

PEELING THE ONION OF TASTE

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“Everyone eats and drinks, but few appreciate taste.” Confucius

If you were asked to describe what “taste” means, what would you say? I am using the word taste in the singular for the complete experience of smelling and tasting. Some call this “flavor.” Would you reply that it indicates whether something – a food, wine or anything you ingest – is sweet, salty, sharp, spicy, hot, cold, bland or intense? Or, when you encounter a new taste, would you say that it takes you back to your childhood, reminding you of the meat loaf your mother made or the ice cream you ate during summer vacations at the shore? Does it, perhaps, evoke the smells in your home at Christmas, or any other holiday your family observed? Marcel Proust captured this notion in Remembrance of Things Past when he wrote that “the smell and taste of things remain poised for a long time, like souls, ready to remind us...” Indeed, our unique experiences set the conditions for a “false” judgment when we encounter a taste, something scientists call perceptual bias. What might be considered distorted in an empirical sense, however, defines who we are as individuals.

Taste is a comprehensive term we apply to food and drink, and one we take for granted; for most adults, it is instinctive, ingrained and usually matter-

of-fact. Children, on the other hand, are still a *tabula rasa*, and they notice everything new and noteworthy, particularly tastes, even if their vocabulary is too limited to articulate their sensations. As we enter adulthood, we have established marked preferences and dislikes in terms of basic tastes. Our upbringing also conditions us to be either open or closed to new experiences as adults.

Individual variations

Taste is a fascinating and highly complex subject. It is *subjective*, and varies by individual. Yet, it can be argued that there are *objective* aspects of taste, which we will discuss later. Research shows that, while we share most taste receptor genes, a certain number differ from one person to the next. Like other aspects of human behavior, in other words, taste is governed partly by our genetic heritage. We are not equally sensitive: we do not possess identical thresholds of perception and recognition. Some may *perceive* a distinctive aroma in a kitchen, for example, but do not know what it is, while others *recognize* that aroma as fresh basil just added to a tomato sauce. Some individuals are unable to smell a compound which can be detected by most others, a condition known as specific anosmia. Or, some may suffer from ageusia and not be able to detect basic tastes – what a horrible thought!

A well-known study conducted by Linda Bartoshuk of Yale University discovered that half of the US population might be considered average or “medium-tasters” while the other half is divided equally into “super-tasters” and “non-tasters.” More women than men, according to this psychophysics research, are “super-tasters” (35% and 15%, respectively).

Taste is also cultural, derived from the habits, norms and cuisine of the culture in which we were raised. Whether we like salty or bitter tastes is not simply an individual matter but may be the result of acculturation. Many people have not realized how significant cultural influences can be. At a dinner party a few years ago at Dalla Valle, a cult winery in Napa Valley, a fellow guest was offended when I suggested that the appeal of wines that are powerful, bursting with fruit and almost sweet, due to high alcohol, could possibly be explained by an American diet of barbecue, Coca Cola, Miracle Whip and ketchup. I was simply making an observation, not a judgment, with respect to how upbringing can determine taste preferences.

Dynamic & experiential aspects

Mood, health and setting can affect how we perceive tastes. If depressed and self-absorbed, we may not pay attention to food and drink. Our normal sensitivities are diminished or altered when we are sick. A wine tasted

at a fancy restaurant on a special occasion may not be quite as exciting when consumed at home under familiar conditions. I cannot tell you how many times I have been told that the wine enjoyed during a memorable trip to Provence or Tuscany simply does not taste as good on this side of the Atlantic! Unaware of the experiential aspect of taste – and how influential it can be in shaping our taste memory – everyone seems convinced that the wine “did not travel well.”

Taste is dynamic, changing with age – ours, as well as the wine’s. I know that my own perceptions have evolved in all matters of taste. I am more experienced at this stage of life, and I have a large mental file of tastes; fortunately, these factors act to offset a natural lessening of sensitivity with age. Our perceptions may not be as acute as we grow older, and our tastes may even take unexpected turns later in life (in our 80s or 90s) . You may now be wondering if this applies to you, your parents or grandparents.

We should really think of taste as the sum total of sensations from visual, aromatic, taste and even sound cues. This is still incomplete, however, because taste is shaped as well by our *response*: taste is not dependent solely on external stimuli, but on our interaction with food and drink. For example, saliva, which again varies by individual, can dilute and interact chemically with

substances in our mouth. Yet, most people are completely unaware that their own chemistry may be altering the tastes they perceive.

Seeing is believing

Appearance, studies have shown, can play a significant role in our response. Chefs realized a long time ago that an artfully arranged plate with small portions of contrasting ingredients with striking colors can heighten anticipation and therefore favorably prejudice our reaction – even if the actual taste does not fulfill the visual promise. The same ingredients, prepared identically, but displayed on the plate in a manner we find less attractive may not taste as good. Conversely, this same plate could appear fussy and overdone to someone who really wants a simple dish of pasta. In other words, the visual message is quite persuasive by itself, and may in fact significantly influence the degree to which we enjoy the food. Visual cues could well be more powerful than other sensory inputs under certain circumstances.

In wine, appearance usually does not play a significant role for most drinkers. However, professional tasters understand that it may communicate information about the condition and state of maturity of a wine – and, in some cases, much more. For the same reason, it could hinder sensory analysis. A pale red wine tends to be less concentrated with flavor compounds than one

that is dark and opaque since the red pigment (anthocyanin) is part of the phenolic content that contributes to taste. This can be misleading, however, as there are exceptions. Wines based on Pinot Noir and Nebbiolo, which often appear comparatively light in color, can often possess intense aromas and flavors.

If we see a bright color dominated by red and purple, we know that the wine is still youthful. A white wine that has darkened and taken on a brownish tint is aging, as is a red wine that seems to be losing color and is tawny at the rim. In a sparkling wine, the fine stream of very small bubbles of a top flight vintage Champagne is not only aesthetically pleasing; it also reveals a long, slow secondary fermentation in a cold cellar. Large “vulgar” bubbles that rise quickly to the surface like club soda indicate a simple tank-fermented sparkler. Cloudiness in a wine could result from lack of filtration prior to bottling, but is usually the dislodged sediment of an older vintage that will resettle if the bottle is left upright for a day or two. Or, a cloudy haze could be a symptom of microbial spoilage. There is, potentially, much to be learned from a visual inspection.

Aroma is the driving force of taste

Next we come to aroma, without doubt a determining albeit usually underestimated driver of taste. Indeed, taste without aroma is virtually meaningless – a lackluster, hollow experience. The legendary chef, Brillat-Savarin, was insightful when he wrote that “I am tempted to believe smell and taste are in fact but a single composite sense, whose laboratory is the mouth and its chimney the nose” (*The Physiology of Taste*, 1825). When a plate of hot food is put in front of us, we may notice a mixture of aromas rather than one particular aroma. Once we put food into our mouths, aroma comes into play almost immediately through our retro nasal passages. There is no question that aroma plays a central role in our overall impression, not to mention the enjoyment we receive. If you doubt that most of what we describe as taste is in truth aroma, pinch your nostrils together with your fingers the next time you eat or drink.

When it comes to wine, a good glass – of adequate capacity and filled halfway – allows us to swirl and release the aroma. Putting our nose to the glass, we can capture all that the wine has to offer. Then, taking a sip, we taste the wine and swallow, once more experiencing the aromatic dimension. There are 1,000 volatile compounds that have been identified in wine. Some would

say, in fact, that the initial aroma (nose to glass) along with the aftertaste – which is principally aroma – combine to offer the most exciting and enjoyable elements of wine drinking. Nonetheless, many people misjudge and underestimate the role of aroma, describing aromatic elements as “flavor” or “taste.” They are right in a way since aroma is central to the total taste impression.

The primary tastes

Returning to the sensations of substances in our mouths, we can identify relatively few stimuli, leaving aroma aside. It has been believed for many years that what we sense in the mouth is limited to a small group of primary tastes: salty, sour, sweet and bitter. There is little doubt about the importance of sweetness or sharpness or the other true tastes, and for those whose olfactory hardware limits their ability to perceive aromatic nuances, they do make the greatest impression. There is so much confusion surrounding the subject of taste, and it extends even to many in the wine and food industry. Perhaps this should not be surprising, since employment in the profession is not predicated on passing a sensory examination. Many professionals may be good in business but are not necessarily good tasters.

Some years ago a “tongue map” was developed indicating exactly where on our tongue we sense saltiness, acidity, bitterness and sweetness. While the map is still in common use, it has been discredited (by the research of Linda Bartoshuk). It appears that our taste buds may not, after all, be in identical locations. This should not really come as a surprise given individual variations in so many aspects of our being.

Texture must also be added to the discussion. Foods can be thin like water, thick like peanut butter, coarse like granola, crunchy as pomegranate seeds, even sharp and pointed like hard pretzels. Consider as well that chewing reverberates through the bones of the skull, adding sound to other sensations; foods can be loud or quiet.

Irritation as taste

What about the sensation of carbonation that millions of people around the world find so irresistible? Scientists describe the effect of carbonic gas as an irritation, but we may well think of CO₂ as mildly anesthetic. Well beyond the refreshing gassiness of Sprite, Pepsi and Perrier, there is the fiery world of the chile pepper that is integral to many cuisines, and an acquired taste in many others. Those unaccustomed to hot peppers find their effect to be a discomfort, or even painful to varying degrees – but not everyone finds that

pain unpleasant. On the contrary, there is something addictive about hot chiles. While scientists tell us that this “heat” is detected by our nerves and not our taste buds, we can understand why, in China, the heat of peppers has long been included among the basic tastes. We could make a good case that the taste profile of many Mexican, Thai and Indian dishes is directly associated with an incendiary assault on our palates. Some of us need that “fix” regularly. Thus oral tastes are not governed solely by taste buds on our tongues, but by other sensations transmitted to the brain through our nervous system.

Umami – the taste multiplier

Umami is often described as the “fifth taste.” Difficult to put into words, the concept of *umami* is best described as an accentuation of the overall flavor along with a savory feeling. *Umami* has been known intuitively for centuries and is the explanation in part for the pungent fish sauces that have been used in many societies up to and including the present. The origin of this unique taste was identified in 1908 by Kikunae Ikeda. A myriad of foodstuffs contain the amino acids and nucleotides that create the *umami* effect. Among them are fish like bonito, which is known as *katsuobushi* when dried, smoked and cured, and is then used to flavor stocks. Other *umami*-rich foods are the small dried sardines or *niboshi* which are, with the addition of kelp or *konbu*,

essential to *dashi*, the base of miso soup. The *umami* effect can be achieved artificially with oft-derided monosodium glutamate (MSG), which may be added to Japanese and Chinese foods.

Umami has gradually entered Western consciousness, thanks in part to my fellow American Master of Wine, Tim Hanni. The term has attained such fashionable status that there are now countless restaurants around the globe bearing the name including a U.S. chain called Umami Burger, a one-star Michelin restaurant in Alsace, France, and a kosher sushi eatery in Toronto, Canada! *Umami* is associated principally with foods, not wines; nevertheless, wine and food can be combined, Hanni would argue, in such a way as to achieve a savory, amplified taste experience equivalent to *umami*.

Applying primary tastes to wine

The four key tastes are all pertinent for wine, and a good wine is one in which a pleasing balance has been achieved. Acidity is a fundamental building block without which wine would seem flat and dull. Wines with excessive acidity appear sharp, tart or possibly even sour, although this extreme is very uncommon. Sweetness normally comes from the remaining natural, unfermented sugars in dessert, late harvest or fortified wines (or from added concentrate). In wine terminology, a “dry” wine contains no noticeable

sweetness; “off-dry” signifies one that is subtly sweet. What is not generally known is that alcohol is also perceived as sweet. It plays a critical role in balancing acidity and tannin in wine. Few wines are perceptibly salty; yet, potassium bitartrate, naturally present in wine, does have a saline flavor. Many wines are stabilized at low temperature in order to precipitate the tartrates so as to avoid a crystalline deposit in bottle (which, although completely harmless and aptly nicknamed “wine diamonds,” needlessly worries some consumers).

Tannin, the phenol that along with acidity provides the structure of red wines, allowing them to age and develop in bottle, can be bitter to varying degrees. It is in no way a flaw for a young red wine to leave a somewhat tannic impression, as long as it is not out of balance with the fruit, flesh and alcohol. It merely signals that the wine will be better if cellared for a period of time, after which it will presumably be smooth rather than astringent.

Thus wine also possesses texture. Tannin leaves a rough coating in the mouth which is different from the drying sharpness of acidity. To understand the difference clearly, lick a cut lemon, wait a minute or two, and then taste a strongly brewed tea; one is acidic, the other tannic. Because they may either compete with or compensate for each other, bitter and sour tastes tend to camouflage one another, as do bitterness and sweetness. A highly tannic and

acidic wine appears unpleasantly sharp, hard and astringent; a highly tannic wine that is relatively low in acidity is usually not unpleasant to most experienced tasters. (For more about this entire subject, I highly recommend Emile Peynaud's *The Taste of Wine*.) In recent years, winemakers have done their best to obtain so-called "sweet" as opposed to harsh tannins by picking riper grapes, removing the woody stems prior to fermentation, practicing various techniques to introduce oxygen into the fermenting wine, and pressing the skins as gently as possible after fermentation is completed. But this takes us into a technical realm that is beyond the intent of this paper...

The objectivity of taste

Tasting is an intellectual, sensory and emotional exercise. No taster – no human being – is completely objective. That said, some individuals have truly remarkable analytical powers, and controlled tests prove that they can identify odors and tastes at low concentrations. So while it is often said that taste is entirely personal, there are objective elements that can be recognized by appropriately discerning individuals (at least the "super-tasters" of this world). While innate sensitivity may be a prerequisite, studies suggest learning greatly enhances natural ability. The level of residual sugar, acidity and tannin can be measured chemically, and good tasters can accurately reflect the laboratory

analysis in at least general terms when confronted – as in the Master of Wine examination - with an unidentified glass of wine. For example, Riesling from the cool growing conditions of the Saar River, a tributary of the Mosel, that contains very high acidity levels (up to 10 grams per liter of titratable acidity) and low pH (a measure of the intensity of the acid), relative to the range in wine generally, can be correctly and objectively described as “high acid.” The same taster can also identify, despite the acidity that makes this wine seem deceptively “dry,” that the wine also contains “low to moderate residual sugar” of 1% to 1.5% by volume.

Even aromas that we associate with familiar fruits, vegetables and spices, which are considered the most subjective of all our reactions, can have a basis in the actual chemical composition. For example, esters brought about mainly by fermentation can be perceived as fruity, like bananas or pineapple, which are associated with ethyl n-butanoate and ethyl n-hexanoate. What is noted as herbaceous in a number of wines – green bell pepper is one common descriptor – can come from methoxypyrazines, another volatile compound. These substances are found in plants and several grape varieties: Sauvignon Blanc, Cabernet Franc, and Cabernet Sauvignon. Aldehydes can have an almond (benzaldehyde) or vanilla (vanillin) odor often noticed by tasters. A

buttery smell commonly noted in rich, barrel-fermented Chardonnays is derived from diacetyl, a ketone. Wine aged in barrel can absorb oak lactones which have an odor resembling coconut. We could go on and on, showing how commonly perceived aromas are based in chemical fact. At the same time, it has to be admitted that many tasters are also capable of inventing fanciful descriptors that come strictly from their own imaginations.

The human palate is far from a precision instrument: our powers of discernment will never attain the accuracy or reliability of laboratory analysis. Still, a taster with the right sensitivities can be remarkably accurate in the identification of objective attributes. Philosopher Barry C. Smith, who has written widely on this topic, explains that “it is through the subjective experience of tasting that we gain personal access to what is objectively there in wine. It doesn’t mean it only exists for each of us” (*The Objectivity of Tastes and Tasting*,” *Questions of Taste*, 2007).

The art of objective tasting

An amateur taster is one who tends to have quick, superficial reactions, does not analyze (and often misses) the fundamentals, and resorts to highly subjective descriptions. An untrained taster *drinks* the wine and might say that “this reminds me of strawberries and whipped cream.” An amateur with a

good mind and a reasonable degree of sensitivity may, however, learn the discipline and language of tasting with the right coach and sufficient training. Tasting – whether of wine, whiskey, tea, coffee or chocolate – involves the physiological attributes we have been discussing as well as a shared lore and vocabulary. To the disinterested and uninitiated, these rituals and terms can seem bizarre and ridiculous, like cricket to an American baseball fan!

A professional wine taster is one who is as dispassionate as possible, capable of holding the extremes of subjectivity in check. A pro focuses on the essential components: concentration, weight, acidity, tannin, persistence, balance, state of maturity, soundness, and overall quality. A skilled taster is also able to control – but not eliminate entirely – the distractions and suggestions coming from the environment and from within. A professional always *spits* out the wine after tasting, knowing that judgement is quickly corrupted once alcohol is consumed.

To illustrate how a seasoned taster would describe a young red Bordeaux from Saint-Julien – known for wines which tend to develop with bottle aging and are dominated by Cabernet Sauvignon blended with Merlot and other varieties – here is a theoretical tasting note: “a dark red color with purple rim; a concentrated yet reserved, undeveloped aroma showing black

and red fruits with carefully judged new French oak; a well-balanced, still largely closed palate with ripe, integrated tannins and moderately high acidity; a dry, clean youthful finish; in sum, a high quality sample requiring a decade of bottle aging to soften, open and gain length, and showing the potential to improve further with another decade or more of cellaring.”

While we may describe how to assess a wine as objectively as humanly possible, we can never forget that our individual or subjective impulses always underpin our sensory perceptions.

Flexibility and tolerance

Taste, as is plain to see, is a multidimensional phenomenon involving genetics, learning, context, highly variable sensitivities, autosuggestion and other types of bias. My purpose in exploring taste is to show how many factors come into play when we react to food and wine. I doubt that many people have taken the time to examine the intricacies of taste, so this discussion may help put it into perspective. Personally, I find the subject intriguing and intellectually stimulating; the fact that it is taken for granted, and very poorly understood, makes it that much more compelling.

Recognizing how labyrinthine the subject of taste really is should make us take pronouncements of wine and food critics with a large grain of salt. We

can listen to and respect the considered opinions of experts, but their views may not in fact suit our own palates: objective analysis does not always translate to subjective enjoyment. A flexible approach that respects many preferences and sensitivities should be in order. Not everyone possesses the equipment to distinguish aromas and tastes and be a highly discerning taster. Some individuals are put off by bitterness and acidity and find certain foods and drinks unpalatable. Others lack sensitivity of one type or another and always seem to be out of step with the consensus, disagreeing that something is salty, acidic or sweet. The paradox is that hyper-sensitive individuals may actually enjoy wine and food *less* than the average person. If you are not a super-taster, in other words, you just might find greater pleasure in far more wines and foods!

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