co.uk/journalsPermissions.nav](http://sagepub.co.uk/journalsPermissions.nav)

DOI: 10.1177/0306312711435375

[sss.sagepub.com](http://sss.sagepub.com)

[sss.sagepub.com](http://sss.sagepub.com)



**Steven Shapin**

Department of History of Science, Harvard University, Cambridge, MA, USA

### Abstract

In historical and ethnographic studies of the making of scientific knowledge, there has been a long-standing fascination with deflating certain stories about objectivity. Among the resources used to achieve that deflation have been the notions of subjectivity, which has been treated more as a trouble for objectivity than as a knowledge-making mode open to systematic study. I describe notions of subjectivity implicated in that inattention; I trace potentially constructive links between contemporary science studies and resources in 18th-century philosophical aesthetics; I draw notice to available engagements with the mode of subjectivity known as taste, and, especially, gustation and olfaction; and I suggest ways in which we might study the achievement of intersubjectivity in these domains.

### Keywords

aesthetics, judgment, objectivity, subjectivity, scientific knowledge, taste

In the science studies world, for quite a long time we've been fascinated by objectivity. We've long since stopped taking it for granted; we've displayed its historicity, its contingency, its shifting meanings.<sup>1</sup> We've described the practices of securing its appearance, and we've described those practices not as the application of off-the-shelf Method but as hard political and cultural work. We've pricked the objectivity balloon. Objectivity, we say, is an ideal for science – and some have asked whether it is actually a coherent and stable ideal – but it's not a reality about science, not in a form easily recognizable from its ideals. And science has been traditionally seen as the major, if not the only, domain where objectivity lives.

Objectivity is not something we can straightforwardly be against – how else do we commend our own stories but through some warrant bearing a family resemblance to objectivity? – but it is something whose specifications we have tended to deflate.

---

### Corresponding author:

Steven Shapin, Department of the History of Science, Harvard University, Science Center 371, Cambridge, MA 02138, USA.

Email: [shapin@fas.harvard.edu](mailto:shapin@fas.harvard.edu)

Overwhelmingly, what we've done is to bring the ideal of objectivity into alignment with reality – ironically, to make it more objective – by adding to it doses of subjectivity. We historicize objectivity by drawing attention to what has counted as objectivity at various times and in various places. We take supposedly objective claims, beliefs, practices, people, institutions, stipulations, and intentions and we show their impurity, the presence in them of disparate subjective things. That which seems to be transparently about objects in the world contains ineradicable elements belonging to subjects, their background knowledge, their categories, customs, conventions, and purposes. Our scientific knowledge is about the world and it is also irremediably about us, as knowers. And the condition of our knowledge being intelligibly about the world is that it contains a bit of us. I take that to be lesson number one of the sociology of scientific knowledge (for example, Barnes et al., 1996; Bloor, 1996).

Giving accounts of whatever has counted as objectivity, we have – often without noticing it – made subjectivity into a matter of potential interest. Subjectivity has indeed been a scholarly focus, but typically in philosophical, historical, and ethnographic treatments of the *subject* and changes in the attributed make-up of that subject: What is, and what is thought about, the entity that experiences, feels, acts, acts with, and is acted upon? That literature is important and extensive.<sup>2</sup> But scholars have not written so much or so incisively when subjectivity and objectivity are considered with respect to knowledge-making. Here, the categories of the objective and the subjective are arrayed in opposition, both in description and in evaluation. Subjectivity is then called upon to deflate objectivity. The two notions go together, but as *Doppelgänger*, the good child and its evil twin, where the one is the positive image, the other the negative: a disruptive and disordering influence on knowledge; a Trickster figure making a mess out of everything. Subjectivity is seen as a philosophical trouble; it's what pollutes objective knowledge. You can find subjectivity as an item in philosophy encyclopedias, but more usually it's encompassed within the entry on objectivity – the grit in the knowledge-machine. There are works in science studies and the philosophy of science – two notable old-time examples are Israel Scheffler's (1967) *Science and Subjectivity* and Ian Mitroff's (1974) *The Subjective Side of Science* – in which subjectivity features in the title and then becomes practically invisible in the text, which shows little to no focused concern with what subjectivity is or how it might work in knowledge-making.

A *Doppelgänger* conception of objectivity and subjectivity is classical. Aristotle and the Stoics circulated the image of the two standing epistemically in the same relation as the wax to the seal; that image worked for Descartes and Locke in the 17th century; and more recently it served for Lorraine Daston and Peter Galison in their historical survey of objectivity. 'Objectivity', they write, 'is related to subjectivity as wax to seal': the two are 'as inseparable as concave and convex; one defines the other' (Daston and Galison, 1992: 82; 2007: 197, 209; cf. Stengers, 2000 [1993]: ch. 2). Objectivity is a candidate for membership in J.L. Austin's class of 'trouser words', taking their meaning from the words to which they are customarily opposed, where the negative (in now-strange language) 'wears the trousers' (Austin, 1962: 70).

You might think, if we believed this or something like this, that subjectivity would be as much a topic of focused theoretical and empirical inquiry as its twin. We'd be greatly interested in what it is; we'd want to distinguish its specific forms and modes; we'd be interested in how it figures in concrete knowledge-making practices; and we'd be

engaging with it in a naturalistic sort of way. But in science studies we've done almost none of those things. And that's odd since, if we no longer believe in the objectivity of legend, that puts quite a load on the subjective items we use for deflationary purposes: oddly, it seems here that objectivity doesn't exist, but subjectivity does. There are probably two reasons for this general neglect. One is the strength of the identification of scientific knowledge with ideas of objectivity and the intellectual capital that accrues from deflating what we take as legend; the other is what might be called the dustbin conception of subjectivity, the bin that holds the heterogeneous bits and pieces of whatever it is that makes trouble for objectivity-stories. We take objectivity as an ideal to be historicized and subjectivity as what we're sadly stuck with if we don't watch out.

The idea that there is nothing coherently and stably to be said about the subjective element in knowledge-making, that it is inchoate, arbitrary, unstable, and endlessly varying, fits subjectivity for its supposedly contaminating task and also excuses us from making its workings an explicitly framed topic of inquiry. What could we possibly find out? That sentiment too is classical. Subjectivities, like the practices of making the knowledges called objective, have their modes, and the naturalistic impulse rightly considers them in their specificities. That is, from the grab-bag of capacities and cultural practices widely regarded as subjective and as yielding subjective claims and knowledge, we can select and describe concrete forms, just as it has proven useful to select and describe the specific modes of knowledge-making known as solid-state physics or botanical taxonomy rather than an entity like 'science as a whole'. So let's consider one mode of subjectivity among very many, the one called taste. Here the famous Latin tag is *De gustibus non est disputandum*. No one seems to know where the phrase originated, though some think it must be scholastic. Common English renderings are 'There's no disputing about taste', 'There's no arguing about taste', and 'There's no accounting for taste'. To each his own. You like Wagner and I like Verdi, and there is nothing we can say to each other that would alter our aesthetic responses or our expressed opinions, nor is there anything I can say or point out to you that would effectively communicate why *Rigoletto* is a great opera and *Götterdämmerung* is pompous drivel. It is widely thought that neither the facts of the matter nor rational persuasion can conceivably have any place in such things. In its normative sense, *De gustibus* counts as advice – don't argue when differing tastes present themselves in social situations, or at least don't expect that such arguments can lead to any worthwhile outcome. People who argue about taste – beyond a certain point or too energetically – can be a pain. It's rude, it's pointless, and it's likely to be disruptive.

In science studies, a telling instance of that view appeared in an important 1973 essay by Thomas Kuhn, in which he was concerned to defend himself from charges of subjectivism. Suppose, Kuhn said, he and a friend go to a movie, a western, and afterwards he remarks to his friend 'How I liked that terrible potboiler!' That the movie was a potboiler is, Kuhn writes, a matter of *judgment*: he and his friend can argue all night, invoking all sorts of standards and criteria, about whether or not it was a potboiler. Judgment is, Kuhn says, 'discussable', if you like, it can be rational. Maybe, Kuhn implied, he and his friend can, by trading arguments and evidence, come to share the view that the movie was indeed a potboiler. But, by contrast, that he liked the film is what Kuhn called a matter of *taste*; the experience of liking is incorrigibly subjective; it is private; and for that reason there's nothing to be said about it that has any consequence:

short of saying that I lied, he cannot disagree with my report that I liked the film or that what I said about my reaction was wrong. What is discussable in my remark is not my characterization of my internal state, my exemplification of taste, but rather my judgment that the film was a potboiler. (Kuhn, 1977 [1973]: 336–37)

Where taste is concerned, there's just nothing to be discussed. Kuhn defended his work in the philosophy and history of science by saying that, of course, scientific theory-choice is a matter of judgment – like finding evidence and criteria by which you can say a movie is or is not a potboiler; but it's not a matter of taste, about which, he claims, you cannot discuss, cannot find criteria, cannot advance evidence, cannot go on in a rational way, cannot reach any sort of agreement, cannot account for differing outcomes (p. 337).

Kuhn here implicitly assimilated positions in the philosophy of science to a body of thought rarely considered in connection with science. The taste–judgment distinction has traditionally had its being in aesthetics, especially in the 18th-century efflorescence of concern with the beautiful and the good, and, though Kuhn didn't say so, thinking of scientific and aesthetic judgments in the same frame is quite a productive thing to do.<sup>3</sup> If it's not exactly Keats's 'truth is beauty, beauty truth', at least it's that, properly understood, concrete procedures for rendering truth and beauty judgments resemble each other quite a lot – or at least that's my claim. I briefly say how they do, and, along the way, I suggest how we might get interested in some historical and contemporary practices of subjectivity as forms of science. I say practices of subjectivity, since the notion becomes accessible in its specifics. Taste is one among many practices of subjectivity and the specific modes of taste involved in the organoleptic properties of aliment – notably taste and odor – have been widely accounted among the most private, arbitrary, and least discussable of all subjective modes. Taste is a mode of subjectivity; its sub-modes include the taste and smell of foods as well as the assessment of artistic beauty; but all forms of taste have been recognized as problems for philosophical treatments of knowledge and order.<sup>4</sup>

How did 18th-century aesthetic philosophers think about taste judgments? There were writers in a direct genealogical line with Kuhn's distinction. Thomas Reid, for instance, surveyed existing philosophical opinion about the relationship between the categories of judgment and taste. Philosophers had situated the domain of judgment in means-ends deliberations, but reckoned judgment impotent in deciding between ends or in fixing upon what was good. Here, they thought, 'we must be guided, not by judgment, but by some natural or acquired taste, which makes us relish one thing and dislike another' (Reid, 1788: 71), a taste we could not discuss. Reid's examples were a food choice and a moral choice, and he was concerned with the question of whether both could be viewed within the same frame:

[I]f one man prefers cheese to lobsters, another lobsters to cheese, it is vain, say they, to apply judgment to determine which is right. In like manner, if one man prefers pleasure to virtue, another virtue to pleasure, this is a matter of taste, judgment has nothing to do in it. This seems to be the opinion of some philosophers. (Reid, 1788: 71)

Reid dissented, thinking that 'we may form a judgment, both in the question about cheese and lobsters, and in the more important question about pleasure and virtue'.

Reid granted that individuals' preference between cheese and lobsters required no judgment, depending only on 'the constitution of the palate'. But if the question is who has the best taste, judgment can and should return an answer: each to his own – 'the two tastes are equally good, and ... both of the parties do equally well, in preferring what suits their palate and their stomach'. Palate relativism didn't disturb Reid, because he evidently cared far more about preserving the discussability of what was called judgment than establishing the accessibility of taste: 'the two persons who differ in their tastes will, notwithstanding that difference, agree perfectly in their judgment, that both tastes are upon a footing of equality, and that neither has a just claim to preference' (p. 71). There was a taste–judgment distinction, but judgment could function in the domain of taste, and the each-to-his-own outcome which some philosophers deplored was itself owing to judgment: '[I]t appears, that, in this instance, the office of taste is very different from that of judgment; and that men, who differ most in taste, may agree perfectly in their judgment, even with respect to the tastes wherein they differ'. Judgment about taste was tolerant; judgment between a life of virtue and a life of pleasure neither was nor should be so casual. Anyone who could not see the obligation of virtue was not a 'moral agent', giving evidence that his faculties were deranged. A taste for lobsters and the worth of a life given over to lobster eating were not on a level (pp. 71–72).

A different genealogy stems from David Hume's (1758 [1757]) great 'Essay Concerning the Standard of Taste', and here its development would lead to an understanding of taste different from the one Kuhn commended. Hume's question was whether there could be such a thing as a standard in matters of taste, and the first response he canvassed was no. He invoked *De gustibus* and he talked about taste in the same sort of way that Kuhn later did:

To seek the real beauty, or real deformity is as fruitless an enquiry, as to pretend to ascertain the real sweet or real bitter. According to the disposition of the organs, the same object may be both sweet and bitter; and the proverb has justly determined it to be fruitless to dispute concerning taste. (Hume, 1758: 136)

But the richness of Hume's essay comes from not leaving the matter there. He also considered the coherence and legitimacy of the view that tastes are neither arbitrary nor incapable of being shared. Indeed, it was a common sentiment among 18th-century Scottish philosophers that the arbitrariness implied by *De gustibus* was refuted by the everyday practices of those who articulated it. Alexander Gerard, for example, perceptively noted that:

The proverb, though frequently expressed, is never steadily or consistently adopted. Its authority is sometimes urged by persons whose sentiments are called into question; but it is disregarded by the same persons, whenever they are disposed to call in question the sentiments of others. (Gerard, 1780: 208)

You take refuge in *De gustibus* when you can find no principle or evidence to justify your taste, but when you find fault with another's taste, you believe and act as if there is a standard of taste, a right and a wrong in the matter (p. 208).

When I say that a Vermeer is beautiful, I mean it to be understood that there is something about the painting that is the occasion of my saying so and ought to cause you to respond as I respond. It's hard to imagine the point of my saying the Vermeer was beautiful if what I meant was nothing to do with observable aspects of the painting, aspects to which I can draw your attention and which I might be able to associate with more or less robust features of beautiful paintings. My sense of its beauty has, of course, got to do with me, but it also has got to do with the painting. And, in thinking that, I do not have to believe in any such notion as universal aesthetic standards. As we reckon that taste responses have got to do with objects, not just subjects, we then quite forget, Hume reminds us, 'the natural equality of tastes', and, he might have said, we argue, dispute, and discuss quite a lot. It's 'natural' for us, Hume said, to call on evidence and reasoned argument in order to arrive either at agreement or adjudication (Hume, 1758: 136). You and I can discuss things about the painting that flow from what I notice and you may not (or the other way round). We do not then act as if we regard our judgments as arbitrary or essentially private; insofar as we think that there are aspects of the object that elicit our aesthetic responses, we are talking about the objects, the same objects available to you as well as me – and we can and do refer to, even point at, aspects of those objects as we talk about our responses. That position too was staked out, turned over, and debated in 18th-century aesthetics.

Kant's *Critique of Judgement* (1914 [1790]: 229–41) named and discussed what he called the 'antinomy of taste'. There are, he observed, two principles of judgment, each of which is valid but each of which seems to rule out the other. On the one hand, taste is an internal, private, felt response – subjective in the sense that there is no way that I can feel just what you feel – and, on the other hand, taste is something we might be able to give reasons for, reasons which we might communicate – objective in the sense that such reasons exist and that we can attach them to the object in question. Kant formalized the antinomy of taste, but he was not the only 18th-century philosopher centrally to confront these conflicting notions (Costelloe, 2003, 2004; Stern, 1991). While no major aesthetic thinker omitted to mention the individuality and unaccountability usually conveyed by *De gustibus*, many reckoned that taste was in fact, as they said, 'improvable' – that there were social and cultural practices through which people could, if they wished, find more or less robust standards of taste and convey their assessments from one to another. Hume, for example, thought that there were people whose taste was accounted experienced, delicate, and correct; that others looked for, and to, these people to constitute a standard of taste; and that there were certain marks by which such people might be identified, among them experience and integrity. Taste was personal and subjective; people looked for ways to instruct taste and to repair the privacy of the subjective; they often found resources for that repair in the judgment of certain sorts of people; and, closing the circle, personal taste could be instructed through social knowledge and modified through social interaction. Hume's account struck many contemporaries as an imperfect notion of a standard of taste, but he never promised an aesthetic rose garden (Hume, 1758: 136–40).<sup>5</sup> Other 18th-century aesthetic writers also viewed taste as a conversation between private responses and more or less robust social standards, a conversation that might, so to speak, go somewhere. The Scottish rhetorician Hugh Blair strongly argued that there was a cultural capacity to adapt, modify, and (as he said) 'improve' taste – to constitute taste as

collectively held – placing his biggest bet on a consensus theory of taste formation: ‘That which men concur the most in admiring, must be held to be beautiful. His taste must be esteemed just and true, which coincides with the general sentiments of men. In this standard we must rest’ (Blair, 1829 [1783]: 24).

For all the points held in common, 18th-century aesthetics does not offer a stable understanding of taste, no more than the philosophy of science offers a stable picture of scientific judgment. Edmund Burke, for example, disagreed with Hume’s suggestion that a food might be bitter to some and sweet to others; we all have the same sense organs, he said, so what’s bitter to me is, of course, bitter to you. What may vary is what we say about how the food strikes you.<sup>6</sup> (This is a recurrent move in the philosophy of taste: you can either make a distinction between the tasting act and reporting on the tasting act, or you can wonder about the intelligibility or legitimacy of any such distinction. It is, however, hard to understand the grounds on which that distinction is so confidently insisted upon.) Nor did the aesthetic philosophers of the 18th century resolve the antinomy of taste. The value for us in considering their work is that they recognized, confronted, and discussed the antinomy. They did not conduct ethnographic research on taste-formation, nor did they produce detailed historical studies of how tastes were made and how the aesthetic private became public, to the extent it did. They acknowledged that the sharing of taste – rendering it social rather than individual – in this domain was a massive problem, but they reckoned that taste communities could be, and were, brought into being. In modern philosophical terminology, they were looking for the concrete means by which *intersubjectivity* might be secured, with difficulty and under specific conditions.<sup>7</sup> Their experiences and their precedents are instructive.

Traditions of aesthetics offer resources for thinking about scientific judgments, picking up, so to speak, the other end of the epistemic stick. In the study of science, we start from the notion of unproblematic and universal objectivity and then we add dollops of subjectivity, while in the study of taste, we start from the disposition to find judgments merely subjective, wholly arbitrary, and incorrigible, and then put ourselves in a position to appreciate that they have a referential character and that they may be discussable. That is to say, in judgments of taste and in judgments of truth, we approach intersubjectivity from different directions, but that is where, in both cases, we tend to wind up.

In fact, to the proverbial ‘There’s no arguing about taste’, I’d counter we argue about little else and, indeed, that absent such arguments and discussions, we would not be able to recognize the fabric of our quotidian social life. We do not much argue (or discuss) whether  $2 + 2 = 4$  (except in philosophy classrooms) or about the facts of the matter (except in law courts), but the texture of our conversations centers precisely on whether *An Affair to Remember* is a good movie, whether *Catch 22* is a great novel, whether Texas BBQ is better than Carolina BBQ, whether the poetry of Bob Dylan is as good as that of Dylan Thomas. So far as the practices of everyday life are concerned, including the everyday life of science-making, we should get better at understanding judgment and how it happens. As Richard Rorty (1987: 41–42) once said, if the objectivity of legend is not on the table, nevertheless we might be interested in something that he thought served the purposes for which objectivity is commonly invoked – which is the achievement, wherever it happens, of ‘unforced agreement’, of coming to free and practical interactional assent about what is, from another point of view, private to the experiencing and knowing subject: ‘Objectivity is intersubjectivity’.

So what do we know about how taste judgments are formed and how they may come to be shared? The answer is: not a lot. There's usually some misunderstanding when I say that: there is a huge sociological literature about this, I am told. But there isn't. The sociological treatment of taste has centered overwhelmingly on the social uses of taste, on taste as a social marker, as a mode of distinction, on explanations of changing tastes, on fashion as a social phenomenon.<sup>8</sup> These are all worthy topics, but they are not the same thing as a focused engagement with making and communicating taste. Antoine Hennion has described (and deplored) sociologists' interest in what taste does to the neglect of what taste is and how it is formed in the interactions between people and objects, people and people. Describing the tasting of wine, he advocates a 'sociology of attention' as an appreciation of tasters' efforts momentarily to make themselves objects rather than subjects, to arrange 'a stronger presence of the tasted object', to attend to and respond to what the tasted object reveals, what it is saying (Hennion, 2007).<sup>9</sup> 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.

One reason, I suspect, that we have so few examples of this sort of thing is the sway of the *De gustibus* sensibility. It is considered either that there is no possibility of discussing taste or there is no point in any such discussion. But there is both the possibility and the point, and there exist, in fact, a handful of exercises showing varying degrees of interest in how, on a concrete level and in a quotidian frame, taste happens.<sup>10</sup> A noteworthy example is a study of how one becomes an opera buff by the sociologist Claudio Benzecry (2009, 2011). How do you learn to respond to opera the way that opera lovers do, to be an opera lover? You hang out with opera lovers, observe the moments and circumstances that elicit approving and disapproving responses, note the words, phrases, and gestures attached to descriptions and evaluations of opera passages and performances. As you listen to the opera, so you listen to the associations and distinctions made between different performances. And you get better at becoming an opera lover as you see more operas and get reactions to your descriptions and evaluations. Becoming an opera lover is knowing about opera and knowing about opera lovers and knowing about how opera lovers know about opera and how they know about other opera lovers; it's about the external world and about coordinating or distinguishing one's private aesthetic responses with the private aesthetic responses of others. Benzecry (2011: 66) acknowledges inspiration by early work of Howard Becker (1953) about how you learn to be a marijuana user, indeed how you learn to experience what a marijuana user experiences and how to value and talk about those experiences. You need both cannabis and community, both objects in the world and fellow experiencing subjects. Everyone gets stoned alone, together.

Academics haven't been greatly interested in naturalistic understandings of the practices of taste and judgment, but there are many other sorts of people to take up the slack. And there are two kinds of communities that have more or less systematically reflected on how tastes may be formed, described, and shared. The community of connoisseurs and those allied to connoisseurship make up one sort. The usage of the word 'connoisseur', by the way, evidently came into English in the context of the 18th-century culture of refinement and politeness: the man of knowledge as a man of taste. In the French from

which it was borrowed, it simply meant knowing, in the sense of being acquainted with, on the *kennen* side of the German *kennen-wissen* distinction, but in English it was attached to the special sort of knowing, which was discernment in matters of taste.

Connoisseurship and scientific judgment aren't usually considered together, but they should be, and indeed they were by the physical chemist and philosopher Michael Polanyi. Judgment for Polanyi wasn't rigidly rule-governed, but neither was it arbitrary nor private. And this is what he signaled by repeatedly assimilating scientific judgment to practices like knowing the characteristics and qualities of wine. 'Connoisseurship, like skill', Polanyi (1958: 56) wrote, 'can be communicated only by example, not by precept. To become an expert wine-taster, to acquire a knowledge of innumerable different blends of tea or to be trained as a medical diagnostician, you must go through a long course of experience under the guidance of a master.' 'Scientific beliefs are necessarily indeterminate. They are like rules of art. They are guides in the art of making scientific discoveries and guides of connoisseurship in assessing the value of a scientific claim' (Polanyi, 1950: 196). Thomas Kuhn, who incorporated elements of Polanyi's views into his *Structure of Scientific Revolutions* (1962), avoided using the notion of connoisseurship, but other than that, his view of scientific judgment was markedly similar. The knowledge of the connoisseur proceeds from example to example, as Polanyi said, but it isn't true that it can be communicated only by example.

Wine connoisseurs, for example, talk a lot about the flavor and odor characteristics of wines (Shapin, 2012). Much of their talk is referential, that is, it points to characteristics in the wine that connoisseurs come to know about, and taste communities can and do coalesce around more or less stable ways of designating these characteristics. You can learn to apply the descriptor 'blackcurranty' to a wine made from cabernet sauvignon and 'flinty' to a Chablis. You can believe that you are then doing something different from what you might be doing if you said that the wine reminded you of a spring morning, and you can believe that the blackcurranty odor arises from a substance that is indeed present in both the wine and the fruit. More to the point, you can come to be a member of a community using the same predicates to refer to their experiences and to the aesthetic properties of the wine. That sort of community can refer judgment of goodness to an assemblage of such properties (Donner, 1991; Shapin, 2012). There is a copyrighted device called a Wine Aroma Wheel – devised by a professor in the UC Davis viticulture and oenology department.<sup>11</sup> It allows users – and there are evidently many thousands around the world – reliably to assign stable descriptors to wine odors and tastes, proceeding from such basic categories as 'fruity', 'floral', and 'nutty' to more finely gauged descriptors such as 'peach', 'apricot', and 'apple'. The users are instructed to provide themselves with index samples of descriptors, for the 'asparagus' odor, several drops of the brine from tinned asparagus in a neutral white wine. The point is not taste objectivity; it is taste intersubjectivity. The Aroma Wheel is a homespun intersubjectivity engine. Taste communities coalesce around practices like that – practices that refer to mutually accessible external properties as the causes of internal states. These taste communities are neither universal nor easy to join, but then neither are the thought communities of particle physics and genomics.

The Wine Wheel is small beer, but many forms of modern commercial and academic taste expertise are immensely influential. Among the less visible bits of modern

corporate and academic science are what I want to call the sciences of subjectivity, embedded within what I'd also like to call the aesthetic–industrial complex. A brief but instructive example: during the Second World War, the US Army Quartermaster Corps became aware that rations for the troops designed for their nutritional value were not performing their role because the men didn't like how they tasted and looked.<sup>12</sup> Aesthetic responses were made into a focused topic of inquiry: that is to say, there was a practical demand for objective information about subjective states. Here the Army added impetus to industrial and academic concerns with taste that were emerging in the 1940s and 1950s, which became known as the technologies of sensory evaluation, notably in connection with the wine and food scientists of UC Davis.<sup>13</sup> The industrial consulting company Arthur D. Little, Inc., in Cambridge, MA, together with commercial food and beverage companies (including Coca Cola and Pillsbury), developed the so-called Flavor Profile Method for eliciting and objectifying taste responses and the chillingly named Hedonic Index to quantify liking.<sup>14</sup> These methods and their successors, often used in connection with focus group techniques pioneered by Robert Merton, now form a vast complex of technical resources that help shape not just our alimentary environment but also practically everything that is commercially formulated, designed, and marketed – from pretzels to presidents, cabernets to Cadillacs, apples to Apples. The sciences of subjectivity are world-making.

With some honorable exceptions, modern philosophers have either relegated taste to the domain of the inaccessible and the inchoate or carried on the fight to identify universal standards; sociologists have engaged with the functions rather than the formation of taste; and a few historians have written about olfactory reactions as indexes of the civilizing process. Meanwhile, the modern sciences of subjectivity go on their way, largely unattended to by people like us. Their practitioners are unaware of the inaccessibility and arbitrariness of taste responses, because they have found ways of accessing them, operationalizing their meaning, manipulating them, and even turning them into profit. If there is no accounting for tastes, that's news to the accountants.

## Notes

This paper is adapted from a Presidential Plenary talk for the Society for Social Studies of Science in Cleveland, OH, on 4 November 2011. It is intended as a provocation and constructive prod, not as a research paper. Improvements to the original were suggested by Rebecca Lemov, Sophia Roosth, and Michael Lynch.

1. See, among many examples, Markley (1983), Bloor (1984), Shapin (1994, 1999), Shapin and Schaffer (1985), Pickering (1991), Dear (1992), Daston (1992), Miller (1992), Gieryn (1994), Porter (1995), Poovey (1998, especially chs 1–3), Solomon (1998), Ashworth (2004), and Jasanoff (2011).
2. For example, Foucault (1988 [1984]), Taylor (1989), Ellis and Flaherty (1992), Haraway (1991 [1985]), Cussins (1996), Hall (2004), and Biehl et al. (2007).
3. Given Kuhn's friendship with the philosopher Stanley Cavell, it is interesting here to compare his treatment with Cavell's (1969 [1965]) account of the distinction between taste and judgment in aesthetics. In acknowledgments to *Must We Mean What We Say?*, Cavell (1969 [1965]: xiv) specifically thanked Kuhn for conversations in 1956–1958 when both were teaching philosophy at Berkeley, which Kuhn had already noted in his 1962 *Structure* (Kuhn, 1962: xiii).

4. Eighteenth-century philosophers concurred in using the word for palate responses to designate also 'higher' aesthetic judgment, even while some considered the link to be merely metaphorical rather than properly substantive: 'How could it have happened', Kant (2006 [1798]: 139–40) asked, 'that modern languages ... have designated the aesthetic faculty of judging with an expression (*gustus, sapor*) that merely refers to a certain sense organ (the inside of the mouth) and to its discrimination as well as choice of enjoyable things? ... [T]he feeling of an organ through a particular sense has been able to furnish the name for an ideal feeling; the feeling, namely, of a sensible, universally valid choice in general.' Kant treated judgments that something is *pleasant* or *agreeable* – as in 'this is a good roast chicken' – as wholly subjective, unlike judgments that a work of art is beautiful or sublime. These latter contain a presumption that other people *should* agree with one's judgment, even if they happen not to (Kant, 1914 [1790]: especially 48–63; see also Korsmeyer, 1999; Dickie, 1996).
5. Modern aesthetic philosophers and critics have become adept in identifying, and undermining, Hume's standard of taste because of its 'circularity': masters of taste are said to be recognized by their possession of good taste, and good taste is what masters have (for example, Noxon, 1961; Smith, 1988: 36–64), but the attributed experience, integrity, and overall good sense of supposed masters of taste are in principle independent of their judgments of aesthetic objects. Other commentators are unworried by any apparent circularity, since Hume was concerned to describe a social practice, and learning any social practice is learning who counts as a competent practitioner (Costelloe, 2004: 99–100; Jones, 1993: 274).
6. 'We do and we must suppose, that as the conformation of their organs are nearly or altogether the same in all men, so the manner of perceiving external objects is in all men the same, or with little difference. We are satisfied that what appears to be light to one eye, appears light to another; that what seems sweet to one palate, is sweet to another; that what is dark and bitter to this man, is likewise dark and bitter to that ...' (Burke, 1834 [1757]: 25).
7. For intersubjectivity, see Schutz (1964 [1951]) and Crossley (1996); for rhetoric and the creation of shared judgment, see Booth (1974: xii–xiii, 98–99).
8. See the classic studies by Veblen (1899, especially ch. 6) and Simmel (1957 [1904]). The most influential modern work is, of course, Bourdieu (1984), but see also Dimaggio (1987), Lamont (1992), Davis (1992), Peterson and Kern (1996), and Johnston and Baumann (2007).
9. See also Hennion (2001, 2005), Hennion and Teil (2004), and Teil and Hennion (2004).
10. See, for example, McCormick (2009), deNora (1995), Guilbaut (1983), Shrum (1996), Lieberson (2000), Lamont (2009), and, of course, the excellent Becker (1982: especially ch. 5).
11. Available at <http://winearomawheel.com/> (accessed 10 December 2011); see also Brenner (2007: 17–23).
12. See Peyram et al. (1954) and Meiselman and Schutz (2003).
13. See Peyram and Swartz (1950), Peyram et al. (1960), Amerine and Roessler (1976), and Stone and Sidel (2004: 7).
14. See Cairncross and Sjöström (1950), Sjöström et al. (1957), Peyram and Pilgrim (1957), Caul (1957), and Amerine et al. (1965: 366–91).

## References

- Amerine MA, Pangborn RM and Roessler EB (1965) *Principles of Sensory Evaluation of Food*. New York: Academic Press.
- Amerine MA and Roessler EB (1976) *Wines: Their Sensory Evaluation*. San Francisco: W.H. Freeman.
- Ashworth WJ (2004) Practical objectivity: The excise, state, and production in eighteenth century England. *Social Epistemology* 18: 181–197.
- Austin JL (1962) *Sense and Sensibilia*. Oxford: Oxford University Press.

- Barnes B, Bloor D and Henry J (1996) *Scientific Knowledge: A Sociological Analysis*. Chicago: University of Chicago Press.
- Becker HS (1953) Becoming a marihuana user. *American Journal of Sociology* 59: 235–242.
- Becker HS (1982) *Art Worlds*. Berkeley: University of California Press.
- Benzecry CE (2009) Becoming a fan: On the seductions of opera. *Qualitative Sociology* 32: 131–151.
- Benzecry CE (2011) *The Opera Fanatic: Ethnography of an Obsession*. Chicago: University of Chicago Press.
- Biehl J, Good B and Kleinman A (eds) (2007) *Subjectivity: Ethnographic Investigations*. Berkeley: University of California Press.
- Blair H (1829 [1783]) On taste. In: Blair H, *Lectures on Rhetoric and Belles Lettres* (ed. A Mills). New York: G. & C. & H. Carvill, pp.16–26.
- Bloor D (1984) A sociological theory of objectivity. In: Brown SC (ed.) *Objectivity and Cultural Divergence*. Cambridge: Cambridge University Press, pp. 229–245.
- Bloor D (1996) Idealism and the sociology of knowledge. *Social Studies of Science* 26: 839–856.
- Booth WC (1974) *Modern Dogma and the Rhetoric of Assent*. Chicago: University of Chicago Press.
- Bourdieu P (1984) *Distinction: A Social Critique of the Judgment of Taste* (trans. R. Nice). London: Routledge & Kegan Paul.
- Brenner D (2007) *Women of the Vine: Inside the World of Women Who Make, Taste, and Enjoy Wine*. Hoboken, NJ: John Wiley.
- Burke E (1834 [1757]) A philosophical enquiry into the origins of our ideas of the sublime and beautiful. In: *The Works of the Rt. Hon. Edmund Burke, Vol. I*. London: Samuel Holdsworth.
- Cairncross SE and Sjöström LB (1950) Flavor profiles: A new approach to flavor problems. *Food Technology* 4: 308–311.
- Caul JF (1957) The profile method of flavor analysis. *Advances in Food Research* 7(1): 1–40.
- Cavell S (1969 [1965]) Aesthetic problems of modern philosophy. In: Cavell S, *Must We Mean What We Say? A Book of Essays*. New York: Scribner, pp. 73–96.
- Costelloe T (2003) Hume, Kant, and the ‘antinomy of taste’. *Journal of the History of Philosophy* 41: 165–185.
- Costelloe TM (2004) Hume’s aesthetics: The literature and directions for research. *Hume Studies* 30: 87–126.
- Crossley N (1996) *Intersubjectivity: The Fabric of Social Becoming*. London: Sage.
- Cussins C (1996) Ontological choreography: Agency through objectification in infertility clinics. *Social Studies of Science* 26: 575–610.
- Daston LJ (1992) Objectivity and the escape from perspective. *Social Studies of Science* 22: 597–618.
- Daston L and Galison P (1992) The image of objectivity. *Representations* 40: 81–128.
- Daston L and Galison P (2007) *Objectivity*. New York: Zone Books.
- Davis F (1992) *Fashion, Culture, and Identity*. Chicago: University of Chicago Press.
- Dear P (1992) From truth to disinterestedness in the seventeenth century. *Social Studies of Science* 22: 619–631.
- DeNora T (1995) *Beethoven and the Construction of Genius: Musical Politics in Vienna 1792–1803*. Berkeley: University of California Press.
- Dickie G (1996) *The Century of Taste: The Philosophical Odyssey of Taste in the Eighteenth Century*. New York: Oxford University Press.
- Dimaggio P (1987) Classification in art. *American Sociological Review* 52: 440–455.
- Donner W (1991) The sensory evaluation of wines. In: Donner W, *The Liberal Self: John Stuart Mill’s Moral and Political Philosophy*. Ithaca: Cornell University Press, pp. 83–91.

- Ellis C and Flaherty MG (eds) (1992) *Investigating Subjectivity: Research on Lived Experience*. Newbury Park, CA: Sage.
- Foucault M (1988 [1984]) *The History of Sexuality, Vol. 3: The Care of the Self* (trans. R. Hurley). New York: Vintage.
- Gerard A. (1780 [1759]) *An Essay on Taste*, 3rd edn. Edinburgh: J. Bell and W. Creech.
- Gieryn TF (1994) Objectivity for these times. *Perspectives on Science* 2: 324–349.
- Guilbaut S (1983) *How New York Stole the Idea of Modern Art* (trans. A. Goldhammer). Chicago: University of Chicago Press.
- Hall DE (2004) *Subjectivity*. London: Routledge.
- Haraway DJ (1991 [1985]) A cyborg manifesto: Science, technology, and socialist-feminism in the late 20th century. In: Haraway DJ, *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge, pp. 149–191.
- Hennion A (2001) Music lovers: Taste as performance. *Theory, Culture, and Society* 18: 1–22.
- Hennion A (2005) Pragmatics of taste. In: Jacobs MD and Hanrahan NW (eds) *The Blackwell Companion to the Sociology of Culture*. Oxford: Blackwell, pp. 131–144.
- Hennion A (2007) Those things that hold us together: Taste and sociology. *Cultural Sociology* 1: 97–114.
- Hennion A and Teil G (2004) Le goût du vin: pour une sociologie de l'attention. In: Nahoum-Grappe V and Vincent O (eds) *Le Goût des Belles Choses*. Paris: Éditions de la Maison des Sciences de l'Homme, pp. 111–126.
- Hume D (1758 [1757]) Of the standard of taste. In: Hume D, *Essays and Treatises on Several Subjects*, new edn. London: A Millar, pp. 134–146.
- Jasanoff S (2011) The practices of objectivity in regulatory science. In: Camic C, Gross N and Lamont M (eds) *Social Knowledge in the Making*. Chicago: University of Chicago Press, pp. 307–338.
- Johnston J and Baumann S (2007) Democracy versus distinction: A study of omnivorousness in gourmet food writing. *American Journal of Sociology* 113: 165–204.
- Jones P (1993) Hume's literary and aesthetic theory. In: Norton DF (ed.) *The Cambridge Companion to Hume*. New York: Cambridge University Press, pp. 255–280.
- Kant I (1914 [1790]) *Kant's Critique of Judgment* (trans. JH Bernard). London: Macmillan.
- Kant I (2006 [1798]) *Anthropology from a Pragmatic Point of View* (ed. Robert B. Louden). Cambridge: Cambridge University Press.
- Korsmeyer C (1999) *Making Sense of Taste: Taste, Food, and Philosophy*. Ithaca, NY: Cornell University Press.
- Kuhn TS (1962) *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Kuhn TS (1977 [1973]) Objectivity, value judgment, and theory choice. In: Kuhn TS, *The Essential Tension: Selected Studies in Scientific Tradition and Change*. Chicago: University of Chicago Press, pp. 320–339.
- Lamont M (1992) *Money, Morals, and Manners: The Culture of the French and American Upper-Middle Class*. Chicago: University of Chicago Press.
- Lamont M (2009) *How Professors Think: Inside the Curious World of Academic Judgment*. Cambridge, MA: Harvard University Press.
- Lieberson S (2000) *A Matter of Taste: How Names, Fashions, and Culture Change*. New Haven: Yale University Press.
- McCormick L (2009) Higher, faster, louder: Representations of the international music competition. *Cultural Sociology* 3: 5–30.
- Markley R (1983) Objectivity as ideology: Boyle, Newton and the languages of science. *Genre* 16: 355–372.
- Meiselman HL and Schutz HG (2003) History of food acceptance research in the US Army. *Appetite* 40: 199–216.

- Miller P (1992) Accounting and objectivity: The invention of calculating selves and calculable spaces. *Annals of Scholarship* 9: 61–86.
- Mitroff I (1974) *The Subjective Side of Science: A Philosophical Inquiry into the Psychology of the Apollo Moon Scientists*. New York: American Elsevier.
- Noxon J (1961) Hume's opinion of critics. *Journal of Aesthetics and Art Criticism* 20: 157–162.
- Peterson RA and Kern RM (1996) Changing highbrow taste: From snob to omnivore. *American Sociological Review* 61: 900–907.
- Peyram DR and Pilgrim FJ (1957) Hedonic scale method of measuring food preferences. *Food Technology* 11: 9–14.
- Peyram DR, Pilgrim FJ and Peterson MS (eds) (1954) *Food Acceptance Testing Methodology, A Symposium Sponsored by the Quartermaster Food and Container Institute for the Armed Forces 8–9 October 1953*. Washington, DC: National Academy of Sciences-National Research Council.
- Peyram DR, Polemis BW, Kamen JM, Eindhoven J, and Pilgrim J (1960) *Food Preferences of Men in the U.S. Armed Forces*. Chicago: Quartermaster Food and Container Institute for the Armed Forces.
- Peyram DR and Swartz VW (1950) Measurement of sensory differences. *Food Technology* 4: 390–395.
- Pickering A (1991) Objectivity and the mangle of practice. *Annals of Scholarship* 8: 409–425.
- Polanyi M (1950) Freedom in science. *Bulletin of the Atomic Scientists* 6(7): 195–198, 224.
- Polanyi M (1958) *Personal Knowledge: Towards a Post-Critical Philosophy*. Chicago: University of Chicago Press.
- Poovey M (1998) *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society*. Chicago: University of Chicago Press.
- Porter TM (1995) *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton: Princeton University Press.
- Reid T (1788) *Essays on the Active Powers of Man*. Edinburgh: John Bell.
- Rorty R (1987) Science as solidarity. In: Nelson JS, Megill A and McCloskey DN (eds) *The Rhetoric of the Human Sciences*. Madison: University of Wisconsin Press, pp. 38–52.
- Scheffler I (1967) *Science and Subjectivity*. Indianapolis: Bobbs-Merrill.
- Schutz A (1964 [1951]) Making music together: A study in social relationship. In: Schutz A, *Collected Papers, Vol. 2: Studies in Social Theory* (ed. Arvid Brodersen). The Hague: Martinus Nijhoff, pp. 159–178.
- Shapin S (1994) *A Social History of Truth: Civility and Science in Seventeenth-Century England*. Chicago: University of Chicago Press.
- Shapin S (1999) Rarely pure and never simple: Talking about truth. *Configurations* 7: 1–14.
- Shapin S (2012) The tastes of wine: Notes towards a cultural history. *Rivista di Estetica* (in press).
- Shapin S and Schaffer S (1985) *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton: Princeton University Press.
- Shrum WC (1996) *Fringe and Fortune: The Role of Critics in High and Popular Art*. Princeton: Princeton University Press.
- Simmel G (1957 [1904]) Fashion. *American Journal of Sociology* 62: 541–558.
- Sjöström LB, Cairncross SE and Caul JF (1957) Methodology of the flavor profile. *Food Technology* 11(9): 2–25 (suppl.).
- Smith BH (1988) *Contingencies of Value: Alternative Perspectives for Critical Theory*. Cambridge, MA: Harvard University Press.
- Solomon RJ (1998) *Objectivity in the Making: Francis Bacon and the Politics of Inquiry*. Baltimore: Johns Hopkins University Press.

- Stengers I (2000 [1993]) *The Invention of Modern Science: Theory Out of Bounds* (trans. DW Smith). Minneapolis: University of Minnesota Press.
- Stern D (1991) Are disagreements about taste possible? A discussion of Kant's antinomy of taste. *Iowa Review* 21(2): 66–71.
- Stone HS and Sidel JL (2004) *Sensory Evaluation Practices*, 3rd edn. San Diego, CA: Elsevier Academic.
- Taylor C (1989) *Sources of the Self: The Making of the Modern Identity*. Cambridge: Cambridge University Press.
- Teil GT and Hennion A (2004) Discovering quality or performing taste? A sociology of the amateur. In: Harvey M, McKeekin A and Warde A (eds) *Qualities of Food*. Manchester: Manchester University Press, pp. 19–37.
- Veblen T (1899) *The Theory of the Leisure Class: An Economic Study in the Evolution of Institutions*. New York: Macmillan.

### **Biographical note**

Steven Shapin is Franklin L. Ford Professor of the History of Science at Harvard University. Having written several books on early modern science, and one on 20th-century American science, he is currently working on the history of ideas about food and eating.