In 1984, he became the chairman of the German parent company, selling it to another German company, Langguth. He also arranged a partial sale of Schieffelin to LVMH, the giant luxury-goods conglomerate. Until 2006, he owned the Bordeaux Chateau Fourcas-Listrac, which he then sold to Hermes.

In dealing with German winemakers, Sichel recalls that he tried not to dwell on the past. "I experienced the same embarrassing problems that I had experienced in Berlin after the war. People were anxious to tell me how well they had behaved during the Nazi period. I adopted the same policy I'd had in Berlin. The minute the subject came up, I made it plain that I did not want to hear about their behavior during the Nazi period. I pointed out that it involved their conscience, and if they had really behaved poorly, they, hopefully, would have ended up in jail by now. This usually ended that conversation."

Sichel has appeared often on American television as a wine authority and in Germany as a witness to the immediate postwar years in Berlin, where he directed the CIA office. He has been a member of several New York wine societies and a frequent judge in wine competitions.

Blue Nun can still be found on store shelves and referenced in the Beastie Boys album *Check Your Head*, which includes a musical interlude in which a narrator tells of a party held in Peter Sichel's New York dwelling, where guests praise the wines. The record includes excerpts from Sichel's audio recording "On Wine: How to Select and Serve."

His memoir contains a chapter titled "Some Advice on Wine" that could easily become the basis for an authoritative book. I would suggest one addition to the long title of this book: add the phrase *bon vivant*. In military and civilian form, Sichel has created an enviable lifestyle for himself, although I have not seen him lately on his bicycle.

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JAMIE GOODE: *I Taste Red: The Science of Tasting Wine*. University of California Press, Oakland CA, 2016, 224 pp., ISBN 978-0-520-29224-6 (hardcover), \$29.95.

By stating that color has taste, Dr. Jamie Goode's title alludes to the wine consumer's challenges that he explores. He alerts readers to coming surprises through his discussion of our evolving understanding of wine tasting that goes far beyond the mouth. Goode introduces and explains the "multimodal" nature of wine flavor, leading to larger issues, such as "the nature of conscious experience" (p. 89).



You may know of UK-based Jamie Goode from his past books (e.g., Goode, 2014) or his blog (wineanorak.com, self-described as "one of the most interesting and comprehensive wine resources on the web").

Goode is well-intentioned. Trained as a plant biologist, he discusses not only biology and chemistry but also "neuroscience" (e.g., psychology, philosophy) in addressing what it means to experience wine and raising such issues as the relevance of expert ratings to informing that experience.

After discussing his background and goals for the coming nine chapters, he spends Chapters 2–4 (about 40 percent of the text) summarizing the relevant science (Ch. 2: smell and taste chemistry; Ch. 3: brain processes; Ch. 4: wine flavor chemistry). Knowledgeable readers may find novel connections to wine chemistry and tasting. However, those without a strong wine background will take much of this on faith, accepting that it presents our best understanding of the body's processing of wine taste (he omits other science, such as health effects). Goode and his editor(s) have tried for a balanced presentation of i) scientific content establishing *bona fides* with technical readers, ii) challenging questions to provoke wine aficionados from diverse technical backgrounds, and iii) coverage of a considerable relevant literature involving various disciplines (but not much economics). Specialists in any of the fields considered might find the coverage partial, but those who acknowledge the complexity of understanding wine will appreciate the challenge he undertakes and agree that he is not unsuccessful.

For wine economists, Goode's most thought-provoking discussions might be i) assessments of wine expertise, ii) cultural differences in appreciation, and iii) the brain as model builder.

Among others, wine economists have studied the value of experts (e.g., Ashton, 2017). Central to that is the interpersonal comparison between expert and consumer evaluations. Goode prepares us by noting in Chapter 5 ("Individual Differences in Flavor Perception") significant individual differences in wine tasting, meaning that "the same wine is not the same to all people" (p. 127): we might agree in sorting wines into a handful of quality categories, but finer distinctions invite disagreement. In the next chapter (Ch. 6, "Why We Like the Wines We Do"), the validity of wine-tasting expertise is central. Goode acknowledges the evidence of experts' unreliability (e.g., citing Hodgson) but concludes that "wine expertise is not illusory" (p. 143). His meaning of expertise is not clearwhether simply technical (e.g., grape, region) or aesthetic (quality differentiation). A subsequent discussion of wine aesthetics provides some clarification: "A rating cannot be a global ... score that is a property of that wine. ... [C]hoose [an expert] whose own narrative ... is largely overlapping with yours; you need to adjust for differences and calibrate yourself to the critic" (p. 149). Given that few of us become that familiar with an expert and her wines, any implied endorsement seems highly qualified.

The relatively concise Chapter 9 ("Is Wine Tasting Subjective or Objective?") provides his most extensive discussion of expertise. It opens with an enduring contradiction from many experts' advice: drink what you like—don't be intimidated by others' opinions—but the expert can guide you to the best. Goode presents the argument that tasting is subjective by quoting neurobiologist Gordon Shepherd (e.g., 2017). Our perceptions—including odors, tastes, and flavors—are finally products of our brains, not characteristics of the stimulant (e.g., wine). Because our brains and their contents are individually unique, the translation of stimuli into perceptions is also unique—not necessarily very different from one to another, but essentially unique. He then counters that premise with extensive quotes from philosopher Barry Smith, who insists that we need an intermediate step in going from objective flavor," which, he admits, our brains can perceive differently, given the myriad influences upon wine tasting.

Goode wants to believe in objective flavor—"to avoid the dead end of subjectivity" (p. 191). As an expert who confesses that "[s]ome days I seem to taste with more clarity. ... [T]he wine shows more of itself," he asserts that "we have [an intersubjective body of] wine knowledge in common within a shared aesthetic system ... [that] is not subject to the problem of subjectivity that bedevils actual perception of flavor" (pp. 191–192). Experts simply have considerably more knowledge. He proposes the UC-Davis Wine Aroma Wheel as "the big leap forward," the use of which gives tasting notes "the appearance of objectivity ... [and] a much more scientific and precise-sounding language" (p. 192)—so not quite objective and precise.

He ultimately endorses the 100-point scale: "A score out of 100 promises to be much more precise—and objective—than a five-star rating system, for example" (p. 192). Given the evidence of individual differences, lack of true objectivity, and doubt about the value of fine distinctions and ratings presented earlier, this surprise is not one Goode intended.

Then he demurs. In closing, Goode acknowledges his lingering unease, citing cognitive scientist Wendy Parr's conclusion that taste and smell perceptions are much more diverse than vision, hearing, and trigeminal (facial sensation nerve) perceptions: "[assuming] a large degree of shared objectivity ... brings enormous benefits. But whether we will ever be able to compensate for our individual, subjective differences sufficiently to share our perceptions of wine in a way that is absolutely, 100 percent meaningful is unknown" (p. 193).

Goode's discussion of cultural differences complements the discussion of experts. He notes (Ch. 5) that cultural differences in flavor perception likely arise because they reflect different "aroma and flavor objects encoded in ... brains" (p. 117)—having discussed encoding's key role in Chapter 3. However, Chapter 8 ("The Language of Wine") is the strongest on cultural differences. Intrapersonal communication is our ability to translate our perceptions of a wine into words or other symbols that at least we understand and perhaps remember; interpersonal

communication is more self-explanatory. Regarding the interpersonal, Goode discusses i) the challenge of describing wine and whether language shapes perception or *vice versa* and ii) how language can structure and constrain communication, perhaps suppressing the poetry of great wine. Regarding the intrapersonal, as we move from stimulus to response, he asks how we record sensory responses, perhaps in words (he does not consider numbers, despite his endorsement of 100point scoring).

Not surprisingly, cultural (and corresponding language) differences are relevant, complicating cross-cultural communication. A French tendency toward musical metaphors (p. 179) might clash with an English or German tendency toward taxonomic descriptions. Groups with a more expansive vocabulary for perceiving odors (e.g., certain Asian tribes [p. 181]) might identify nuances that American tasters overlook. More simply, how do we communicate or even recognize a wine flavor, such as eucalyptus, in an Australian cabernet sauvignon if we have never experienced eucalyptus? Chapter 7 ("Constructing Reality") argues that our approach to experience at whose core is choice making is essentially modeling (one section title: "The Brain's Need for a Model"). Through experience, our brains select the key variables needed for reliable predictions and process data from those variables to predict what we experience at every instant, using a Bayesian updating process as new information becomes available (and adjusting the set of key variables).

He acknowledges related questions of free will; the "modeling" view suggests that the concept is complicated. We can freely develop and nurture our own model of the world (how consciously?), but the model governs our choices. The question becomes the stage of brain work at which we lose control. For those wondering about the inclusion of philosophy as part of neuroscience, Goode's discussion of free will illustrates the connection, one of many in the mind-brain literature (e.g., Bickle, 2013).

Aside from its thought-provoking and wide-ranging discussion, here are some concerns. Goode states his concern that "the reader might find this book stodgy and hard to read, worthy but dull," because he uses academic studies extensively (p. 6). To avoid this issue, he "kept a brighter tone and introduced a narrative thread ... and decided not to reference the research studies and scientific papers [that] make books seem overly scientific, ... likely to put people off" (p. 6). He provides a bibliography, organized by chapter, but I could not always tell how closely it supports the text, and I could not always connect entries with content.

I acknowledge his choice without agreeing with it and allow that perhaps this style increases the book's popular appeal, but it (and some typographical errors and a style that sometimes meanders) complicated my reading at times and raised questions that more thorough and careful documentation and editing might have avoided.

Given Goode's interdisciplinary coverage and the infancy of the relevant wine research, it is not surprising that he provides more good questions than answers.

Given his target audience, one can also sympathize with his breezy style, which sometimes skates over what we actually know. Despite my reservations, this is a good read that compels a serious student to think hard about the scientific basis for her wine enjoyment.

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