

TRADEMARK ISSUES RELATING TO DIGITALIZED FLAVOR

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Over the past three decades, most people have become accustomed to dealing with music, film, photography, and other expressive media stored in digital format. However, while great strides have been made in digitalizing what we see and hear, there has been far less progress in digitalizing the other senses. This lack of progress is especially evident for the chemical senses of smell and taste. However, all this may soon change. Recently, several groups of researchers have commenced various projects that could store odors and flavors in a digital format, and replicate them for humans.

Digitalization of odors and flavors has significant potential. Most obviously, it would allow odors and flavors to be stored without degradation—and transmitted over long distances by e-mail or the internet—without the need to deal with a physical object. At the same time, digitalization could create a number of potential problems, including deceptive distortion of digital odors and flavors, as well as the misuse of well-known odors and flavors for unconnected goods and services.

This article explores one subset of these potential problems: namely, those in the realm of trademark law. After discussing the state of the technology, the article explores how trademark law can respond to certain uses of digital flavors. It analyzes various trademark law issues that may arise, such as whether a party can obtain trademark rights in a digitalized flavor as well as whether others can borrow an existing flavor to market their goods or services. While the focus is on flavor—which due to its idiosyncrasies presents the most difficult problems—many of the same conclusions will apply to odors.

Because digitalization technology in the realm of flavors is still very primitive, the article is predictive in nature. Nevertheless, by identifying the potential obstacles and problem areas now, the legal system may have time to react before the technology inevitably becomes feasible.

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INTRODUCTION

Were it not for the senses, humans would exist in isolated cocoons. Our five senses allow us to perceive the world around us. But, equally importantly, they also allow us to communicate those perceptions to each other. Our senses collectively constitute the medium by which living beings communicate about their world. Most human communication occurs through the senses of sight and sound. Anyone who has ever walked a dog, by contrast, can verify how the canine species relies more heavily on the sense of smell. Nevertheless, even we humans use the senses of touch, smell, and taste to both enhance and facilitate communication. The complete message we receive from face-to-face communication with others can be a nuanced mix of signals we receive through all five of our senses.

Of course, we regularly use technology such as telephones and e-mail as a tool in interpersonal communication. These technologies undoubtedly make interpersonal communication, especially at a distance, easier, quicker, and cheaper—although debate continues as to whether it is as effective. But in addition to communicating with other humans *through* technology, humans also need to communicate directly *with* technology. The complex computational, storage, and retrieval power of a computer is of little use if the human operator cannot direct the computer what to do, or the computer cannot communicate what it just did back to the human.

Our communications with technology involve a “formatting” problem. Most information technology today is digital. Human beings, however, are “analog” devices. When we communicate with our machines, we must convert our thoughts and commands into digital format. Similarly, computers convey information to humans by converting its digital information into an output recognized by one of our senses. Because humans rely heavily on their senses of sight and sound in communication, it is easy to understand why most early developments in computer interface technology focused on those two senses.¹ Early computer-to-human communication was purely visual. Moreover, that visual interaction was quite limited, as the first computer monitors displayed only monochromatic text. Within a few decades, technology evolved to allow for both sound and pictorial/graphical communication. Today, high resolution monitors and sophisticated sound chips and speakers allow for advanced sight and sound displays. The interaction now even works both ways, with iris readers, fingerprint scanners, and speech recognition technology allowing humans to communicate to our machines by means other than buttons, dials, keyboards, and the mouse.

While there have been great strides with respect to sight and sound, computer-to-human communication via the other three senses is far less developed. Admittedly, haptic input technology is becoming increasingly sophisticated, and includes modern multifunctional touchpads and touchscreens. There has also been some effort to introduce various types of haptic *output*, usually in the form of vibration.² For example,

¹ The greater development in sight and hearing interfaces may also be attributable to another factor. People experience sights and sounds in much the same way. However, differences in how people experience the same scents and tastes make synthesis more difficult. See Samuel Greengard, *A Sense of Technology*, COMMUNICATIONS OF THE ACM (Sept. 14, 2014), <http://cacm.acm.org/news/178831-a-sense-of-technology/fulltext> [<https://perma.cc/4X46-HMY4>]. See also note 30.

² Haptic interaction is more developed for small computing devices such as tablets and smartphones. These portable devices often use vibration to

researchers at the Mixed Reality Lab have developed a system they dub the “Huggy Pajama,” by which parents may transmit the sensation of a hug to their children (or anyone else) from afar.³ But even with these advances, computer technology does not really convey much information using the more nuanced aspects of the human sense of touch.

The technology is even more primitive for the two chemical-based senses of smell and taste. While some developments have occurred, especially in the area of smell synthesis,⁴ computers do not really communicate to any significant extent using smell and taste.⁵ For much computer-to-human communication, such as the results of mathematical or financial calculations, the failure to include these three senses has little, if any effect. However, much inter-human communication relies to varying extents on touch, taste, or smell. A touch on the arm, or the “homey” scent of a kitchen, can convey powerful messages. Any digitalized version of these messages that does not appeal to all the senses is less “complete,” and may be less effective.

All this may be changing. In recent years, researchers in various fields have begun to experiment with synthesizing

communicate with the user in settings in which an audible output would be inappropriate.

³ The interface includes a jacket containing air pockets. An electronic signal causes the pockets to fill with or release air, resulting in a compression that feels like a hug. *Huggy Pajama*, MIXED REALITY LAB, <http://mixedrealitylab.org/projects/all-projects/huggy-pajama> [https://perma.cc/2EZP-GYP3]. The Mixed Reality Lab has also developed “RingU”, a simpler device that allows a long-distance “squeeze” on a ring-like device worn on the recipient’s finger. *Features Section*, MIXED REALITY LAB, <http://ringu.mixedrealitylab.org/#features-section> [https://perma.cc/G43S-425R].

⁴ One of the more perplexing devices is the “Scentee”, which attaches to an iPhone or Android phone through the headphone jack. The device imitates various scents, which the phone user can experience. Shane Hickey, *Groundbreaking Gadgets Aim to Provide a Feast for the Senses*, THE GUARDIAN (Sept. 28, 2014), <https://www.theguardian.com/technology/2014/sep/28/groundbreaking-gadgets-feast-for-senses> [https://perma.cc/36WR-LYAQ]. While the Scentee was sold for a while on Amazon.com, at the time of writing, the site currently lists it as “unavailable.”

⁵ Somewhat greater development has occurred in the area of smell and taste *sensors*, which perceive and classify the scent or flavor of a particular item, but do not recreate that scent or flavor for experience by humans. Such devices have significant industrial applications, such as ensuring uniformity between production facilities and detecting spoilage. See Carolyn Mathas, *The Five Senses of Sensors—Part I: Smell, Taste, and Hearing* (Mar. 26, 2015), <http://www.digikey.com/en/articles/techzone/2015/mar/the-five-senses-of-sensors-part-i-smell-taste-and-hearing> [https://perma.cc/977N-UDQG]. See also, e.g., Neil Savage, *The Taste of Things to Come*, 486 NATURE S18, S18 (2012). Because this article focuses on the use of senses for purposes of communication, technology that only detects smell or flavor will not be discussed.

aspects of the senses of touch, smell, and taste. Much of the impetus for this development comes from medicine, where there is a perceived need to augment or enhance these senses for those suffering from some sense disability.⁶ However, there is an increasing trend towards exploring sense synthesis for its entertainment value or even in its own right, not merely as a means for dealing with a medical condition. Recognizing the medical and commercial possibilities of synthesized smells and tastes, researchers on several continents are working to develop ways to create artificial tastes and smells. Two organizations at the forefront of this research are the Mixed Reality Lab⁷ and the Keio-NUS CUTE Center at the National University of Singapore.⁸

Digitalized taste and smell present real enigmas for various areas of technology, innovation, and law. This paper deals with one small part of this larger issue: possible trademark issues that could arise with the digitalization of flavor. In particular, the paper argues that it will be exceedingly difficult to apply several basic rules of trademark law – a body of law designed with words and visual symbols in mind—to tastes and smell.

The article is primarily predictive in nature. While trademark law certainly has its share of normative issues, those issues generally lie outside the scope of this discussion. The most important of these normative issues is whether trademarks should complement patents (both utility and design) and copyrights in protecting product features. But for better or worse, that issue has largely been resolved in favor of making trademark protection available. Unless digital flavors are qualitatively different from product shapes, trademark protection is in theory available. This paper concludes that in most cases no qualitative difference exists. It accordingly focuses on how the existing rules might apply, leaving the broader normative issues for another day.

The one exception is in Part IV.B., which discusses a party's ability to digitalize an existing well-known flavor and apply it to a different good or service. Existing trademark law affords no relief. However, one can make a strong argument that such "borrowing" is nothing more than free-riding, which when done by a non-competitor has no real social value. If so, Congress could either create a cause of action (as it did in the

⁶ Nimesha Ranasinghe, Adrian Cheok, Ryohei Nakatsu & Ellen Yi-Luen Do, *Simulating the Sensation of Taste for Immersive Experiences*, IMMERSIVEME'13 at 29, 30 (Oct. 22, 2013) [hereinafter "*Simulating Taste*"].

⁷ *Mixed Reality Lab*, MIXED REALITY LAB, <http://mixedrealitylab.org/> [https://perma.cc/3BX6-TV TZ].

⁸ *Keio-NUS CUTE Center*, NATIONAL UNIVERSITY OF SINGAPORE, <http://cutecenter.nus.edu.sg/> [https://perma.cc/SL48-UZ XZ]. See also Savage, *supra* note 5.

case of “cybersquatting”), or courts could borrow from principles of general misappropriation law or the right of publicity.

A few initial points of clarification are in order. The author chose to focus on flavor because of its unusual nature. Flavors, like smells, can trigger strong and detailed involuntary memories, often many years after the person encountered the stimulus.⁹ The concept of “taste memory”, and the related phenomenon of “conditioned taste avoidance”,¹⁰ could enhance a party’s ability to use digitalized flavors for either good or bad purposes.

While this paper talks of both *taste* and *flavor*, it focuses on the latter. The two terms are not synonyms in this discussion. This paper uses “taste” to refer to the sense itself, like the senses of sight and hearing. Flavor is the *stimulus* that triggers the sense of taste. Thus, flavor is to taste what sounds are to hearing. Technically, most research into sense synthesis does not involve synthesizing the senses themselves.¹¹ Senses involve two basic components: the stimulus, and the perception of that stimulus by the human brain. Current efforts at synthesizing human senses actually deal almost exclusively with the stimulus component.¹² Thus, efforts in digitalizing flavor focus on converting the stimuli into a digital form, and the development of some analog output technology to convert those digital files back into something the human taste organs can experience. While there are experiments in digitizing the perception aspect of the senses—that is, digitalizing the signal the eye, ear, or even the tongue sends to the human brain along with digital sensors connected to the brain—that development remains in such a stage of infancy that it would be premature to include it in this paper.¹³

⁹ See Nimesha Ranasinghe et al., *Digital Taste and Smell Communication*, BODYNETS 2011 at 78, 78 (2012) [hereinafter “*Digital Taste*”].

¹⁰ See *infra* text accompanying notes 72-75.

¹¹ As discussed *supra* in note 5, there has been considerable development in the field of flavor sensor technology. However, much of this technology does not transmit flavor sensations to humans, but rather merely examines a product to determine particular attributes such as spoilage.

¹² The stimulus is often referred to as “actuation” in the scientific literature. *Digital Taste*, *supra* note 9, at 78. To illustrate the point in the text, again consider hearing and sounds. Digital music on a CD or iTunes is stored in a digital format. However, the human sense organ—in this case the ear—is a purely analog device. The *perception* of an artificial stimulus accordingly remains essentially non-digital, as it requires a device to convert the digital files into an “analog” format that can be perceived by the human ear. In other words, your iPod stores music digitally, but replays it through earbuds or speakers that generate analog sound waves.

¹³ The authors of *Digital Taste*, *supra* note 9, propose a method of using direct magnetic stimulation of various areas of the brain to replicate smell and flavor. *Id.* at 79-83. Such a method approaches a truly digital flavor. For the proposal to become reality, however, researchers will have to undertake the

One could use “taste” to refer to both the sense and the stimulus. But that use is misleading. The sense of taste does not operate in isolation. The full sensation associated with tasting an object also depends on inputs perceived by other senses, especially smell.¹⁴ The complexity of this interaction makes flavor more difficult to synthesize in the first place, but in time may enhance the use (and abuse) of digitalized flavors. The modern convention is to use the term “flavor” to refer to the full sensation experienced by the combined senses of taste, smell, and the other senses.¹⁵ This article follows this convention. However, as there is no good verb to refer to the act of experiencing the full flavor sensation, the article employs the verb “taste” to refer to the act of experiencing a flavor.

Another core concept of this paper is *digitalization*. While flavors can be synthesized by either chemical or digital electronic means, the article focuses only on the latter. Use of digital technology creates a host of intriguing possibilities that do not exist—or at least do not exist to nearly the same degree—with chemical synthesis.¹⁶ As just one example, digitalization allows for complete physical separation of the input and the person sensing that input. Accordingly, digitalizing a flavor could in theory allow that flavor to be transmitted by e-mail or over the internet, without transmitting any physical object.¹⁷ The paper also discusses other intriguing possibilities of digitalization.

The paper proceeds as follows. Part I explores the current state of flavor synthesis technology, including a discussion of the particular technological hurdles involved. Part II considers the potential of digital flavor technology. Some of this potential is obvious, including the ability to “taste test” a product from afar before purchase. Others—including the possibility of using digitalized flavor to enhance audio and visual communication, as a form of expression, as a trademark for non-consumable goods, or as a form of digital “candy” sold in its own right as a commodity—are less obvious, but at the same time more intriguing. But these innovative benefits come at a cost. Part III provides an overview of some of the issues that arise through digitalized flavor – and proposes a framework for conceptualizing the different uses of the

herculean task of mapping the brain to learn what flavor components are experienced in which locations. There is no certainty that the responsible regions will be the same for all individuals.

¹⁴ This interaction is discussed in greater detail *infra* at text accompanying notes 21-28.

¹⁵ *What is Taste?*, THE TASTE SCIENCE LABORATORY, <http://www.tastescience.com/abouttaste1.html> [https://perma.cc/95W9-QU5G] [hereinafter [“*What is Taste*”].

¹⁶ *Simulating Taste*, *supra* note 6, at 30-31.

¹⁷ *Accord: Digital Taste*, *supra* note 9, at 78.

technology. Part IV discusses the potential trademark law pitfalls involved in digitalized flavor. For example, a party who can alter flavor by the simple expediency of computer commands can conceivably adopt a flavor as a mark, just like parties currently employ words and symbols.

I. THE TECHNOLOGY OF FLAVOR SYNTHESIS AND DIGITALIZATION

A. FLAVOR AND THE SENSE OF TASTE

The sense of taste is in some ways quite simple. Unlike the colors, lighting, motion, depth perception, and other variables involved in vision, taste comprises relatively few components. Indeed, the classic definition of taste included only four components: sweet, sour, salty, and bitter.¹⁸ Most today include a fifth component called “umami.” Umami, a Japanese term that means “delicious,” describes the savory taste of meat.¹⁹ Because of the limited number of inputs, the organ we think of as responsible for perceiving taste—the tongue—is far simpler than the eye.²⁰

But the full sense of flavor—as opposed to the narrower concept of taste—is highly complex. As noted in the Introduction, a sensual perception is not so much what the particular organ encounters, but instead how that perception registers in the brain. What we hear is affected not only by our ears, but also by our eyes and touch receptors. Similarly, multiple factors combine to affect what our brain ultimately tastes when we place something on our tongue. First, flavor is not determined solely by the tongue. Instead, it is highly affected by the other senses.²¹ Smell is especially important. Indeed, the nose has considerably more influence on what we taste than the taste buds. Studies estimate that 80 to perhaps even 90 percent of what we experience as flavor actually comes from the sense of smell.²² One need only eat a meal while

¹⁸ *Id.* at 79; see also S.K. Wertz, *The Elements of Taste: How Many Are There?*, 47 J. OF AESTHETIC EDUC. 46 (2013).

¹⁹ *What is Taste*, *supra* note 15; Bijal P. Trivedi, *The Finer Points of Taste*, 486 NATURE S2, S2 (2012); *Digital Taste*, *supra* note 9, at 79. Others quibble with this classification, arguing, *e.g.*, that astringency and pungency should be included as flavor components, or that bitterness is actually a catchall for other characteristics. Savage, *supra* note 5, at S18.

²⁰ See generally Trivedi, *supra* note 19, at S2 (giving a brief overview of the tongue). However, as will be demonstrated below, the tongue is only partly responsible for the sensation of flavor.

²¹ *Simulating Taste*, *supra* note 6, at 30.

²² H. Breer, *The Sense of Smell: Reception of Flavors*, 1126 ANNALS N.Y. ACAD. SCI. 1 (2008); *What is Taste*, *supra* note 15. Contrary to popular perception, this scent detection is retronasal: molecules enter the nose from the *back* of the mouth rather than from the front of the nose as with other smells. Dana

suffering a head cold or holding one's nose to validate the importance of smell to the ultimate tasting experience.²³ For example, the sense of smell makes it easier for us to distinguish limes from lemons.²⁴ While the tongue senses bitterness and some sweetness, it is the aroma that leads the brain to register the full flavor of a lemon or a lime.

Less recognized is how other senses also influence how we taste. The mouth also picks up the tactile sensation of what we eat—firm or squishy, solid or liquid—which affects how the brain interprets the flavor of the item.²⁵ Similarly, the temperature of the item being tasted is important, especially with respect to the sweet, bitter, and umami flavor components.²⁶ Even vision can affect our perception of flavor.²⁷ For example, in a study where researchers added a flavorless red dye to white wine, several tasters perceived the wine as a red wine.²⁸

Further complicating the issue are individual idiosyncrasies that affect flavor. Not every human's taste buds are the same. In fact, there are marked differences among individuals involving the number and types of taste buds, which means two humans may not taste the same object the same way.²⁹ As just one example, some people find the herb coriander has an unpleasant “soapy” taste, while most detect nothing of the sort. Some people are genetically unable to taste certain flavors at all.³⁰ There are also ethnic and geographical

M. Small et al., *Differential Neural Responses Evoked by Orthonasal versus Retronasal Odor Perception in Humans*, 47 NEURON 593 (Aug. 18, 2005).

²³ Savage, *supra* note 5, at S19.

²⁴ *What is Taste*, *supra* note 15.

²⁵ Michael Eisenstein, *More Than Meets the Mouth*, 468 NATURE S18, S18-9 (2010).

²⁶ See Alberto Cruz & Barry G. Green, *Thermal Simulation of Taste*, 403 NATURE 888 (2000).

²⁷ Technically, the sense of taste includes only taste, smell, and texture. However, what we see affects how we characterize that we taste. *How does the way food looks or its smell influence taste?*, SCIENTIFIC AMERICAN (Apr. 2, 2008), <https://www.scientificamerican.com/article/experts-how-does-sight-smell-affect-taste/#> [<https://perma.cc/TWD2-MC58>].

²⁸ *Id.*

²⁹ *Everybody Experiences Flavor Differently!*, THE TASTE SCIENCE LABORATORY, <http://www.tastescience.com/abouttaste3.html> [hereinafter “*People Differ*”] [<https://perma.cc/UMZ2-55WT>]. See also Ewen Callaway, *The Lost Appetites*, 486 NATURE S16, S16 (2012). It is also interesting to note that taste buds do not exist only on the tongue. They can also be found elsewhere in mouth, and even in the nose and various other organs in the body. See Bijal P. Trivedi, *Hardwired for Taste*, 486 NATURE S7, S7 (2012) (updated online Apr. 25 2014). The function taste buds perform in these other locations is not completely understood.

³⁰ One well-known example is Phenylthio carbamide, or PTC, which cannot be tasted by a significant percentage of people due to genetics. Eisenstein, *supra* note 25 at S18. Another chemical, 6-n-propylthiouracil, or PROP, cannot be tasted by roughly 30% of the population. *People Differ*, *supra* note 29. These differences are not unique to humans. Cats, for example, cannot

differences, with peoples native to some regions exhibiting various commonalities.³¹ Finally, memory and the brain's own thought processes can influence taste. A study of taste preferences for the soft drinks Coca-Cola and Pepsi demonstrated that when consumers knew the brand, their tasting preferences were different than they engaged in blind taste testing.³²

B. SYNTHESIZING AND DIGITALIZING FLAVOR: THE CURRENT STATE OF THE ART

The focus of this paper is on digitalization of flavor. Digitalization involves representing something that exists in the real world by an array of electronic on/off switches—"1s" and "0s" in computerspeak. If that binary code is organized and replayed in the proper order, the original item can be replicated. Thus, when a person types a document into a word processor, the analog collection of letters and numbers are stored in a digital format, and can be reproduced on demand.

Digitalization offers a number of distinct advantages over analog storage methods like photocopying and magnetic tape recording. Analog reproductions are almost always distorted to some degree, and the distortions tend to get worse as copies are made of the copies. Analog copies also degrade over time. A digital copy, by contrast, can exist permanently without degradation,³³ and every copy can be exactly the same.³⁴ Therefore, digitalization of art and music allows for accurate and long-term preservation. With e-mail and the internet, digitalization also facilitates transmission of perfect copies over great distances without distortion or loss.

detect sweet flavors. Dolphins cannot detect umami or bitter flavors. Callaway, *supra* note 29, at S16. One theory is that these deficiencies result from natural selection. Sweet foods were not traditionally part of a cat's diet. And because dolphins swallow food whole, taste is of less importance. *Id.*

³¹ In the case of PTC, the percentage of people who can taste the chemical ranges from 5 to 85 percent, with the lowest sensitivity in Europe, the Middle East, and India. *The Geography of Taste, Bitter Taste in Particular*, THE TASTE SCIENCE LABORATORY, <http://www.tastescience.com/abouttaste4.html> [https://perma.cc/4NZW-BM9T].

³² Samuel M. McClure et al., *Neural Correlates of Behavioral Preference for Culturally Familiar Drinks*, 44 NEURON, 379 (2004) [hereinafter "*Coke/Pepsi*"]. The difference in preferences for blind and revealed tasting was especially marked for Coca-Cola. *Id.* at 385.

³³ Digital copies are not necessarily permanent. While they do not gradually degrade over time like analog copies, they are susceptible to corruption. Digital storage media are highly vulnerable to electric charges, magnetism, and liquids. Also, minor alterations of a digital file can corrupt the entire file. When corruption occurs, it can be a more serious problem than degradation, for it may render the digital file completely unusable.

³⁴ Digital reproductions need not be perfect copies. In photography, for example, photos are often stored in the .jpg format, which compresses the file and results in some loss of data.

Because it involves so many complex and interacting components, flavor is extraordinarily difficult to digitalize. Indeed, it can be difficult to *synthesize* flavor even in non-digital form. Flavor may be the most difficult sense of all to replicate. Any attempt to synthesize flavor must do more than recreate the chemicals that interact with the taste buds on the tongue. Instead, it should also include the other senses necessary to appreciate taste fully, including smell, touch/temperature, and sight. A sophisticated synthesis would also be able to accommodate personal differences in the way people perceive the same flavor inputs.

Of course, humans have synthesized flavors for decades, if not centuries. Many food and beverage products sold today contain artificial flavors. Use of synthesized flavors has been extended to cigarettes (both tobacco-based and smokeless), and even some traditionally non-tasted items. Among the oddest of these technologies is the “TasteScreen”, which comprises a system of cartridges containing 20 chemical flavors. Those flavors can be combined by software and then sprayed on the user’s computer display, where the user is supposed to lick the screen to experience the flavor. As one study aptly noted, the system presents several problems, among which is the likelihood humans would find licking a screen “distasteful.”³⁵ Another possibly not-well-thought-out effort was an advertisement for Welch’s grape juice that was placed in a magazine. The advertisement included a synthesized grade juice flavor.³⁶ Readers peeled back a tab located on the page, licked the page, and thereby experienced the flavor of grape juice. One commentator noted the implications of ads in magazines that sit for weeks on end in a doctor’s waiting room.³⁷

Other chemical-based syntheses are more nuanced. A device called the “Food Simulator” combines chemical and mechanical components to better imitate not only the raw taste, but also the texture of food.³⁸ The “Tag Candy” System utilizes both vibration and smell stimuli to affect the way the user experiences a real cookie.³⁹ Some studies have also used electric current to alter the way a person perceives the flavor of an item.⁴⁰

However, most flavor synthesis to date has been non-digital. The synthesis typically involves the use of chemicals

³⁵ *Simulating Taste*, *supra* note 6, at 30.

³⁶ Mandy Van Deven, *Does Licking an Ad Count as Falling Off the Wagon?*, FLAVORWIRE (Apr. 9, 2009), <http://flavorwire.com/17118/does-licking-an-ad-count-as-falling-off-the-wagon/> [<https://perma.cc/ZNP2-EM4F>].

³⁷ *Id.*

³⁸ *Simulating Taste*, *supra* note 6, at 30.

³⁹ *Id.*

⁴⁰ *Id.*

(natural or man-made) which are then mixed and released in a way the tongue can experience.⁴¹ Chemical reproduction of flavors, especially when augmented by electrical, sight, or tactile based stimuli, is perhaps the easiest way to reproduce flavors. However, certain inherent limitations in analog technology prevent these methods from achieving their full potential. Because all require the use of chemicals in one way or another, long-distance replication is extremely difficult. Chemicals are expensive to transport and store.⁴² Moreover, any particular user could exhaust his or her supply over time. Purely digital stimuli, by contrast, would require only electric current and a reusable electro-mechanical output device to replicate flavor anytime and anywhere.

On the other hand, digitalization of flavor involves its own unique problems. One significant obstacle is the lack of any agreed-upon format for representing flavor in digital format. For visual displays, the leading standards are basic RGB and CMYK.⁴³ Sound can be split into recognizable frequencies using Fourier Transformation techniques.⁴⁴ Until science develops a similar standard “file system” for flavor, creation and especially communication of digital flavor will present problems.

Due in part to these obstacles, efforts to reproduce flavor stimuli in a truly digital form are still in the very early stages.⁴⁵ Yet, there have been some promising developments. Researchers have experimented with an “electrogustometer” that uses electrodes to stimulate various areas on the human tongue.⁴⁶ Other studies have used various means to determine how temperature affected the taste sensations of sweet, sour, and salty.⁴⁷

But perhaps the most noteworthy development to date is the Digital Taste Synthesizer, or what some have dubbed the “Digital Lollipop.”⁴⁸ This device, developed at the National University of Singapore, was described in detail in a scientific

⁴¹ *Id.*

⁴² *Id.* at 31.

⁴³ *Id.* at 30.

⁴⁴ *Id.*

⁴⁵ *Id.* at 31 (describing the technology as in its “infancy”).

⁴⁶ J. Stillman et al., *Electrogustometry: Strengths, Weaknesses, and Clinical Evidence of Stimulus Boundaries*, 28 CLINICAL OTOLARYNGOLOGY & ALLIED SCI. 406 (2003).

⁴⁷ Cruz & Green, *supra* note 26; Karel Talavera et al., *Heat Activation of TRPM5 Underlies Thermal Sensitivity of Sweet Taste*, 438 NATURE 1022 (2005).

⁴⁸ See, e.g., Jacob Davidson, *Get Your Chocolate Fix Without the Guilt: Electronic “Lollipop” Can Simulate Any Taste*, TIME (Nov. 23, 2013), <http://newsfeed.time.com/2013/11/23/get-your-chocolate-fix-without-the-guilt-electronic-lollipop-can-simulate-any-taste/> [https://perma.cc/YF77-7YVL]. As will be discussed below, the title of this article is a bit misleading, as the Digital Lollipop cannot synthesize all the components of flavor.

paper published in 2013.⁴⁹ The system comprises three basic components: a control module, and output interface placed on the tongue, and a communication module.⁵⁰

The tongue interface employs two silver electrodes that both transfer electronic pulses of various intensity and polarity, and vary the temperature.⁵¹ These pulses and temperature fluctuations stimulate the taste buds to “recognize” four of the five taste elements (the device does not replicate the umami flavor) as well as the sensations of minty and spicy (achieved primarily by changes in temperature).⁵² Tests of the device on human subjects showed that while the device was not always accurate, it was possible to predict in a majority of cases how the test subject would perceive various stimuli.⁵³

The Digital Lollipop is far from perfect. It interfaces only with the tongue, and does not provide olfactory, haptic (other than temperature), or visual stimuli.⁵⁴ Therefore, the device does not simulate complete flavor, but only those flavor elements perceived by the tongue. And even in this regard it is incomplete, as it lacks the umami taste. Tests also revealed a large subjective component in tasting.⁵⁵ Finally, the device suffers from some design issues. The current tongue interface is bulky, and requires the user to stick her tongue into it.⁵⁶ The controls on the interface are also skittish, especially with people who salivate more than others.⁵⁷ These design problems may limit people’s willingness to use the device in the real world. Nevertheless, it is fair to say that the Digital Lollipop is a positive first step toward fully digitalizing the stimuli that lead to the sense of taste in humans. It is also possible that improved versions will solve the design problems, especially if they incorporate the olfactory, tactile, and other stimuli needed to more accurately simulate the full experience of flavor.

II. THE POTENTIAL OF DIGITALIZED FLAVOR

It is currently unclear when science will ever accurately digitalize flavor. But once current efforts bear fruit, the implications are many and fascinating. Most obviously, digitalization of flavor would allow for flavors to be experienced from great distances, possibly even transferred over the

⁴⁹ *Simulating Taste*, *supra* note 6, Preliminary research on the project is discussed in *Digital Taste*, *supra* note 9.

⁵⁰ *Simulating Taste*, *supra* note 6, at 32.

⁵¹ *Id.*

⁵² *Id.* at 33.

⁵³ *Id.*

⁵⁴ *Id.* at 32.

⁵⁵ *Id.* at 33.

⁵⁶ *Id.*

⁵⁷ *Id.*

internet to anyone with a computer and an electromagnetic taste module. More significantly, however, digitalization would allow flavor to be divorced from the item being tasted, and experienced by itself. This separation of flavor from physical object has significant ramifications for various aspects of competition and commerce.

A. Practical Benefits

The internet has proven a significant boon to online vendors. Amazon.com has no need for an attractive physical sales floor, a large sales staff, or a customer parking lot. The associated cost savings can give the online seller a significant economic advantage over traditional retail establishments. For many hard goods, these cost savings can more than offset the additional shipping costs required to transmit goods to each individual consumer. The savings can be even more significant in industries such as software and recorded music, where the item being purchased need not be shipped, but simply transferred over the internet to the consumer as a digital file.⁵⁸ While the total percentage of sales made online is smaller than most news accounts would lead us to believe—according to the U.S. Department of Commerce, e-commerce sales comprised only 8.1 percent of total retail sales—that percentage is increasing at a steady pace.⁵⁹

However, not all sellers enjoy equally the advantages afforded by the internet. While the lack of a “brick and mortar” store does result in cost savings, it also poses some problems for consumers. One key problem is that consumers cannot fully inspect the item prior to purchase. A consumer who visits a traditional retail store can examine the goods under consideration before making a purchasing decision. With respect to goods offered online, this opportunity to inspect is more limited. Because computer technology currently interacts effectively with only two human senses—sight and sound—potential consumers shopping on the internet are limited to visual and aural inspection of the items they are considering. For certain types of goods, this limitation is a minor obstacle. A person searching for recorded music or audiobooks, for example, can often listen online to excerpts from the recordings she is considering prior to purchasing. Similarly, a consumer may be

⁵⁸ Three-dimensional printers offer the promise of a similar sea change in how hard goods are distributed. A consumer who owns a 3D printer would need only purchase a CAD file and raw materials, which she could use to “print” the product at home. If the technology improves and prices lower, shipping costs for finished goods may become a thing of the past.

⁵⁹ U.S. Dep’t of Commerce, *Quarterly Retail E-commerce Sales 2nd Quarter 2016*, U.S. CENSUS BUREAU NEWS (Dec. 7, 2016), <https://www2.census.gov/retail/releases/historical/ecomm/16q2.pdf> [<https://perma.cc/JB5W-YUNN>].

able to evaluate items such as books and decorative goods using visual inspection.⁶⁰

But sight and hearing are less useful when it comes to gauging other desired attributes of goods. For example, someone shopping for clothes may want to feel the fabric to determine comfort and durability. Determining the heft or balance of a tool is also problematic if sight and sound are the only options. However, the problems are perhaps most acute for items like perfumes, foodstuffs, and drink. The primary attributes of these goods are measured by the senses of taste and smell rather than appearance and sound. Meaningful examination from afar is accordingly impossible given the limits of current technology.

Of course, the lack of digitalized touch, smell, and flavor has not prevented online sales of these sorts of goods. When physical examination of goods is impossible, consumers rely on various proxies to obtain the desired information. Probably the most important of these proxies is the trademark, which informs consumers that the goods being examined come from the same source as those about which the consumer already has some knowledge. Prior experience with goods from a source helps the consumer predict the likely quality of those currently being considered.⁶¹ Consumers may also rely on recommendations and reviews (which work best when used in connection with a trademark) to obtain information that might otherwise be obtained by physical inspection.⁶²

This use of proxies is by no means a product of the internet, or even the digital era. Consumers have used trademarks as proxies for centuries.⁶³ The importance of marks greatly increased in the mid-1800s, when the growth of rail transportation increased the distance between producer and consumer.⁶⁴ However, while the internet did not spawn trademarks and trademark law, it has increased their importance in the buying experience. Although some early prognosticators predicted that the internet would diminish the importance of trademarks—by “leveling the playing field” of large and small players and making it easier for the newcomer

⁶⁰ Visual inspection over the internet is not always entirely accurate. Items pictured in online stores are often presented in isolation, without any context. It can accordingly be difficult to gauge the actual size of the item in question.

⁶¹ 1 J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 2:5 (2016) [hereinafter “MCCARTHY”].

⁶² Many online reviews of items sold over the internet focus on matters of weight, durability, size, temperature during use (especially in the case of electronics), and other attributes that cannot be accurately assessed over the internet.

⁶³ Humans have marked the goods they produce for centuries. The phenomenon was not limited to Europe and the Mediterranean, but also took place in Japan and China. MCCARTHY, *supra* note 61, at § 5:1.

⁶⁴ *Id.* at § 2:5.

to enter a market—it has in many ways had just the opposite effect. Consumers shopping on the internet rely to even a greater extent on trademarks, because physical inspection is difficult or impossible.

On the other hand, proxies have their limits. They perhaps work best when they deal with objective, widely-recognized attributes of the good. Most consumers agree on what a reviewer means when she says a tool is durable or a fabric is flimsy. But other attributes are more subjective. Flavors and smells lie near the high end of the subjective spectrum. Two people may vehemently disagree about whether the flavor of a particular food or wine is “good” or “bad.” Instead, a consumer is often better served by tasting or smelling the item himself to determine if he finds it pleasing.

Digitalization has the potential to surmount some of the obstacles facing the sale of flavor-dominant goods over a distance. Should science develop an inexpensive and accurate way to transmit digitalized flavors over the internet, consumers and sellers of food, drink, and other taste goods could benefit greatly. Digitalized flavor would allow consumers to sample the product before purchase. Moreover, because that sampling can occur in the comfort of one’s home (or perhaps more likely office), consumers can save on travel and search costs, which could increase their purchasing power at any given income level. In a few years, it may be possible for wine vendors to conduct an online wine tasting in which numerous consumers could “sample” a selection of wines. While still preserving some of the attributes of the current model, such as commentary by the seller or vintner representative, consumers would no longer even need to be in the same room as the seller or each other.

Digitalizing flavor also offers other potential benefits. Consider again the hypothetical wine tasting. First, unlike ordinary tastings, an online wine tasting would be “non-destructive.” A vendor using digitalized flavor would use an easily-replicable digital file, and accordingly would not actually need to open and use up any wine. That alone could result in significant cost savings. Second, digital tastings would allow potential consumers to sample a wide array of products, including those the seller does not currently have in stock, thereby reducing inventory costs. Third, tasting a digitalized flavor would not involve the consumption of any calories, and those who sampled would never get “full.” Similarly, in the case of alcoholic beverages, experiencing the digitalized flavor sample would present no risk of intoxication. While a digitalized wine flavor would include a component representing

the alcohol, the digital flavor would not actually contain alcohol, and as a result would have no intoxicating effect.⁶⁵

Nor would the benefits of digitalized flavor be limited to sampling. Divorcing the flavor from any actual physical product could also help prevent detrimental health effects associated with the physical product. For example, people could enjoy the flavor of tobacco smoke without suffering any of tobacco's ill effects. Diabetics might be able to experience the flavor of sweet foods without the negative effects of real sugar.⁶⁶ Further health benefits could arise from using digitalization to improve the flavor of current food products. Some healthy foods have either a bland flavor, or a strong flavor that many people do not enjoy. If a seller can attach an artificial but desirable flavor to these foodstuffs, consumers might be more inclined to purchase and consume those healthy foods.

B. Cutting Edge Benefits: Expanding the Use of Flavor

The discussion so far has emphasized food and beverages, items for which flavor is certainly crucial. However, flavor can also play a role in connection with non-food products. Items such as toothpaste, dental floss, and medicines are often artificially flavored to make them more appealing. Similarly, sellers sometimes add a pleasant flavor to stamps, envelope flaps, and other items where adhesive is licked during normal use. Digitalization would make it possible for consumers to "sample" the flavor of these non-tasted products prior to purchase. While flavor might be a less-important criterion for these goods than for foods—for instance, it is unlikely that the flavor of an envelope flap strongly influences an envelope shopper—it could nevertheless affect a consumer's decision to purchase. Further afield are items such as pencils and pens, which are not intended to be tasted, but are often put in the mouth by users.

Even more intriguing, however, are products where flavor heretofore has not been a criterion in the purchasing

⁶⁵ However, it is possible the digital flavor could have a placebo effect. Humans are highly suggestible. Experiencing something that contains the taste of alcohol might cause some people to feel intoxicated, even though they have consumed no actual alcohol.

⁶⁶ *Digital Taste*, *supra* note 9, at 83. The potential here is more open to doubt. Some studies suggest that the pancreas and other organs may not react not directly to sugar, but instead to the perception of sweetness in high-sugar food; it is the perception of sweet that causes the body to produce insulin. See Kate S. Collison et al., *Gender Dimorphism in Aspartame-Induced Impairment of Spatial Cognition and Insulin Sensitivity*, PLOS ONE (Apr. 3, 2012), <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0031570&type=printable> [<https://perma.cc/6LR3-GSYH>]. If this is correct, then even a digitalized sweet flavor might have negative health effects.

decision in any way. Digitalization of flavor effectively allows flavor to exist in isolation, without any innate connection to a physical object. In other words, users could experience a flavor sensation even without “tasting” the product itself. Should simple and inexpensive digitalization ever become a reality, sellers could attach a digital flavor to goods or services ranging from paper to plumbing services (or even law review articles). The flavor will be contained in a digital file somehow associated with the good or service,⁶⁷ and experienced by use of some device like the Digital Lollipop discussed above.⁶⁸ The person would need only use the stimulus device, not put the actual good in her mouth. It is not all that difficult to envision a time in the near future where sellers begin to attach a digital flavor to a wide variety of non-consumable goods and even services. Flavor in this situation operates essentially as a “bonus.” Use of the digital flavor is akin to giving the buyer a piece of candy (something that provides a pleasant flavor but no meaningful nutrition) in connection with advertising or a sale. If buyers come to associate the candy with the good or service, it might prove to be a valuable marketing tool—akin to the use of a catchy “jingle” in advertising. While flavor is not likely to be a major selling point, use of a digital flavor could be a cheap way to sway the marginal consumer.⁶⁹

While attaching a flavor to a product such as paper may seem like science fiction, the scenario is not as far-fetched as it may sound. Sellers already engage in analogous behavior. Even today, sellers try to appeal to consumer senses that do not directly reflect the utility of a good or service. The entire realm of product and fashion design, for example, is an attempt to appeal to consumers’ sense of visual aesthetics for utilitarian goods. While some product designs make the product more ergonomic, many merely are meant to be visually pleasing. Similarly, sellers in physical stores use music, images—and even smells—to put consumers in a pleasant frame of mind. If a fashion designer can use eccentric, non-practical designs to appeal to consumers, and a realtor use the odor of baking bread when showing a home, it is not that farfetched to imagine a crafty seller in the future attaching a digital flavor when selling the same goods or services.

⁶⁷ This “association” could occur in a number of different ways. In essence, the seller would merely need to develop some mechanism pursuant to which the flavor stimulus would be experienced only when the user was using or evaluating the good or service.

⁶⁸ See *supra* text accompanying notes 48 to 57.

⁶⁹ For example, consider a law student pondering the purchase of a study aid. Typically, that student considers the purchase a necessary but unpleasant situation. Adding a pleasant flavor to the transaction could make it somewhat more enjoyable.

In fact, there may be a strong incentive to incorporate odors and flavor into advertising. Appeals to the senses of smell and taste could be especially powerful marketing tools. Humans have an extremely strong association with the two chemical senses. While the physiological reasons are not fully understood, we have potent smell and flavor “memories”, where experiencing a particular smell or flavor even years later can trigger a clear memory of some prior event.⁷⁰ The connection is strongest for smell. However, since 80% or more of what we describe as flavor actually comes from our sense of smell, memory association is also quite powerful for taste.⁷¹ Several studies explore the physiological workings of this “flavor memory.”⁷²

Most studies have focused on “conditioned taste avoidance,” or “CTA”, where taste memory causes the taster to avoid foods and beverages that have had negative consequences in the past. CTA typically is a reaction to a food or beverage that has caused one to be nauseated.⁷³ The CTA reaction is particularly strong and long-lasting, arising even when there is a significant time gap between consumption and the ill effects, and remaining in place substantial periods of time.⁷⁴

⁷⁰ See Maria Isabel Miranda, *Taste and Odor Recognition Memory: The Emotional Flavor of Life*, 23 REV. NEUROSCIENCES 481, 493 (2012); see also Maria Isabel Miranda et al., *Glutamatergic Activity in the Amygdala Signals Visceral Input During Taste Memory Formation*, 99(17) PROC. NAT. ACAD. SCI. USA 11417 (2002) [hereinafter “*Glutamatergic*”].

⁷¹ Miranda, *Taste and Odor Recognition Memory*, *supra* note 70, at 482. Studies show this taste memory begins in utero, where children experience taste and develop taste memory. Similarly, mothers who eat certain foods produce children who tend to like those foods. Gretchen Cuda-Kroen, *Baby’s Palate and Food Memories Shaped Before Birth*, NPR (Aug. 8, 2011 12:01 AM), <http://www.npr.org/2011/08/08/139033757/babys-palate-and-food-memories-shaped-before-birth> [https://perma.cc/7BG7-9T5B].

⁷² Hans Welzl et al., *Conditioned Taste Aversion as a Learning and Memory Paradigm*, 125 BEHAV. BRAIN RES. 205, 206 (2001); Maayan Merhav & Kobi Rosenblum, *Facilitation of Taste Memory Acquisition by Experiencing Previous Novel Taste is Protein-synthesis Dependent*, 15 LEARNING AND MEMORY 501 (2008); Takashi Yamamoto & Yasunobu Yasoshima, *Electrophysiological Representation of Taste Memory*, in NEURAL PLASTICITY AND MEMORY: FROM GENES TO BRAIN IMAGING § 6.1 (F. Bermudez-Rattoni ed. 2007); Fernando Gamiz & Milagros Gallo, *Taste Learning and Memory: A Window on the Study of Brain Aging*, 5 FRONTIERS IN SYS. NEUROSCIENCE 91 (2011).

Less well understood is exactly *why* the connection is so strong. A series of experiments demonstrated that the brain regions that store taste memory are linked to those that remember the time and place of tasting. See Judy Siegel-Itzkovich, *Link Found Between Brain Region for Taste memory and Region that Encodes Time, Place of Tasting*, THE JERUSALEM POST (Sept. 22, 2014), www.jpost.com/landedpages/printarticle.aspx?id=376046 [https://perma.cc/6Z3U-3EVJ].

⁷³ See Welzl et al., *supra* note 72, at 205.

⁷⁴ *Glutamatergic*, *supra* note 70, at 11417.

CTA would be of limited use to a seller using digital flavors. Obviously, no rational seller would attach a CTA-inducing flavor to its *own* product. It would also be problematic—both practically and legally—to attach such a flavor to a competitor’s product in an attempt to turn consumers away from that product.⁷⁵ On the other hand, while the research is far less extensive, there is also some evidence of a conditioned taste *preference*, in which tasters prefer flavors that produce a positive effect.⁷⁶ If people also have a taste preference, sellers could attempt to woo consumers by attaching flavors likely to tap into positive memories, such as those associated with holiday dishes and “comfort” foods.

Use of digital flavors may also prove be a fairly inexpensive marketing tool. In comparison to chemicals, digital files are cheap to store and replicate, and do not degrade over time. Provided the technology to *create* digital flavor files in the first place is not that expensive, the cost of using those flavors should be relatively low. Therefore, a seller might be inclined to use digital flavors even if flavor is only a minor factor in a consumer’s decisionmaking process - or even if flavor only puts consumers into a pleasant frame of mind.

Finally, it is even possible that flavor could become a commodity in its own right. Sellers may be able to develop and market a form of “digital candy,” where the consumer experiences a pleasant flavor, but neither receives any nutrition or any other physical attached object. The inventors of the Digital Lollipop also hypothesize the creation of “taste symphonies”, where new and existing flavors are combined in different ways.⁷⁷ Just as painting and music became forms of expression millennia ago, flavor—once it is divorced from a physical object—could also become a new medium of communication. Of course, it will certainly take some time for these new uses of flavor as a tool of communication to be fully appreciated. Nevertheless, it is likely that parties will begin to explore the medium once the technology is there, just as they have taken advantage of other technological developments.

⁷⁵ The legal issues arise mainly under false advertising law (both federal and state). Among the practical difficulties are the possibility such a tactic would “backfire”, turning consumers away from not only the competitor’s product, but also substitute products sold by the person using the flavor.

⁷⁶ Welzl et al., *supra* note 72, at 206; A. Sclafani, *Learned Controls of Ingestive Behavior*, 29 APPETITE 153, 153 (1999); M.G. Tordoff, *Metabolic Basis of Learned Food Preferences*, CHEMICAL SENSES 239 (M.I. Friedman, M.G. Tordoff, & M.R. Karee eds. 1991). The research into conditioned taste preference is so far limited to animals. It is also unclear whether preferences are formed as quickly, or last for as long, as with CTA.

⁷⁷ *Simulating Taste*, *supra* note 6, at 33.

III. LEGAL ISSUES INVOLVING DIGITAL FLAVORS

A. Overview of Legal Issues

As the prior section demonstrated, current efforts to digitalize flavor could potentially have significant benefits. The most immediate and significant changes would relate to food and other items. Digitalization would facilitate internet sales of food, drink, and other goods where flavor is an important consideration in a consumer's purchasing decision. At the same time, because digitalization allows flavor to exist without the need for access to a corresponding product, it has the potential to transform the way people think about—and sellers use—flavor.

But as with all new technologies, the picture is not entirely rosy. First, because the ability to use flavor can increase profits, sellers are likely to want to seek intellectual property protection for digitalized tastes. However, law—and especially intellectual property law—does not always adapt well to sea changes in technology. The remainder of this article explores how digitalized flavor is likely to be treated under one crucial area of intellectual property: trademark law.⁷⁸ Of course, as digitalized flavor is not yet a practical reality, much of the ensuing discussion is predictive in nature. It is nevertheless

⁷⁸ Of course, patent law is also likely to play a major role in digitalization of flavor, as developers are likely to seek patents on the technology. However, there is nothing about digital flavor technology that makes these patent issues particularly unusual. This article accordingly will not address patent law.

Digital flavors could also raise intriguing issues in copyright, the third major area of intellectual property law. Unlike the patent issues, these copyright issues could be quite unusual and vexing. With respect to *real* flavors, courts and scholars have already begun to ponder whether copyright protection might be available. A court in the Netherlands held in 2015 that a producer could not use copyright to protect the distinctive flavor of its cheese, even though an earlier Dutch decision had recognized copyright in an odor. *Levola Hengelo B.V. v. Smilde Foods B.V.*, C/05/272772/HA ZA 14-603 (Jun. 10, 2015) (opinion in Dutch). Scholars in the United States disagree as to whether a recipe or distinctive dish could be the subject of copyright. *Cf.* Christopher J. Buccafusco, *On the Legal Consequences of Sauces: Should Thomas Keller's Recipes Be Per Se Copyrightable?*, 24 CARDOZO ARTS & ENT. L.J. 1121 (2007) and J. Austin Broussard, *An Intellectual Property Food Fight: Why Copyright Law Should Embrace Culinary Innovation*, 10 VAND. J. ENT. AND TECH. L. 691 (2008) (both arguing for some protection) *with* Leon Calleja, *Why Copyright Law Lacks Taste and Scents*, 21 J. INT. PROP. L. 1 (2013) and Christopher J. Buccafusco, *On the Legal Consequences of Sauces: Should Thomas Keller's Recipes Be Per Se Copyrightable?*, 24 CARDOZO ARTS & ENT. L.J. 1121 (2007) (both arguing copyright should not be available). Because the considerations relevant to copyright are fundamentally different than those arising in trademark and unfair competition law, they will be reserved for a separate article.

important to recognize these issues before the technology is developed, so early adopters will know how to react.

B. How to Conceptualize Digitalized Flavor: A Taxonomy

As will soon become apparent, several factual variables may affect how current legal rules apply to digital flavors. More particularly, both the nature of the good or service to which the flavor is attached, and the nature of the flavor itself, can have an impact. To avoid cumbersome descriptions, it might be useful to establish a uniform terminology for the following discussion. First, this article will divide the world of goods and services into three categories; namely:

Flavor-crucial: where the flavor of the item is likely to be an extremely important, if not the most important, criterion in the decision to purchase. This category includes most food and beverage products, as well as candy, chewing gum, and chewing tobacco.⁷⁹

Flavor-relevant: where consumers consider flavor, but are not likely to let flavor override other criteria such as quality or effectiveness. Medicines, tooth-cleaning products, mouthwash, and similar goods with artificial flavors fall in this category.

Flavor-incidental: where consumers might appreciate a pleasant flavor, but that flavor plays either a minimal role or no role in the decision to purchase. This category includes items like stamps and envelopes, as well as all items not tasted during normal use.

The second categorization is related to, but slightly different than, the first. Foods, beverages, and all other flavor-crucial items are “tasted” products. Their primary purpose is to be consumed, and flavor is accordingly an important criterion to most consumers. But some flavor-relevant and flavor-incidental products are also tasted. Orally-administered medicine, toothpaste, mouthwash, dental floss, and even pencils, pens, and eyeglass frames are all “tasted” products. Whether by design or because of nervous habit, all of these products are regularly put into the mouth and therefore tasted during normal use. All other products are “non-tasted” goods. The vast majority of goods fall into this non-tasted category, as one does not usually put clothing, electronics, and books into the mouth. Because digital technology will also allow flavors to

⁷⁹ As noted *supra* at text accompanying note 76, parties may in the future develop a form of digital candy, where a digital flavor is sold as a good in its own right. Digital candy would also be a flavor-crucial good, even though there is no attached product.

be attached to services, non-tasted items also include all services.⁸⁰

The third category focuses not on the commodity, but instead on the nature of the flavor. A digital flavor could either be *representative* of the actual flavor of a product, or an *arbitrary* flavor attached to the product. Representative flavors are most likely to be used in advertisements for *tasted* goods, or taste-testing for such goods. Arbitrary flavors, by contrast, have greater potential use. First, arbitrary flavors could be used in advertising not only tasted, but also non-tasted goods. Rather than a representation of what the consumer will be purchasing, the arbitrary flavor provides an additional enticement not directly connected with product's inherent flavor - again, just as if the seller threw in a piece of candy. An arbitrary digital flavor used in this way would play the same role as a catchy advertising jingle, or an advertisement featuring a celebrity.

Second, while the use of representative flavors would likely be limited to advertising and taste testing, a seller could continue to provide an arbitrary flavor post-purchase, attaching it to the good or service so that consumers would experience the flavor when they use the product.⁸¹ If a seller could find a way to ensure that consumers use the digital interface at the same time they use the product, the arbitrary digital flavor could become an additional feature of the product. In the case of non-tasted goods and services, the arbitrary digital flavor would be the only flavor the consumer would experience. Although some of these products do have inherent flavor, users do not experience that inherent flavor in normal use. For example, even though paper does have an inherent flavor, no seller would likely go to the trouble of attaching a digital flavor mirroring that real flavor. And as paper is a non-tasted good, the digital flavor would be the sole flavor consumers associate with the product.

For tasted goods, by contrast, the arbitrary flavor would function as a second flavor, which the consumer could experience in addition to the inherent flavor of the product. Although probably more likely in the case of flavor-relevant goods, clever sellers might also make use of secondary flavors for flavor-crucial goods. For example, a pizza seller could provide a secondary digital beer flavor to be experienced along

⁸⁰ For most purposes in the law, restaurants are classified as a service, not a good. That same classification should also apply here. While restaurant patrons are buying food, they are paying extra for the preparation and presentation of that food. While the food is tasted, the service is not.

⁸¹ While such post-purchase use would also be an option for representative flavors, few if any sellers are likely to use representative flavors in this way. Once the consumer possesses the good, she will have access to the actual flavor, and therefore has no need for the same flavor in digital form.

with the pizza.⁸² In this regard, there is one subtle, but important, difference between traditional chemical and digital synthetic flavors. Chemical flavors often perform a “masking” function, overpowering the inherent flavor of the product. In the case of a masking flavor, the consumer tastes only the synthetic flavor. However, because digital flavors require use of an interface, they will not mask the actual flavor of the item, but will instead be experienced as a second flavor alongside the actual flavor.⁸³

These categories admittedly represent differences of degree rather than kind. Not everyone chews on pencils and pens. Moreover, different consumers may disagree as to how important flavor is for some goods. Consider toothpaste. While many consumers are mainly concerned with cleaning properties and fluoride, others may consider flavor extremely important. Notwithstanding the lack of precise boundaries, grouping goods and services into these classes will benefit the discussion.

It is also possible the categorization of certain products could change over time. If flavor is digitalized and attached to non-tasted goods, consumers may eventually come to take it into account in their purchasing decision. The effect of this change in behavior would be to make some—or possibly many—goods and services that were flavor-incidental move into the flavor-relevant category.

IV. ISSUES IN TRADEMARK LAW

Digital flavor could be a persuasive marketing tool. If so, at some point it is likely two or more sellers will want to use the same—or at least a highly similar—flavor. These cases will raise issues under the law regulating trademarks.⁸⁴ At the risk of oversimplification, three separate, but related issues may arise in connection with this phenomenon. First, a party who uses a digital flavor may claim exclusive trademark rights in that flavor. This situation, discussed in section A of this Part IV, raises the core question of whether flavor is within

⁸² It might also be possible to add a second flavor that was not arbitrary. For example, a cola manufacturer could sell not only the product itself, but also an attached, but different, cola flavor. While the flavor in this case is not representative, it is not entirely arbitrary either.

⁸³ It is, of course, possible that at some time in the future the technology will develop to the stage where digital flavors can also negate the inherent flavor. If so, then digital flavors could also mask. This issue is important to the question of functionality, addressed *infra* at text accompanying notes 139 to 158.

⁸⁴ Trademark law is conceptually part of the broader doctrine of unfair competition. Use of digital flavors could also present real problems under unfair competition law, especially the law of false advertising. The author plans to explore these issues in a subsequent article.

trademark subject matter. Second, because digital technology will allow easy synthesis of flavors, a manufacturer could conceivably “borrow” the flavor of a well-known food or beverage product and attach it to its non-tasted or flavor-incidental product. The party who sells the well-known food or beverage could conceivably turn to trademark law for relief against this appropriation. Section B deals with this question. Third, rather than adding a flavor to its own product, a party may attempt to reduce demand for a competing product by attaching an unpleasant flavor to that other product. Section C addresses this scenario.

A. FLAVOR AS TRADEMARK SUBJECT MATTER

Trademark protection in the United States is not limited to words, logos, and other classic trade symbols. It also can extend to non-verbal, non-pictorial features of the product itself, including overall shape,⁸⁵ color,⁸⁶ decoration,⁸⁷ sound,⁸⁸ and even scent.⁸⁹ At least in theory, the flavor of a product could also serve as a trademark for that product.⁹⁰ However, to date no party has succeed in obtaining trademark protection for a flavor, at least at the federal level.⁹¹ Part of the difficulty stems from the special rules that apply to “product feature” marks, and part is due to the unique nature of flavor.

Since at least 1993, scholars have acknowledged the possibility of trademarks in flavor, but pointed out the significant legal hurdles to actually obtaining such protection.⁹² Perhaps because these scholars struck such a cautionary tone,

⁸⁵ See *Traffix Devices, Inc. v. Marketing Displays, Inc.*, 532 U.S. 23 (2001) (recognizing that trademark protection is available to designs, but denying it to the particular product because the design configuration was functional); *Kellogg v. Nat'l Biscuit Co.*, 305 U.S. 111 (1938).

⁸⁶ See *Qualitex Co. v. Jacobsen Products Co.*, 514 U.S. 159 (1995).

⁸⁷ See *Wal-Mart Stores, Inc. v. Samara Bros., Inc.*, 529 U.S. 205 (2000).

⁸⁸ See MCCARTHY, *supra* note 61, at § 7:104.

⁸⁹ See *In re Clarke*, 17 U.S.P.Q.2d (BNA) 1238 (TTAB 1990). *Clarke* is discussed in greater depth *infra* text accompanying notes 131-136.

⁹⁰ *New York Pizzeria, Inc. v. Syal*, 56 F. Supp. 3d 875, 880-81 (S.D. Tex. 2014) (“[P]laintiff is correct that there is no ‘special legal rule’ that prevents flavor from serving as a trademark.”) The *Pizzeria* case is discussed *infra* at text accompanying notes 115 to 123.

⁹¹ In the United States, trademark law is a dual or “hybrid” system, with protection available under federal law, state law, or both. Most parties who use marks in interstate commerce prefer federal protection. The author is unaware of any claims of state-law trademark protection for flavor.

⁹² Nancy L. Clarke, *Issues in the Federal Registration of Flavors as Trademarks for Pharmaceutical Products*, 1993 U. ILL. L. REV. 105; Amanda E. Compton, *Acquiring a Flavor for Trademarks: There's No Common Taste in the World*, 8 NW J. TECH. & INTELL. PROP. 340 (2010); Jerome Gilson & Anne Gilson LaLonde, *Cinnamon Buns, Marching Ducks and Cherry-Scented Racecar Exhaust: Protecting Nontraditional Trademarks*, 95 TRADEMARK RPTR. 773 (2005).

the U.S. Patent and Trademark Office and the courts have had to deal with only a handful of attempts to protect flavor. Only two recent reported U.S. court decisions deal directly with the issue: the 2006 Trademark Trial and Appeal Board decision in *In re N.V. Organon*⁹³ (affirming the USPTO's refusal to register) and the 2014 Southern District of Texas decision in *New York Pizzeria, Inc. v. Syal*⁹⁴ (dismissing an infringement claim).⁹⁵ The claimed mark in *Organon* was an artificial orange flavor used in connection with certain medicines.⁹⁶ In *Pizzeria*, by contrast, a restaurant chain claimed a competing restaurant had mimicked the distinctive flavor of certain dishes sold by the chain.⁹⁷ In both cases trademark protection was denied.⁹⁸

As both opinions recognize, the flavor of a product falls into the category of "trade dress," which includes both product shapes and features.⁹⁹ While trade dress can be protected under United States law, the party seeking protection must meet a higher standard than in the case of many word and picture marks. First, the Supreme Court's *Wal-Mart* decision holds that the design of a product can be protected only if there is proof of "secondary meaning".¹⁰⁰ In other words, unlike arbitrary words and logos, product designs are never inherently distinctive. They qualify for protection only if consumers cease to view the feature as a part of the product, and instead come to consider it as an indication the product comes from a single source.¹⁰¹ This change in meaning takes time, which means a trademark must be in use for quite a

⁹³ 79 U.S.P.Q.2d 1639, 2006 WL 1723556 (TTAB).

⁹⁴ 56 F.Supp.3d 875 (S.D. Tex. 2014).

⁹⁵ A third case dealing with flavor is *William R. Warner & Co. v. Eli Lilly & Co.*, 265 U.S. 526 (1924), where the United States Supreme Court denied trademark protection to a chocolate suspending solution used for liquid medicine. While it involves flavor, *Warner* is of limited precedential value for several reasons. First, the claimed mark was not the chocolate flavor, but instead the brown *color* of the chocolate. Second, *Warner* predates both the Lanham Act and the genesis of the functionality doctrine (indeed, the Court never uses the term functional).

⁹⁶ *Organon*, 2006 WL 1723556 at *1.

⁹⁷ *Pizzeria*, 56 F. Supp. 3d at 877.

⁹⁸ The European Union Trademark Office reached the same conclusion in a case much like *Organon*, involving use of an artificial strawberry flavor for medicine, although its reasoning differed somewhat. *Eli Lilly & Co.*, Case R 120/2001-2 Second Board of Appeal, Office for Harmonization in the Internal Market (Trade Marks and Designs) (Aug. 4, 2003).

⁹⁹ While most of the trade dress precedent deals with shape and color, the opinions correctly recognize that flavor is analogous to these other attributes. *Pizzeria*, 56 F. Supp. 3d at 881; *Organon*, 2006 WL 1723556 at *15.

¹⁰⁰ *Wal-Mart Stores, Inc. v. Samara Bros., Inc.*, 529 U.S. 205, 211 (2000); *Pizzeria*, 56 F. Supp. 3d at 881; *Organon*, 2006 WL 1723556 at *15 ("Because flavor is generally seen as a characteristic of the goods, rather than as a trademark, a flavor, just as in the case of color and scent, can never be inherently distinctive.").

¹⁰¹ *Wal-Mart*, 529 U.S. at 211.

while before it could ever qualify for protection—during which time others may copy the feature. Second, even if the feature acquires secondary meaning, a product feature cannot be protected as a trademark if it is “functional.”¹⁰² Both secondary meaning and functionality are terms of art in trademark law, and will be explained in more depth below.

Organon and *Pizzeria* recognize that both the requirement of secondary meaning and the functionality bar pose problems when a seller claims flavor as a mark. *Organon* also identifies a third problem, one unique to the question of flavor. Unlike appearance, sound, and scent, a potential consumer must actually taste a product to ascertain its flavor. In many situations, one must buy the product before tasting it, making it difficult to use flavor to help in a purchasing decision. Nevertheless, neither *Organon* nor *Pizzeria* necessarily controls the issue at hand. Both cases dealt with the actual flavor of tasted goods (admittedly a synthetic flavor in *Organon*, but one still added to the product itself). This paper, by contrast, deals with digital flavors. As discussed in Part II, digitalization will expand the universe of possibilities in two ways. First, it will allow separation of the physical object and its flavor, allowing potential consumers to experience flavor independent of access to the good. Second, digitalization will allow sellers to attach flavors to goods that are not themselves tasted. These factors could in some cases make it easier for digital flavors to overcome any hurdles to trademark protection. Accordingly, all three of the reasons cited for denying trademark protection warrant a more in-depth analysis to determine whether they apply to digital flavors.

1. Inability to Sample Prior to Purchase

The TTAB in *Organon* identified one unique attribute of flavor that affects its ability to function as a trademark. Trademarks are useful insofar as they help consumers choose among competing goods and service. For trademarks to perform that role, consumers need to have access to the mark *before* making a purchasing decision. Visual, sound, and smell marks present few problems in this regard, as all can be observed prior to purchase. But as the TTAB observed:

A consumer generally has no access to the product's flavor prior to purchase. ... unlike color, sound, and smell, there generally is no way for consumers routinely to distinguish products by

¹⁰² *Qualitex Co. v. Jacobsen Prods. Co.*, 514 U.S. 159, 165 (1995); *Pizzeria*, 56 F. Supp. 3d at 881; MCCARTHY, *supra* note 61, at § 15:23.

sampling them before they decide which one to purchase.¹⁰³

A product feature that does not perform the function of a trademark, the argument follows, should not receive protection under trademark law.

In this regard, *digital* flavors are likely to fare better than the actual flavor at issue in *Organon*. A seller who has digitalized the flavor of its product can provide the digital flavor file [hereinafter “DFF”] to potential consumers in advance, allowing those consumers to taste test the item prior to the purchasing decision. Therefore, a digital flavor provided in this way could perform the function of a trademark, providing information about the source of the product.

On the other hand, it is also possible sellers will attach a DFF to the good or service itself as an added product feature. In this case the *Organon* Board’s objection would be a valid reason to deny trademark protection. If the flavor cannot be at least sampled prior to purchase, consumers will not use it as a source indicator in their purchasing decision. Of course, a seller could easily skirt this obstacle by using the digital flavor in advertising as well as on the product.

2. Distinctiveness and Secondary Meaning

The Supreme Court’s *Wal-Mart* decision holds that product features can be protected as trademarks only after those features acquire secondary meaning.¹⁰⁴ Secondary meaning represents a change in the meaning of the particular product feature to potential consumers. It exists once “in the minds of the public, the primary significance of a [mark] is to identify the source of the product rather than the product itself.”¹⁰⁵

Because flavor is a product feature, at first glance it might seem the *Wal-Mart* rule applies. If so, the secondary meaning requirement will doom most attempts to claim trademark rights in flavors. Few flavors have the level of consumer recognition necessary to serve a source-identifying function.

However, the analysis is not quite that straightforward. The *Wal-Mart* opinion itself recognizes exceptions to the requirement of secondary meaning. The following discussion accordingly first addresses when a seller who uses a flavor must prove secondary meaning. Following that, it briefly discusses whether it might be easier to acquire that secondary

¹⁰³ *Organon*, 2006 WL 1723556 at *15.

¹⁰⁴ *Wal-Mart*, 529 U.S. at 211.

¹⁰⁵ *Id.* (quoting *Inwood Laboratories, Inc. v. Ives Laboratories, Inc.*, 456 U.S. 844, 851, n. 11 (1982)).

meaning for digital flavors, especially for flavor-relevant and flavor-incidental goods and services.

a. Need for Secondary Meaning

Clearly, *Wal-Mart* would require secondary meaning to protect the actual flavor of a food or beverage product. But what about *digital* flavors for these products? Arguably, the fact these flavors can exist independent of the product could cause the U.S. Patent and Trademark Office or a court to allow protection without a showing of secondary meaning. And when one turns to digital flavors associated with non-tasted products, the applicability of *Wal-Mart* is even less obvious.

Consider first the nature of a digital flavor. To taste the flavor, a party cannot merely “taste” the good or service to which it is attached. Tasting instead requires use of an external electro-mechanical device. This separation means there is an inherent arbitrariness to a digital flavor that divorces it to some extent from the physical object. That separation may also mean users will not perceive of the flavor as a feature of the attached product, at least to the same degree. Because *Wal-Mart*’s requirement of secondary meaning applies only to product features, not to accoutrements such as packaging,¹⁰⁶ the requirement arguably would not apply to attached digital flavors.

However, it is unlikely any court would grant a blanket exemption to digital flavors. The *Wal-Mart* rule does not turn on labels. Rather, it is based on the Court’s perception of human nature. To the Court, consumers simply do not view a product feature as a source identifier when they first encounter that feature in the market.¹⁰⁷ Even if a digital flavor exists separated from the product, and is experienced in a different way, consumers would perceive it the same way they perceive that actual flavor (provided it represents the actual flavor of the underlying product).

On the other hand, a flavor would not have to be attached permanently. Sellers may choose to use digital flavors only in advertising. If that flavor is perceived as representing the actual flavor of the product, consumers are likely to view it as a product feature, and the *Wal-Mart* secondary meaning requirement should apply. But if the flavor is purely arbitrary, not representational—which will be the case for all non-tasted goods as well as arbitrary flavors for tasted goods—consumers may not associate it directly with the product, and the seller should perhaps be relieved from the requirement of proving secondary meaning.

¹⁰⁶ MCCARTHY, *supra* note 61, § 8:12.50.

¹⁰⁷ *Wal-Mart*, 529 U.S. at 215.

Even so, most courts are still likely to require proof of secondary meaning even in the case of non-tasted goods with arbitrary flavors. The law dealing with color and scent provides a useful analogy. Like digital flavor, color and scent can be product features. But in the case of a *single* color or scent—say T-Mobile’s hot pink, or the plumeria scent in the *Clarke* case—courts interpret *Wal-Mart* and the other Supreme Court precedent as requiring proof of secondary meaning even when the color is used only in advertising.¹⁰⁸ By the same logic, use of a single flavor in advertising, or in other “disconnected” situations such as post-sale service, would not allow the seller to protect the flavor without proof of secondary meaning.

But things become more intriguing when one turns to *non-tasted* goods and services. For these items, a digital flavor is purely an arbitrary embellishment to the product. While the digital flavor may affect the purchasing decision, that effect is less direct. A digital flavor attached to non-tasted goods or services could put a potential consumer into an agreeable state of mind, making her more willing to purchase. In this way, a digital flavor could perform the same function as a song played during a commercial for the good or service, or while the product is being used. This difference could affect the question of whether secondary meaning is a *sine qua non* in the case of non-tasted products.

The *Wal-Mart per se* rule does not apply to all features. In its pre-*Wal-Mart* decision in *Two Pesos*, the Court held the unusual theme of a restaurant could be inherently distinctive, and accordingly protected as a trademark without proof of secondary meaning.¹⁰⁹ *Wal-Mart* distinguishes *Two Pesos* by noting the design of a restaurant is not akin to the design of a product, but is instead a “*tertium quid*.”¹¹⁰ Of course, that distinction is not particularly helpful, as the Court provides no hint as to what makes a restaurant design different enough to be a “third thing.” However, at the very least the Court’s affirmation of *Two Pesos* probably means digital flavors for *services* may be protected without proof of secondary meaning, as long as they are unusual.¹¹¹ Because services have no inherent flavor, consumers who encounter an attached flavor may view it as a source indicator.

It is also possible that the realm of the *tertium quid* is not limited to services. The *Two Pesos* exception could be broader, applying to goods whenever the particular design characteristic is not a natural feature of the product. In other

¹⁰⁸ MCCARTHY, *supra* note 61, § 7:44.

¹⁰⁹ *Two Pesos, Inc. v. Taco Cabana, Inc.*, 505 U.S. 763, *reh’g denied* 505 U.S. 1244 (1992).

¹¹⁰ *Wal-Mart*, 529 U.S. at 215.

¹¹¹ MCCARTHY, *supra* note 61, § 8:12.50.

words, as flavors are not normally associated with commodities like paper and plumbing services, consumers who encounter an unusual digital flavor for these might immediately interpret the flavor as indicating a single product source.¹¹² While this rationale has some appeal as a matter of policy, it is unlikely to take root because it is difficult to reconcile with precedent. The dry-cleaning pads at issue in *Qualitex* were traditionally not colored, and yet the Supreme Court held the color could be protected only with secondary meaning.¹¹³ Similarly, in the oft-cited TTAB decision in *Clarke*, which upheld the registration of a scent used for sewing thread, the TTAB required proof of secondary meaning even though sewing thread has no discernable natural scent.¹¹⁴ Based on these and other cases, courts are likely to protect the digital flavor of non-tasted goods only when there is proof of secondary meaning, while allowing distinctive flavors for services to be protected without such proof under *Two Pesos*.

b. Proving Secondary Meaning

The foregoing discussion demonstrates that a party who wants to protect the flavor of any good—real or artificial—must prove secondary meaning. In most cases that requirement will pose a difficult hurdle. Neither of the two recent decisions dealing with flavors address whether the flavors involved had acquired secondary meaning. In *Organon*, the registrant offered no evidence of secondary meaning.¹¹⁵ In *Pizzeria*, the court based its decision on its finding of functionality (a separate and independent bar to protection discussed below), and accordingly did not need to address secondary meaning.¹¹⁶ Nevertheless, it is likely quite difficult for the *actual* flavor of a food, beverage, or pharmaceutical product to acquire secondary meaning. This sort of shift is unlikely in the case of flavor because consumers do not generally tie a particular flavor to a single source. But while difficult, secondary meaning is not impossible. There might be some products (Coca-Cola and Juicy Fruit chewing gum come to mind) that both have a unique flavor and have been around long enough for a unique flavor-source association to arise in consumers' minds.

Nor is it likely to be categorically easier to prove secondary meaning for digital flavors. In the case of flavor-critical and flavor-relevant products, the consumer invariably

¹¹² It is hornbook law that consumers need not be able to name the source. *Id.* § 15:8.

¹¹³ Technically, the pads did have a color—the natural color of the material used. But the key was whether a different, artificial color could be protected as a trademark.

¹¹⁴ *In re Clarke*, 17 U.S.P.Q.2d (BNA) 1238 (TTAB 1990).

¹¹⁵ *Organon*, 2006 WL 1723556 at *15.

¹¹⁶ *Pizzeria*, 56 F. Supp. 3d at 881.

considers flavor a desirable product characteristic. It will take time for a seller to change that inherent perception so that the consumer comes to view flavor as an indication of a single source. Therefore, relatively few digital flavors for tasted goods are likely ever to acquire the secondary meaning necessary for trademark protection.

However, in certain situations proving secondary meaning might be somewhat easier. The nature of the product may have some effect. For goods with either no inherent flavor or a very mild flavor—all non-tasted items as well as flavor-relevant items such as pencils and stamps—secondary meaning may develop more rapidly. Because flavor is not an innate characteristic of these goods, consumers may view the addition of a digital flavor as arbitrary, and accordingly quickly come to ascribe the flavor to a single source. This source recognition is perhaps even more likely in the case of a digital flavor, at least when the consumer can experience that flavor separate from the good itself.

For other goods, however, this change in perception is less likely. Unlike pencils, toothpaste and dental floss *are* often sold with a distinct flavor. Similarly, all flavor-crucial goods come with a flavor. Because consumers readily encounter flavors, they may be less likely to consider flavor an indication of source, and instead continue to view it as a product feature.

Interestingly, this same observation suggests that the increased use of digital flavors may over time make it more difficult to prove secondary meaning. As the use of digital flavors increases, consumers will more frequently encounter flavors for all categories of goods. If so, then any particular use will not seem as arbitrary as it was in the case of the first users. If the perceived arbitrariness of a particular feature affects secondary meaning, the more widespread the use becomes, the less idiosyncratic it will be—even for goods that have no inherent flavor. Therefore, it may be that early adopters of digital flavors have greater success in developing secondary meaning than latecomers.

Of course, secondary meaning is only one hurdle. Because flavor is a form of trade dress, it can be protected under trademark law only if it is not functional. The next section deals with this issue.

3. Functionality

Lack of secondary meaning will prove to be a serious hurdle for flavor marks for most goods, both tasted and non-tasted. Those few goods that clear that hurdle (as well as services, where secondary meaning should not be required) will encounter another, equally imposing, obstacle. Under United States law, a party can never protect a functional product

feature as a trademark, even if that feature develops secondary meaning.¹¹⁷ Thus, for example, a party who has developed a unique shape for an airplane fuselage cannot acquire trademark rights in that shape if the shape makes the plane more aerodynamic. The *Pizzeria* decision indicates that the flavor of a food product is likewise functional.¹¹⁸ This section explores whether that same rationale applies to digital flavors, especially where flavor-relevant and flavor-incidental goods and services are involved.

a. Application of the Current Functionality Test

While the functionality doctrine has had a tortured history in the United States courts, the Supreme Court has (for now at least) settled on a two-part test to determine functionality. Under this test a design feature is functional either (a) “if it is essential to the use or purpose of the article or if it affects the cost or quality of the article,” or (b) if a grant of exclusive rights would put competitors at a “significant non-reputation related disadvantage.”¹¹⁹

The *Organon* and *Pizzeria* tribunals both found the flavors at issue functional. However, the rationale was not exactly the same in the two cases. The *Pizzeria* court applied the first part of the test set out above, finding the flavor of the product affected quality.¹²⁰ *Organon*, by contrast, focused on the second part, finding that competitors needed to use the orange flavor in order to compete effectively.¹²¹ Notwithstanding the difference in reasoning, *both* tribunals reach the correct result on the specific fact situation before them. Reconciling the different reasoning, however, requires one to dig a little deeper into the Supreme Court precedent dealing with functionality.

Pizzeria involved the flavor of food. Food, of course, is a flavor-crucial item. When asked to rate the “quality” of food, the flavor will be the predominant criterion.¹²² Therefore, the flavor of the food products in *Pizzeria* directly affected

¹¹⁷ MCCARTHY, *supra* note 61, at § 7:63.

¹¹⁸ *Pizzeria*, 56 F.Supp.3d at 881-82.

¹¹⁹ *Qualitex Co. v. Jacobson Prods. Co.*, 514 U.S. 159, 165 (1995).

¹²⁰ “The flavor of food undoubtedly affects its quality, and is therefore a functional element of the product.” *Pizzeria*, 58 F.Supp.3d at 882.

¹²¹ *Organon*, 2006 WL 1723556 at *12. The TTAB also briefly mentioned a factor relevant to the first part of the test, indicating that flavor can perform a useful function, making it “essential to the use or purpose of the product.” *Id.* at *13 (quoting *Qualitex*). However, the TTAB’s main focus was competitive need. The opinion mentions several times how giving exclusive rights in the orange flavor would give the applicant a competitive edge, in part because orange performed the function of flavor—making the otherwise objectionable taste palatable—better than alternate flavors.

¹²² In a restaurant, other factors may also be relevant to the perception of overall quality, including service and ambience.

consumer perception of quality, making flavor a functional feature under the first test.

On the other hand, one could argue flavor also affected the quality of the medicine in *Organon*. Admittedly, flavor is not as important a feature as the medicinal qualities of the product. Nevertheless, if asked to compare the “quality” of two medicines—one with a pleasant flavor, the other without—the typical consumer might well rate the former as higher quality. As long as the product feature is significant to the purchasing decision, it helps determine the overall quality of the product in both the economic and vernacular usages of that term.

The Supreme Court’s functionality test, however, uses the term “quality” in neither the economic nor the vernacular way. The most detailed discussion of functionality is in the Court’s *TrafFix* decision.¹²³ Although many (including this author) have criticized the ambiguity of this opinion, the Court appears to define quality in terms of the *primary utility* of the product in question. For example, when it discusses the press pad at issue in the earlier *Qualitex* case, the Court suggests the quality of the item was defined by its use as press pad, not its color or other aesthetic features.¹²⁴ As long as the feature has no effect on how the product performs its primary utilitarian purpose, it neither is essential to the use or purpose of the article nor affects its cost or quality.¹²⁵ Nevertheless, the feature can still appeal to consumers, possibly because they find it makes the product look—or in our case, taste—better. This, the Court explained, is the role of the second part of the test. The notion of competitive necessity deals with features that do not affect utilitarian functionality, but nevertheless appeal to consumers’ sense of aesthetics, and hence are “aesthetically functional.”¹²⁶

The analysis in *Organon* corresponds exactly to this two-part interpretation. Medicine is a flavor-relevant commodity. The primary utility of medicine is curing, treating, or preventing disease or other malady. If medicine does not perform these functions, consumers will not purchase it for medicinal use¹²⁷ regardless of how pleasant it tastes. Therefore, only these medicinal properties determine what is “essential to the use or purpose” of the medicine, and therefore its quality. Nevertheless, the particular orange flavor at issue in that case

¹²³ *TrafFix Displays, Inc. v. Marketing Displays, Inc.*, 532 U.S. 23 (2001).

¹²⁴ *Id.* at 33.

¹²⁵ A design feature is also functional if it lowers production costs. *Id.* Because adding a flavor will always entail an *additional* cost, this type of functionality is not relevant to the analysis.

¹²⁶ *TrafFix*, 532 U.S. at 33.

¹²⁷ If a consumer knows a “medicine” provides no medicinal benefit, and has no side effects, a consumer could conceivably purchase it for use as “candy”; *i.e.*, for its flavor alone.

was still functional -- under the *second* part of the test.¹²⁸ The TTAB opinion discusses at length how an orange flavor is particularly effective in disguising the inherent bad flavor of medicines.¹²⁹ Other things equal, consumers prefer pleasant-tasting medicines to those with an unpleasant flavor. Because of orange's unique masking characteristics, other sellers of medicines would not be able to compete as effectively in the market if they could not use a similar orange flavor.¹³⁰ The orange flavor, then, afforded the applicant a "significant, non-reputation related" advantage.¹³¹

On the other hand, this reasoning does not lead to the conclusion that flavor will be functional for *all* flavor-relevant

¹²⁸ One sentence in *Organon* can be read as suggesting the flavor was functional under the first part. The TTAB indicates that masking the inherent flavor of the medicine would encourage people to take it. *Organon*, 2006 WL 1723556 at *13. Of course, medicines "work" better if people actually take them. Under this reasoning, then, the flavor helped the medicine perform its primary utilitarian function.

¹²⁹ *Id.* at *8.

¹³⁰ Granting rights in the applicant's orange flavor would bar not only use of that exact orange variant, but also most other orange flavors. After all, the test for trademark infringement is whether defendant's use is likely to cause confusion. For goods like medicines where flavor is relevant but not crucial, consumers would merely distinguish orange from other flavors. Variations in the type of orange flavor would not dispel that confusion.

The European Union decision in *Eli Lilly & Co.*, Case R-120/2001-2 Second Board of Appeal, Office for Harmonization in the Internal Market (Trade Marks and Designs) (Aug. 4, 2003), takes a similar tack. The mark in that case was an artificial strawberry flavor used on medicine. The Board denied registration. The actual grounds the Board cited was Article 7(1)(b) of Council Regulation (EC) 4/94 of 20 Dec. 1993 on the Community Trade Mark, 1994 OJEC (L 11) 7. That provision refuses registration to "trade marks that are devoid of any distinctive character." The Board held that the strawberry flavor was not distinctive. At first glance—at least to one trained in U.S. trademark law—this seems to be a conclusion concerning distinctiveness and secondary meaning, discussed *supra* in Part IV.A.2. But in applying Article 7(1)(b), the Board focused on competitive need as much as distinctiveness. Compare ¶¶ 14 and 15 (competitive need) with ¶ 16 (distinctiveness).

¹³¹ The TTAB in *Organon* also likens the situation in that case to that in the old Supreme Court case of *William R. Warner & Co. v. Eli Lilly & Co.*, 265 U.S. 526 (1924). *Warner* dealt with the brown color of the chocolate used by the company to suspend its liquid quinine solution. The Court held the use of chocolate could not be protected. While it never mentioned the word functionality, it noted that chocolate was especially useful in two ways. First, it was a particularly effective suspension medium, which would render it functional under the first part of the *Traffix* analysis. Second, the Court noted that chocolate made the medicine "peculiarly agreeable to the palate." *Id.* at 531. This latter passage is somewhat ambiguous. It could be that chocolate, like the orange in *Organon*, was the most effective flavor to mask the inherent flavor of the medicine (quinine has a particularly strong taste). On the other hand, it could be that people preferred the flavor of chocolate to other flavors that masked just as well. In the latter case, the preference for chocolate would make it only aesthetically functional, a somewhat controversial branch of the functionality doctrine.

products. Consumers certainly may prefer stamps, envelopes, and pencils with a flavor to an unflavored version. In the case of envelopes, for example, the adhesive used does not taste all that pleasant, even if the flavor is not that strong. If so, consumers would be willing to pay a premium for an added flavor that masks the real flavor.

But that alone does not make the pleasant flavor functional. It is important to distinguish between the use of *some* flavor and the use of a *particular* flavor. If a party obtains trademark rights in a particular flavor—say, peanut butter for envelopes—it can only prevent other sellers from using similar peanut butter flavors. The other sellers would remain free to use any other flavor on their envelopes. Unless peanut butter is either cheaper or for some reason does a better job than any other flavor of covering up the inherent flavor of envelope adhesive, other sellers could still compete by using some other flavor. Therefore, while the use of some flavor may be essential to competition, the use of the peanut butter flavor—which is all the seller could protect—is not essential. In this way the situation is distinguishable from *Organon*, where the particular orange flavor was the most effective option.

The older *Clarke* decision, which dealt with the scent of sewing thread and embroidery yarn, illustrates this difference quite well.¹³² The scent may have made the thread and yarn more appealing to consumers and thereby command some price premium in the market (if not, the seller would be unlikely to go to the time and expense of adding a scent). However, there was nothing special about the particular scent used. Many other alternative scents would also appeal to potential consumers, and allow other thread sellers to compete effectively.¹³³ Therefore, notwithstanding its age—*Clarke* was

¹³² *In re Clarke*, 17 U.S.P.Q.2d (BNA) 1238 (TTAB 1990).

¹³³ One hotly-debated passage in *Traffix* can be read to suggest that the availability of alternative designs is not relevant in the functionality analysis. When discussing whether the two-spring design in that case was functional, the Court stated:

There is no need, furthermore, to engage, as did the Court of Appeals, in speculation about other design possibilities, such as using three or four springs which might serve the same purpose. Here, the functionality of the spring design means that competitors need not explore whether other spring juxtapositions might be used. The dual-spring design is not an arbitrary flourish in the configuration of MDF's product, it is the reason the design works. Other designs need not be attempted.

Traffix, 532 U.S. at 33-4. Some have read this passage to suggest that the availability of alternate designs is irrelevant to the functionality analysis. See discussion in MCCARTHY, *supra* note 61, § 7:75. However, the statement is not that broad. It is important to remember that the Court found the dual-spring design in *Traffix* functional under the *first* part of the test. If the design is

decided well before both *Qualitex* and *TrafFix*—the case should remain good precedent for both scents and flavors. When flavor is not the crucial criterion, and any flavor will do, no particular flavor should be deemed functional.

b. Application of Analysis to Digital Flavors

The foregoing analysis considered “actual”—both real and artificial—flavors. As such, the discussion focused on flavor-crucial goods and masking flavors used in connection with other tasted goods such as medicine. Digital flavors open up new possibilities. Not only will digitalization allow flavors to be attached to heretofore non-tasted goods and services, but it will also enable sellers to attach a secondary flavor to be attached to a tasted good. On the other hand, unlike the flavor in *Organon*, it is unlikely digital flavors will ever mask the inherent flavor of the product. These differences present new twists on the functionality issue.

Nevertheless, the same basic considerations applicable to actual and chemically-synthesized flavors should also apply to digital flavors. Consider representative flavors first. Virtually any digital flavor that replicates the actual flavor of the product to which it is attached is functional. If the actual flavor is functional, merely replicating that flavor in digital form should not change the result. The flavor still either represents the quality of the product, or affects others’ ability to compete.¹³⁴ Indeed, if digital flavor copies were *not* functional, a seller could gain exclusive rights in the actual flavor through the simple expediency of making a digital copy and obtaining a trademark in that copy.¹³⁵

This result also comports well with trademark policy. Unless the seller of the tasted product has a patent, anyone else may freely copy the flavor of that item for its competing product. If someone can copy the flavoring, she should be free to inform the public that she is selling a product with identical flavor, regardless of whether she advertises using words, allows consumers to sample the flavor, or simply attaches a digital flavor that can be tasted during post-sale use. Therefore,

essential to the use of the item or affects its cost or quality, the availability of alternatives is perhaps not relevant. But under the second part of the test, considering alternatives is crucial. If alternatives are available, granting exclusive rights in one particular design will not limit the ability of others to compete. *Id.* at §7:65.

¹³⁴ One exception might be a digital flavor that replicated the actual flavor of a non-tasted good such as paper. However, as a practical matter sellers are not likely to add such a flavor.

¹³⁵ While acquisition of trademark rights would not necessarily give the party exclusive rights to sell foods with that flavor—using the flavor in the food would be analogous to a descriptive fair use—it would limit the ability to compete by preventing those other sellers from *advertising* using the digital flavor.

while it is possible to make a metaphysical argument that a digital copy of the actual flavor of a food or beverage product does not directly affect the quality, a court should still find the digital flavor functional under the second part of the functionality test, which focuses on the need to compete.

On the other hand, arbitrary flavors attached to tasted goods, as well as digital flavors attached to non-tasted goods and services, should never be considered functional. For the former, the digital flavor exists “alongside” the actual flavor instead of supplanting it. Even if the product is a flavor-crucial good like wine, the digital flavor’s complementary role to the actual flavor makes it non-functional.¹³⁶ The function of flavor in these cases is not to represent the actual flavor or mask, but instead merely to provide a pleasant experience to consumers, and make them more amenable to purchasing the good or service. Just as no one would conclude that a clever advertising jingle that increased sales is functional, pleasing flavors in an advertisement or attached to a product should also be deemed non-functional. Other things equal, both the jingle and the flavor should qualify for trademark protection.

In conclusion, then, a party who uses a digital flavor on a *service* should automatically qualify for trademark protection. Because such a mark is not a part of the service, there should be no need to demonstrate secondary meaning. Nor is such a mark functional. Protecting digital flavors on *goods*, by contrast, would be much more difficult. These sellers would have to demonstrate secondary meaning. Only a handful of sellers are likely to meet this requirement, even when the flavor is a loosely attached digital flavor. Of that handful, many will be precluded by the second obstacle—functionality—from obtaining trademark protection. However, some digital flavors for goods will overcome this hurdle. All flavors for non-tasted goods, as well as arbitrary flavors for tasted goods, are not functional because they neither define quality nor are essential for competition. As long as the party using those flavors can show secondary meaning, they should be able both to register and to protect their flavors as trademarks.

¹³⁶ A seller might be able to boost sales of its product by providing a completely unrelated, but pleasant, flavor to help win over consumers. For example, a party selling pizza could supply consumers a digital flavor file replicating beer, a natural go-with. Use in this situation is logically equivalent to using a digital flavor on a non-tasted product. Because consumers do not view the digital flavor as representing the actual flavor of the product, other sellers do not need to use the flavor in order to compete.

B. BORROWING “REAL” FLAVORS FOR USE ON OTHER PRODUCTS

Part A above demonstrated that for flavor-crucial and some flavor-relevant items, neither the actual flavor nor a digital replication of that flavor can be protected as a trademark because the flavor is functional. This in turn could lead to a peculiar phenomenon. Some flavors are quite widely known and admired. In a world of digital flavors, it might be possible for parties to borrow someone else’s well-known flavor for use not only on competing products, but also products that are completely unrelated. Indeed, it is even conceivable that a party could market the flavor as a commodity in and of itself—a sort of digital candy comprising the digital flavor, attached to no physical good. Application of the standard trademark analysis presents certain difficulties in these cases.

A hypothetical example may aid the discussion. Suppose a mobile phone seller manages to digitalize a perfect replica of a well-known and widely liked flavor—say, the flavor of Coca-Cola—and “attaches” the DFF to its product. The Coca-Cola company would almost surely object strongly to this use. For a variety of reasons, the other party’s use of the flavor could reduce the tremendous goodwill Coca-Cola has built up over the years in the flavor of its soft drink.

The issue, however, is whether the company has any legal right to prevent such use of the flavor. Of course, in the case of Coca-Cola, the company claims the unique flavor of its soft drink is a secret formula protected by trade secret law. However, trade secret law would afford relief only if the product seller obtained the secret formula by improper means.¹³⁷ As long as the seller developed the synthesized flavor using reverse engineering¹³⁸ or other acceptable means, any trade secret claim would fail. If trade secret protection is of no avail, Coca-Cola would likely turn to trademark law to seek relief. In the United States, both federal and state laws may be available to protect marks. This section will discuss federal laws first, and then turn to state laws.

1. Federal Trademark Law

Federal trademark law provides two basic rights. The first, trademark infringement, applies when another’s use of the mark is likely to cause confusion among consumers or potential consumers as to the source of the goods or services

¹³⁷ UNIF. TRADE SECRETS ACT § 2, 14 U.L.A. 537 (amended 1985).

¹³⁸ “Reverse engineering” involves disassembling or otherwise analyzing a product distributed by the trade secret owner to the public, in an effort to discover its hidden features. *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 476 (1974).

involved, or a likelihood of consumer misperception that the mark owner approves, sponsors, or is otherwise connected with those goods or services.¹³⁹ In our example, the product seller's use of the Coca-Cola flavor could, depending on the circumstances, lead consumers to believe the product was produced or otherwise connected with the Coca-Cola company. Second, trademark law also affords the owners of "famous" marks a cause of action for trademark dilution,¹⁴⁰ which occurs when another's use of the mark in commerce diminishes the goodwill connected with the famous mark by either blurring¹⁴¹ or tarnishment.¹⁴² The flavor of Coca-Cola may well be sufficiently recognized to qualify as famous under dilution law.¹⁴³ And the use of the Coca-Cola flavor on another product could certainly cause blurring or tarnishment.¹⁴⁴

But before delving into the details, it is crucial to explore a threshold issue. Both of these federal trademark rights are available only to someone who owns a legally-protected *mark*.¹⁴⁵ And for the reasons elaborated in the prior

¹³⁹ 15 U.S.C. § 1114 (Lanham Act (L.A.) § 32.), affords a cause of action to anyone with a mark registered with the U.S. Patent and Trademark Office. 15 U.S.C. § 1125(a) (L.A. § 43(a)) provides a cause of action to any trademark owner regardless of whether she has registered.

¹⁴⁰ 15 U.S.C. § 1125(c) (L.A. § 43(c)).

¹⁴¹ The statute defines dilution by blurring as "association arising from the similarity between a mark or trade name and a famous mark that impairs the distinctiveness of the famous mark." *Id.* § 1125(c)(2)(B) (L.A. § 43(c)(2)(B)). This provision also lists several factors a court should consider in determining whether blurring has occurred.

¹⁴² The statute defines dilution by tarnishment as "association . . . that harms the reputation of the famous mark." *Id.* § 1125(c)(2)(C) (L.A. § 43(c)(2)(C)).

¹⁴³ § 1125(c)(2)(A) (L.A. § 43(c)(2)(A)) defines a famous mark as one "widely recognized by the general consuming public of the United States as a designation of the source of the goods or services of the mark's owner." Due to the strong stated preferences many have for Coca-Cola, *see Coke/Pepsi, supra* note 32, at 381, the flavor may qualify as famous under this definition.

¹⁴⁴ If a sufficient number of sellers were to attach a synthesized Coca-Cola flavor to their products, consumers would no longer instantly associate that flavor with the single seller, which is the essence of blurring. If the product in question was of poor quality or in some way unsavory or immoral, the use might also result in tarnishment.

¹⁴⁵ The dilution statute is clear in this regard, as it applies only to the "owner of a famous mark." 15 U.S.C. § 1125(c)(1) (L.A. § 43(c)(1)). Moreover, in the case of product features ("trade dress" in Lanham Act-speak), the owner bears the burden of proving its trade dress is not functional. *Id.* § 1125(c)(4) (L.A. § 43(c)(4)).

The infringement provisions are not as specific. § 1114(c), which applies to federally-registered marks, gives rights to a party who has registered its mark. However, as the Lanham Act only allows the "owner" of a mark to register, Lanham Act § 1051(a)(1) (L.A. 1(a)(1)), the same result should obtain. § 1125(a)), which gives a right of action for registered and unregistered marks alike, is not on its face explicitly limited to mark owners. Instead, it affords a cause of action to anyone "likely to be injured" by the

sections, Coca-Cola has no trademark rights in the flavor of its soft drink. Although Coca-Cola may be among the few companies able to demonstrate secondary meaning in the flavor of its product, that flavor is clearly functional, as it “affects the quality” of the soft drink. Indeed, in the case of a soft drink, flavor is likely to be the predominant criterion in any purchasing decision. Because its flavor is functional, Coca-Cola cannot use federal trademark law to protect it, even if the flavor has acquired secondary meaning and the other party’s use causes some purchaser confusion.¹⁴⁶

In the case of competing soft drinks, this result furthers the basic policies of trademark and competition law. Unlike patent and copyright laws, trademark law is not intended to provide sellers with any *a priori* advantage in competition. Rather, trademark law exists to ensure that any competition is fair, and that purchasers are not deceived as to the source of the goods they are buying. If a party wants monopoly rights in the functional features of its product, it needs to meet the requirements (and suffer the limitations) of utility or design patent law. If it does not or cannot obtain such protection, others are free to compete by copying the feature. Copying in such cases is necessary for effective competition. The doctrine of functionality recognizes that the dividing line between trademark and patent/copyright is not always clean. Therefore, when a party without a patent or copyright tries to translate its trademark rights into patent- or copyright-like protection, trademark law needs to give way to the interest of free copying ... even if some purchaser confusion may occur.

On the other hand, use of a digitalized Coca-Cola flavor would not be limited to competing soft drinks or affiliated goods such as rum and colas. Digitalized flavors could also be used on completely unrelated tasted goods, as well as non-tasted goods and services. Would trademark law afford Coca-Cola any right to prevent these non-competitive uses? Under current law the answer is surely no. The Supreme Court test for functionality focuses solely on the item to be protected—in our example, Coca-Cola. That test would still consider the flavor of Coca-Cola functional because it is essential to the soft drink sold by

other’s use. However, in cases involving use of a mark, courts limit standing under § 1125(a) to mark owners. *See, e.g., Exxon Corp. v. Humble Exploration Co.*, 695 F.2d 96 (5th Cir. 1983) (holding that a party who abandons its mark no longer has any rights, and accordingly cannot prevent use of the term by another even when that use might cause consumer confusion due to residual association of the term with the prior owner). The broader language of § 1125(a) applies to false advertising claims involving other characteristics of the goods.

¹⁴⁶ *Accord* MCCARTHY, *supra* note 61, at § 7:63 (“Functionality is a potent public policy, for it trumps all evidence of actual consumer identification of source and all evidence of actual confusion caused by an imitator.”); *W.T. Rogers Co., Inc. v. Keene*, 778 F.2d 334, 338 (7th Cir. 1985).

the Coca-Cola company. The taste makes the product what it is. That it has no effect on the quality of the product to which it is attached (the mobile phone) is irrelevant. If the flavor is functional, Coca-Cola has no trademark in the flavor, and cannot sue for either infringement or dilution.¹⁴⁷

In short, then, nothing in federal trademark law will help a company that discovers that the flavor of its product has been digitalized and used in connection with another party's goods and service. The result is the same regardless of whether defendant's goods compete, whether they are tasted or non-tasted goods, or even whether defendant sells the flavor by itself as a stand-alone commodity.¹⁴⁸ The problem facing the plaintiff in this situation is that its flavor is functional. As a result, that flavor is simply not protected by federal trademark law, regardless of whether plaintiff couches its claim in terms of infringement, dilution, or something else. Unless the defendant also uses the Coca-Cola mark or other protected word or device, it is free under federal law to borrow and market a product with the Coca-Cola flavor.

¹⁴⁷ One could argue that the policy arguments in favor of allowing borrowing of the Coca-Cola flavor are stronger for competitors than for non-competitors. After all, as discussed *supra* in text accompanying notes 119 to 126, courts regularly point out that the rationale for the functionality rule is grounded in notions of competition. And effective competition often requires copying features of the other's goods or services, at least to some degree. The seller of the non-competing good, by contrast, has no real need to copy. While adding *some* flavor to its good or service may increase demand, there is no special need to borrow the particular flavor of Coca-Cola. Many other flavors would do as well.

But this policy argument ultimately comes up short. Facilitating competition is only one of the two purposes of the functionality rule. The other is the desire to cabin federal trademark law to its intended sphere. Protecting the function of a product is the province of *patent* law. If parties could use trademark law to protect product features that perform a function, they might be inclined to forego the more expensive (and typically shorter-lived) utility patent protection. Although the Court's "essential to the use or purpose" test is a poor approximation of what should fall within the realm of patent law, it is clear the Court perceives the functionality rule as a way to preserve the preeminent role of patent law. MCCARTHY, *supra* note 61, at § 7:63.

¹⁴⁸ Several courts have afforded relief when a defendant sells "affiliation goods": products referencing a well-known company and using that company's marks. *See, e.g.,* Automotive Gold, Inc. v. Volkswagen of America, Inc., 457 F.3d 1062 (9th Cir. 2006) (applying this to key chains). These cases are readily distinguishable from the situation discussed in the text. In all the affiliation goods cases, defendant actually used plaintiff's protected mark. As demonstrated in the text, a party has no trademark rights in the actual flavor of its product.

2. State Trademark and Unfair Competition Law

Trademark law originated in the courts, as a branch of the broader notion of unfair competition.¹⁴⁹ State law continues to play a role in the area today. Some states have trademark statutes and registration systems that provide protection on a statewide rather than national basis. Even those states that lack comprehensive regulation will recognize various claims, such as misappropriation, unfair competition, and passing off, that might prove applicable.¹⁵⁰ Parties who bring federal trademark claims typically also include one or more of these state-law claims, as they often include many of the same elements.

If federal law provides no relief to a party whose flavor is borrowed, that party might turn to state law for relief. Borrowing a flavor actually fits nicely into the state-law tort of misappropriation.¹⁵¹ In the hypothetical case of Coca-Cola, the soft drink company has invested considerable effort developing a business value—the flavor of its product. By borrowing the flavor and attaching it to its goods or services (or selling it as a digital candy), defendant is free-riding on Coca-Cola's efforts. Although the claims and analysis might differ depending on whether the borrower was using the flavor to compete, the claim would be available against both competitive and non-competitive uses of the flavor.

However, a state-law claim would likely fare no better than a federal trademark claim. Regardless of how it was framed, a court would almost certainly find the state-law claim preempted. Preemption does not come from federal trademark law, as the Lanham Act has a very limited preempted scope.¹⁵²

¹⁴⁹ MCCARTHY, *supra* note 61, at § 5:2.

¹⁵⁰ All states also recognize a cause of action for trade secret misappropriation. However, trade secret law is not likely to play that great a role in cases involving flavor. In most cases, the digitalization of the flavor will result from reverse engineering. Reverse engineering, however, is a universally-recognized and acceptable way to acquire a trade secret. On the other hand, should a trade secret claim be available, it is important to note that the conclusion of this section—that state law claims are preempted—would not apply. *See Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974) (holding state trade secret laws as not preempted by federal patent law).

¹⁵¹ There is a widespread perception that the old tort of “misappropriation” survives in the United States today in only a handful of specific situations. *See, e.g.*, THE AMERICAN LAW INSTITUTE, RESTATEMENT OF THE LAW (THIRD) OF UNFAIR COMPETITION § 38 (1993) (suggesting doctrine applies only to trade secrets, the right of publicity, when positive law covers the situation, and where the appropriation breaches a contract or infringes common-law copyright). A quick search of the case law, however reveals a far more robust doctrine of misappropriation. *See, e.g.* *U.S. Sporting Prods., Inc. v. Johnny Stewart Game Calls, Inc.*, 865 S.W.2d 214 (Tex. App. 1993).

¹⁵² *JCW Investments, Inc. v. Novelty, Inc.*, 482 F.3d 910 (7th Cir. 2007) (stating that preemption is “the exception rather than the rule and if state trademark law is “coterminous” with federal, state remedies survive);

It comes instead from the federal Patent Act. The rationale for preemption is again the notion of functionality. The flavor of an tasted product like Coca-Cola is a utilitarian feature. Protection of utilitarian features is the realm of federal utility patent law. A state law that provides an alternative, parallel form of protection is preempted because it interferes too greatly with the intended operation of the federal patent system.¹⁵³ Coca-Cola's solution is to seek a federal patent (although the flavor probably would not qualify for a patent, and even if it had the patent would have expired many years ago), not to turn to state law for relief.

In conclusion, digitalization of flavor will make it possible for others to borrow the flavor of existing food and beverage products, and either attach that flavor to their own goods or services or sell it as a digital candy. Under current law, there is nothing the seller of the food or beverage product can do about that borrowing.¹⁵⁴ Federal trademark protection is unavailable because the flavor is functional. State law is unavailable because it is preempted by federal patent law.

3. *Should* Borrowing be Actionable?

Some might consider the lack of any remedy problematic. If digitalization technology follows the track of 3D printers and other sorts of technology and becomes relatively inexpensive, the amount of flavor borrowing would likely increase exponentially. After all, as discussed above there are good reasons to attach a flavor. And it is always easier to borrow something you know consumers like than to develop something yourself. While borrowing of flavors may be justified when done by a competitor, where non-competitors are involved it is little more than a wholesale appropriation of a business value. Should the level of borrowing increase too much, society may demand a response. Of course, because of the restrictions outlined above, any such response would have to come from Congress rather than from the states or the courts.

The "cybersquatting" problem may provide a useful analogue.¹⁵⁵ Like borrowing a flavor, the typical bad faith cyber-squatter is essentially a free rider who takes advantage

Kerzner Intern. Ltd. v. Monarch Casino & Resort, Inc., 675 F. Supp. 2d 1029 (D. Nev. 2009) (describing how state law is preempted only when it would allow parties to infringe federally-registered marks).

¹⁵³ Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1989) (stating that federal patent law preempts a state law prescribing one particular method of copying boat hulls).

¹⁵⁴ Unless the borrowing involves misappropriation of a trade secret, which as noted earlier is rarely likely to be the case in a situation involving flavor.

¹⁵⁵ "Cybersquatting" occurs when a party adopts someone else's well-known trademark as the URL for a website.

of the goodwill associated with the organization whose name it has borrowed. When existing trademark law proved inadequate to deal with the problem, Congress enacted a special provision to afford relief.¹⁵⁶ This provision considers the extent to which the cyber-squatter is attempting to ride on the coattails of the mark owner.

Another useful analogy is misappropriation law, especially the branch called the right of publicity. Under this doctrine, a party may sue to prevent someone else using her “name or likeness” in commercial advertising. While the right originated in the personal tort of privacy, the modern right of publicity has in most states morphed into a species of misappropriation law, focusing on notions of free riding and unjust enrichment. Of course, the right of publicity is a personal right, which in the United States does not extend to corporations.¹⁵⁷ But given the change in focus of the claim, there is no *a priori* reason a corporation should not have a limited right to prevent unauthorized use of its name, or appropriation the goodwill it has in certain attributes of its operations.¹⁵⁸ Because a famous flavor is an important business attribute, and because someone appropriates that flavor for an unconnected good or service has no compelling reason to use that flavor, a court could allow recovery under “corporate right of publicity” theory.

C. DILUTING EXISTING MARKS BY ADDING FLAVORS

Another possible scenario involving digital flavors is that a seller would attach a digital flavor not to its own good or service, but instead to the product of a competitor. If the attached flavor is unpleasant (especially if it triggers a CTA reaction¹⁵⁹), and the seller can find a way to encourage consumers actually to taste it, the tactic could cause consumers to shun the product. In addition to possible claims under false advertising law, it is also possible the injured competitor could bring an action for trademark dilution.¹⁶⁰

To illustrate the possible situation, suppose a party selling blue jeans attaches a nauseating flavor to two competing products, LEE and LEVI'S jeans. Unlike the potential dilution claim discussed in section B above, the competitor in this case would meet the threshold requirement of owning a protectable mark. Rather than dilution of the

¹⁵⁶ 15 U.S.C. § 1125(d).

¹⁵⁷ J. THOMAS MCCARTHY, THE RIGHTS OF PRIVACY AND PUBLICITY §§ 4.41; 4.43.

¹⁵⁸ Indeed, one of the early seminal works on the right of publicity argued the right should extend to corporations. Nimmer, *The Right of Publicity*, 19 LAW & CONTEMP. PROBS. 203, 216 (1954).

¹⁵⁹ For a discussion of conditioned taste avoidance, see *supra* text accompanying notes 72 to 75.

¹⁶⁰ The federal dilution claim is set out in 15 U.S.C. § 1125(c).

distinct flavor of the product itself, the competitor would be arguing that use of the flavor would harm the goodwill in the LEE or LEVI'S mark, as consumers now have a negative association with the product. Moreover, the marks in question (especially LEVI'S) would qualify as a "famous" mark.¹⁶¹ To the extent that negative association reduces the goodwill in the famous mark, the acts of the seller could result in dilution by tarnishment.¹⁶² Moreover, the owner of the mark would not be limited to damages, as the actions of the hypothetical seller would qualify as "willful" within the meaning of Lanham Act § 43(c).

Even though these preliminary requirements are met, a dilution claim would likely fail. Lanham Act § 43(c) imposes dilution liability only on a party who "commences use of a *mark* or *trade name*." In other words, defendant must make use of plaintiff's mark in some way. Attaching a flavor to the LEE or LEVI'S mark would not satisfy this requirement. The flavor itself is not a mark. Nor would the seller be using the LEVI'S mark, because the seller is not attaching that term to its own goods and services. As a result, a federal dilution claim would fail.

On the other hand, the competitor may not entirely be without a remedy. First, as discussed in Part IV.A., a false advertising claim may be available. Second, a *state-law* dilution claim might be an option. Several states afford a cause of action for dilution, and not all explicitly require use of a mark. While liability under state law would be limited to activities in or affecting the particular state, it would at least afford some relief to the aggrieved trademark owner.

CONCLUSION

Efforts are currently underway to synthesize, in digital format, the components of what we perceive as flavor. While at present the technology is in its very early stages, steady improvement is occurring. At some point in the not-too-distant future, parties may be able to send "digital flavor files" to others over the internet, which the recipient would then taste using some electronic or electromagnetic interface device.

If these efforts are successful, the potential of digital flavor is tremendous. Sellers could offer "virtual" food or wine tastings, obviating the need to use up inventory or even have the tasters physically present. Nor is the potential limited to food and drink. Because digital flavors could be cheap to produce, and would certainly be cheap to duplicate and

¹⁶¹ Federal dilution protection is available only for famous marks. *See supra* note 140.

¹⁶² The definition of dilution by tarnishment is set out *supra* in note 142.

transmit, sellers could attach flavors even to non-tasted goods, or services. There is even the possibility that flavors could become a commodity in their own right; a sort of digital “candy” that users would appreciate solely for its flavor.

But potential benefits can also come with potential problems. This article addresses one of these problems. It discusses possible issues in trademark law, including whether parties can obtain trademark rights in a digital flavor (it cannot), and whether another party may use a digital “copy” of a well-known food or beverage in connection with a different good or service (it can). Because current legal rules were certainly not designed with digital flavors in mind, applying trademark law to digital flavors will require courts and the Patent and Trademark Office to be flexible, and at times imaginative. Moreover, in some cases—especially borrowing flavors to use on other goods—those current rules may need to be changed.

This article only scratches the surface. Even in the realm of intellectual property, digital flavors present significant issues in copyright law. Issues may also arise in tort and other non-intellectual property areas. The author’s intent was to establish a framework to address these features by identifying the idiosyncratic features of digital flavor. With this framework in place, research on these other issues may take place -- with any luck, *before* the technology becomes reality.