

# **Cured, Fermented and Smoked Foods**

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# Cultures and Cultures: Fermented Foods as Culinary 'Shibboleths'

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Fermented foods and drinks, especially if assertively aromatic and prepared in the deep tradition of a particular culture, are what we call 'shibboleths' after the Hebrew word in the Biblical book of Judges used to distinguish one ethnic group from another. That is, fermented dishes quickly and emphatically separate those who belong to the village from those who are visiting (or planning to attack it!). For *our* group, a traditional fermented item like *kimchi*, cheese, beer, or wine can represent the most comforting of comfort food or the most joyful of celebratory food. But for our *guests*, no matter how intrepidly cosmopolitan and open to experiences, that same dish may never become their treasured comfort or joy food. The polite guest may even need to leave the table for a moment to recover enough composure to try another small carefully selected bite under the watchful eye of the gracious and hopeful host. At the very worst the impolite guest will avoid the table altogether, the complete nature of the shibboleth having been revealed.

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From our unique paired and integrated point-of-view as a working team of a Professor of Religion (and Rabbi) and a Professor of Biology (and atheist), we explore in our paper the biological origins of cultural preferences for particular fermented foods and drinks with an emphasis on the shibboleths: that is, those fermented cuisines that have been among the most defining and unifying components of human cultures while emphatically excluding other cultures. Using examples especially from Jewish tradition, we will complement the biological analysis with a cultural-linguistic analysis of explanations and justifications that humans have used for their unique preferences. Indeed we find the two aspects (the biological and the cultural) to be inseparably intertwined. The compelling importance of our contribution will be to set a firm and comprehensive foundation for fermented cuisines in general as biologically inevitable shapers (i.e. includers and excluders) of cultural traditions.

Traditionally fermented foods are always transformed by the activities of local microbes, and are always many steps away from 'fresh.' The transformations may be profound: new, unfresh colors, textures (often leaning toward the viscous), flavors entirely devoid of clues as to the original identity of the food and even peculiar sounds since many traditionally fermented foods spend much or all of their life-spans fizzing effervescently. However the odors of fermented foods are typically their most defining properties. Olfaction, a peculiar and primal sense, seems to shoot information directly into the most primitive parts of the brain, bypassing rational contemplation and decision-making and certainly bypassing certain aspects of normal guest-like behavior.

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Fermented foods work well as shibboleths for at least three biological reasons:

1. The original fermenting communities of microbes were (and many still are) no more than the indigenous microbes of a particular region and of its human population. Microbes from local soils and waters confer a characteristic '*terroir*' by tumbling into open buckets of milk and vats of grape juice. The indigenous microbiota dwelling in and on humans produce not only familiar body odors and flavors but also those same nuances in fermented cuisines. It is no coincidence that a well-ripened, surfaced-washed cheese can reek of foot odor. The same bacteria cause both.
2. Our senses of taste, smell, touch, sight, and hearing vary according the genes that code for the functions. The normal, ancestral situation was for a continuous lineage of humans to dwell in a small, inbred settlement with a limited travel radius. Such conditions are ideal for concentrating genetic traits including perceptions of food that might lead to strong preferences and aversions. Small, related communities are also ideal for the transmission of cultural information concerning culinary preferences. However, when these groups become less socially and geographically isolated from one another, 'culture' enables them to adapt their genetically inherited preferences in order to negotiate their new experiences of familiarity with the Other as friend or foe. To this end,
3. Humans seem to be genetically predisposed to find causalities and explanations. No matter how serendipitously a particular regional fermented cuisine might have evolved through chance encounters of microbes and food, humans characteristically would be ready with a full explanation: 'This is our cuisine, as our ancestors always made it, and part of our culture', or 'it's OK to eat this but not that from our neighbors, because...' This is the gist of even the most scholarly of commentaries on foods, no matter how elaborate the rhetoric and justification. Jewish commentary is a rich source of such explanations.

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The word 'culture' has several definitions, with which their etymologies are intertwined here. The *Oxford English Dictionary* entry indicates an origin for 'culture' concerned with the cultivating of plants and animals (essentially farming) but then the word began to take on connotations of the various parameters of societies such as customs, language, art and religion. And the word 'cult' is a sort of extreme and specific form pertaining mostly to religion and is connected etymologically to culture from the deepest Latin roots. Meanwhile, late-nineteenth-century microbiologists developing techniques for keeping various microbes alive in the lab., decided 'culture' was the right word (both as a noun and verb) for that activity. We have come to understand a certain profound, unexpected and even counterintuitive relationship between *cultures of humans* and *cultures of microbes*, especially fermenting microbes that enhance flavors,

aromas, colors and textures of some of the most defining foods and drinks of human cultures.

Cultures of fermentative microbes associate with their own particular cultures of humans. Likewise, cultures of humans have their special microbial cultures. How these relationships were initiated and are maintained are more in the hands (or in the fimbriae) of the microbes than of the humans. That is the counterintuitive part. Humans (being almost unavoidably human-centered) might think that their various fermented foods and drinks are concoctions of their own invention. (Indeed typical recipes for fermented items read like elaborate protocols.) *However it is the other way around.* The relentless (microbe-centered) activities of microbial fermenters make it impossible for fermented cuisines not to have occurred. It was inevitable many times over in human cultures everywhere.

Microbiology students mindful of their experiments are sometimes surprised to discover that the bacteria by which cheese-making is demonstrated on one day in the lab. are virtually the same bacteria that may be isolated from their own skin on another day in the lab.<sup>1</sup> However, many microbiology lab. manuals, which come from a tradition of controlling microbes, do not make this connection. Modern milk processing is all about control and even legislation. However it was not too many centuries ago (and even currently in some indigenous human cultures) when fermentations of all sorts *just happened* to pretty much anything that was not either eaten on the spot or completely desiccated (by long roasting, salt, or exposure to dry air). Which micro-organisms did the fermentations? Whatever bacteria and fungi were available tumbled into milk pails, grain bins, and vats of fruit. Those available were two categories of mostly 'Gram positive' bacteria. One set came from the bodies of humans, the same bacteria that produce odors ranging from pleasantly familiar to repelling. Another set of Gram positives were from the soil, easily brought into the kitchen on hands and feet and on wooden milk pails. In addition to bacteria were indigenous fungi, mostly yeast. The many wild yeasts (now tamed and domesticated for industrial fermenting operations) were just those that can easily be found on decaying plants, in rich humus soils and on normal human skin.

What about the pathogens? Despite garnering most of the publicity about the microbial world, pathogens are rare. Of the estimated millions of bacterial species, only about 50 are human pathogens and these tend to be out-competed by our normal body bacteria and in normal soil communities. Therefore by extension, the rare pathogens are out-competed in any decomposing food such as a bucket of fermenting milk. Indeed most fermented food and drink are preserved and protected against further invasions by less desirable microbes.

A special, related side topic is food poisoning, which we consider to be a summary (often violent) encounter between one's own indigenous bacteria and those of a particular regional, foreign cuisine (i.e., other peoples' bacteria), whether the microbes are characteristic of a particular fermented food or merely local contaminants. Living

in an area over a period of time may allow an acclimation and truce between the adversarial microbes and thus a gradual acceptance of the offending regional item. However, humans learn quickly and viscerally (albeit often irrationally) from such encounters and can develop life-long, strong aversions often centered on an acutely recalled odor or flavor. Thus a memory of food poisoning can be a contributor to some of the strongest shibboleth qualities of fermented cuisines.<sup>2</sup>

Although you might be convinced now that body and soil bacteria and yeasts are tumbling by the billions out of the air into pails of milk and vats of fruit at all times, you might nonetheless cling to the idea that somehow fermented cuisines are inventions of our various human ancestors who were cleverly taking advantage of the situation. The other way around, is our conclusion! The first major contribution of our human ancestors was being desperately hungry and willing to eat highly transformed (indeed putrefying) food, frothing with a miasma of microbes. Then, subsequent contributions of humans to the development of regional fermented cuisines centered around the remarkable (probably species-specific) ability of humans to justify elaborately pretty much anything that they are doing, including finding causalities (false or otherwise.) It was inevitable that elaborate customs and traditions (i.e. justifications) would evolve around special fermented foods. Furthermore the shibboleth quality probably did not go unnoticed by our various insular, not well travelled, and somewhat xenophobic ancestors. That aspect would only serve to enhance the culture-building aspects of fermented cuisines: noticing one's very own language, religion, customs, (delicious) fermented foods versus some stranger's very different language, religion, customs, (repugnant) fermented foods. Cultural justifications for these distinctions came about especially when geographic proximity brought groups together regularly, so as to negotiate whether these 'Others' were friends or foes. This is exemplified in our consideration of two traditional Jewish culinary shibboleths: *hametz* and Gentile wine

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In Biblical and later Jewish cultural traditions, two food categories, *hametz* (leavened bread) and Gentile wine, exemplify taboos on fermented foods explicitly intended to keep groups separate from one another, i.e. Jews from Gentiles. *Hametz* is prohibited during the seven days of Passover and in the Biblical grain-offering sacrifice (*minhab*): 'It shall be eaten as unleavened cake...it shall not be baked with leaven' (Lev. 6:17-18). Maimonides says that this is because idolaters (that is, non-Israelites) typically used leavened-bread offerings in their sacrifices. The Bible's prohibition against leavened food during Passover makes very clear its purpose of distinguishing God's chosen people from everyone else: 'For seven days no leaven shall be found in *your* houses; for whoever eats what is leavened *shall be cut off from the congregation of Israel*, whether an alien or native of the land. *You shall eat nothing leavened, in all your settlements you shall eat unleavened bread*' (Ex. 12:19-20). This implies that unfermented food is *ours* and perfect, while fermented food is *yours*, and less than perfect. Of course, the ancient Israelites ate leavened bread as part of their ordinary daily diet, just like their neighbors, even as Jews did and continue to do today.<sup>3</sup> Therefore we should emphasize that these

seasonal and situational prohibitions of *hametz* had more of a didactic, rhetorical function than a practical legal one. They cultivated an *awareness* of difference from neighboring groups, without absolutely restricting contact and significant interaction with them. For the ordinary Israelite in the Biblical period,

Eating practices were about what Israel could and, particularly, could not eat – not about what they actually did or did not eat. They were...most often about negation – negation of certain evil qualities and, by extension, negation of nations who displayed those qualities...[and sometimes] the nation whose qualities should be avoided could even be Israel herself.<sup>4</sup>

Similarly, post-Biblical references to the *hametz* prohibitions typically apply them metaphorically to personal qualities to be avoided, though perhaps always lurking in the background is the unstated rationale, 'because that's how the Gentiles behave.'

The prohibition of Gentile wine, a sub-category of prohibited Gentile foods, is a post-Biblical Jewish innovation, and an explicit, direct attempt to limit intimate (versus commercial) contact with Gentiles. Under the foreign rule of the Roman Empire, the rabbis especially felt Jewish identity was particularly vulnerable, and thus intensified social boundaries between Jews and Gentiles. The rationales given for prohibiting Gentile wine were that it was *yayin nesekh* ('libation wine') assumed to have been produced for Gentile worship, *avodah zarah* (literally, *foreign* worship); or even if it weren't, drinking *setam yeinam* ('just *their* wine') with Gentiles will lead to intermarriage. The Talmud (b. Avodah Zarah 36b) rationalizes prohibitions against Gentile foods and wine as protection against a slippery slope to intermarriage and idolatry: 'Their bread and oil were forbidden on account of their wine, their wine on account of their daughters, and their daughters on account of "another thing," i.e., idolatrous worship.'<sup>5</sup> Indeed, some authorities even prohibited Gentile beer, not because it was used for 'foreign worship,' but because it likewise promoted excessive familiarity between Jews and Gentiles. Thus, the prohibition of *fermented* drinks was intended to separate Jews from Gentiles, though by the medieval era, many restrictions on intoxicating drinks other than wine, e.g. on beer, 'boiled wine,' or wine mixed with significant amounts of honey and pepper (*yaynomalin* or *konditon*), were relaxed,<sup>6</sup> both in the Muslim lands and in Christian Europe. Wine *per se* however remained problematic, because of its association with 'foreign worship' or the foreigners who made it, even after some Jewish legal authorities decided that Muslim and Christian worship was not idolatrous.

While both *hametz* and wine function as 'shibboleths' in Jewish tradition to divide Jews from non-Jews, do the peculiar features of biological fermentation *per se* play a role in this cultural-linguistic construction of boundaries? Yes! *Hametz* is the same root as the Hebrew adjective for 'sour' – *hamutz* – the taste of many fermented foods. Rabbinic law extended the prohibition against Gentile wine to cheese (m. A.Z. 2:4–5), pickled fish, and other products preserved in vinegar, ostensibly because the preservative vinegars may come from Gentile libation wine (m. A.Z. 2:6, cf. 2:2), or because they may have

been made from non-kosher fish or other animal ingredients. However, these foods also would taste and smell sour or acidic, or in the case of cheese, pungent. But here is where it gets complicated, for the same could be said for the spicy relishes, pickled fish, and other foods made by Gentiles that the rabbis permitted. Still, it is possible that physiological and ecological factors could easily affect or reinforce cultural preferences so that Jews would experience sour or pungent flavors as 'good sour' or 'bad pungent.' Though the earlier rabbinic texts we've mentioned don't stress the off-putting smells or tastes of Gentile foods, early modern German sources complained that Jews smell bad like garlic, and in the modern period, 'sour' such as *borst*, sauerkraut, and *schav* were a notable component of Lithuanian, Polish, and Russian Jewish diets.<sup>7</sup> However, since Eastern European Jews shared this taste for sour and onions with their non-Jewish neighbors, it functioned more as an intra-Jewish culinary shibboleth between Western and Eastern European Jews.<sup>8</sup>

Fermentation also takes time, a point alluded to not only in the reason given for eating unleavened bread on Passover (the Israelites didn't have enough time to let their bread rise when they escaped Egypt), but also in its metaphorical extension to the moral realm. As a verb, *hametz* also connotes 'delay,' as in the saying: '*ke-derekh she-ayn me-hamitzim et ha-matzah, ayn mahmitzin et ha-mitzvah*', which the *Alcalay Hebrew-English Dictionary* translates 'As you must not allow the *matzah* to become sour, so you must not allow the *mitzvah* to become sour by postponement.' Post-Biblical interpretations set up a rich set of symbolic associations between *hametz* and morality. *Hametz* is associated in midrash and kabbalah with the *yetzer ha-ra*, 'the evil inclination.' There's an echo of this in the New Testament's 'beware of the leaven of the Pharisees' (Mk 8:15, cf. I Cor. 5:6-7). In other words, *matzah* symbolizes a good deed, but food allowed to leaven is a deed 'gone bad' – evoking viscerally all the side-effects food gone bad has; it stinks, is slimy, is puffed up, etc.

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While the characteristic odors, taste, and appearance of fermentation may be associated with wine and wine-like drinks, Jewish tradition tends to stress the less visible or palpable, more spiritual or essential aspects of wine and its producers. Indeed, acid or piquant flavors or a frothy appearance are important criteria for determining that wine-like liquids are no longer wine, and hence *permissible*, while conversely, wine contaminated by Gentiles must still taste as wine should for it to be prohibited.<sup>9</sup> Certainly the intoxicating effect of fermented wine made or touched by Gentiles plays a role in its prohibition, since drinking with them blurs and breaches the social boundaries between Jew and Gentile. But more important is the assumption behind it: wine and those who produce it somehow share something basic in their essence. While we doubt the classical Jewish sources knew that fermenters and their fermented products shared the same local bacteria, their language 'contamination', and equation of food producers with their products (even though the connections are invisible) prompt the same response: 'quarantining' the Other's 'poison'. This poison is particularly insidious, since one can hardly smell or taste the difference between Jewish



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and Gentile wine. What makes Gentile wine bad is that Gentiles themselves make it, and consequently, if a Gentile touches Jewish wine, or if Gentile wine gets mixed with Jewish wine, it becomes 'contaminated' and unfit to drink. It is as if Gentiles and their wine share some sort of fundamental essence that is somehow 'bad,' in contrast to Jews and their wine. The Zohar in the thirteenth century explains a mystical, fundamental difference between Jews and their wine, and Gentiles and their wine, and the dangerous consequences of mixing the two, as follows:

Hence Israel drinks the wine of Israel ...He who drinks is strengthened and whosoever recites a blessing over such wine is exalted in holiness. They do not imbibe *wine made in impurity by the impure for the spirit of impurity rests upon it*. Whosoever drinks such wine thereby pollutes his spirit and makes himself impure. He is not of the side of Israel and he is disqualified from existence in the World to Come ...the realm of 'the treasured wine.' (*Zohar: Shemini 40a*).

For Jews, drinking such wine turns them to 'the other side.' The famous Maharal of Prague in the sixteenth century quotes this passage at length in his polemical sermon against Jews drinking Gentile wine, directing it especially against the Jewish legal authorities who encouraged it by their lenient determination that Christians and Muslims were not idolaters, hence their wine no longer *yayin nesekh*. The Maharal's argument against drinking Gentile wine is basically 'you are what you eat,' but there is a special connection between a people and its wine:

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Wine is not like other drinks that are for the body alone, but rather, wine enlightens the mind. And indeed its aroma is known to have this effect, as our rabbis *z"l* said, 'Let the whole soul praise the Lord,' what thing does the soul enjoy but the body does not? I say aroma. Accordingly Scripture said [wine] is what 'gladdens God and people'<sup>10</sup> for it should be said that wine gladdens God when one makes libations of it on the altar, and people when it enlightens their mind.<sup>11</sup>

He goes on to say that as Jacob 'the good child' and Esau 'the bad child' while still in their mother's womb (according to the midrash) respectively kicked when she passed by a synagogue and bet midrash, or by a Gentile temple, so

a kind finds its own kind and is aroused by it. For it is attracted by its nature by itself to the thing to which it is attached, without any intention, awareness, or choice, only of its own accord, because anything on its own part is aroused by the thing to which it is attracted.<sup>12</sup>

It is as if the Gentile wine has a mind of its own, or better, of its Gentile maker, and can't help being attracted to idolatry. However, superficially, Gentiles, Jews, and their wines basically look, smell, and taste like they're from the same species. That they are not is a mystical secret, and so have something in common with the process of fermenting wine, according to the Maharal.

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Wine is something secret hidden in the grape, which the process of wine-making brings forth, revealing the invisible and making it visible. Hence the Maharal says, you will understand the prohibition of *yayin neseekh*, and will not say that the matter of wine is of little consequence, for Scripture has said about it that it 'gladdens God and people' and by saying it 'gladdens God,' it teaches that wine suits someone who separates themselves from what is physical, and all this is because wine comes out of the innermost part of the grape, and what is hidden suits what is divine, which is why *YaYi"V* (wine) is numerically equivalent to *SO"D* (secret).<sup>13</sup>

Wine-liness, as it were, is next to Godliness. The metaphorical fermentation of wine, its makers, and consumers is dualistic; their differences remain secret and invisible until the process reaches the point when variant effects are revealed in the physical demeanors of those who drink the different wines. Indeed, there are even two different kinds of revelations – *giluyim*. The good revelation from the good wine is the disclosure of the mystical secrets of God, occasioned by *our* wine's power to 'enlighten the mind' – in us, the good people. The bad revelation is the *gilui arayot*, literally, 'the revealing of nakedness,' improper sexual relations, the effects of *the Others'* 'fermentation' that has gone too far.<sup>14</sup> 'Foreign worshippers', Gentiles, or Jews 'poisoned' by drinking their wine, are what they drink. Interestingly, while such blurring of boundaries resulting from intoxication is normally discouraged, there is a notable exception in Jewish tradition. On Purim, drinking *Jewish* wine to blur boundaries is encouraged, indeed required. As the Talmud says '*hayav inesh li-besumeh be-Purya ad de-lo yada bein arur Haman le-Baruch Mordechai.*' (A person must get so drunk on Purim that they don't know the difference between 'Cursed be Haman' and 'Blessed be Mordechai', b. Megillah 7b). In other words, there is both 'good' and 'bad' intoxication, just as there is good and bad fermentation. Jewish wine strengthens Jews, but Gentile wine and other kinds of 'bad fermentation' makes them 'go bad.'

As we were writing and discussing this paper together we realized that there was a particular irony in our contention that strong-smelling fermented foods are shibboleths. Brumberg-Kraus noticed that while his Jewish examples indeed used *fermented* foods and drinks to differentiate themselves socially from Gentiles, they said little about them being odoriferous. Dyer suggested two explanations. The first is that one can be remarkably anosmic (the olfactory equivalent of blind) to fermentative odors of one's own cuisine. Therefore there may be no comment at all in cases where it might appear to an outsider that odor should be mentioned. The second is that humans have a rather poor sense of smell and this may go along with an exceptionally impoverished vocabulary for describing odors. The reactions tend to be more visceral than verbal.

The phenomenon of failing to recognize one's own cultural fermented foods as having any particular odor surprised us at first. Although on retrospect, this may be

a shibboleth quality. Some of Dyer's students of English descent have informed her that English food must be an exception since nothing in that cuisine is odoriferously fermented! Meanwhile some of Dyer's Asian students could scarcely bring themselves near the table at which the class was having a cheese-tasting of Cheddars and Stiltons. Similarly, Rabbi Brumberg-Kraus at first despaired that he could think of no stinky fermented Jewish foods, at least not in the classical Jewish sources, to support our hypothesis! His Gentile colleague Professor Dyer easily corrected him, reminding him that pickled herring and gefilte fish left at room temperature for any significantly lengthy period of time would cause odors throughout the house. Indeed the advent of large modern refrigerators may sustain the illusion that one's own (and even others') cuisine have no remarkable odors. Chilling dulls odors and therefore may have a dulling effect on perceptions of unique odors. Visits to open markets of developing countries, especially to the fish and meat sections, may be necessary for reacquainting scholars with the truly shibboleth nature of (for example) fish being transformed in the warm sun into a cultural delicacy by microbial fermentations.

Humans, compared to nearly all terrestrial mammals, are exceptionally deficient in genetic ability to detect odors. Typical mammals have at least 1000 genes for olfactory reception and typically all are functional. In humans, about two-thirds of those thousand olfactory genes are mutated beyond use. We manage to get weak whiffs of microbial fermentations with just a few hundred receptors. Apparently this deficit began to evolve when humans became more upright and visually oriented. Most interesting smells are heavier than air and are best detected with a keen nose (dog-like) to the ground. Indeed dogs are good guides to the mostly uninterpretable (to us) olfactory world. While we detect 'notes', dogs (with 1000 functional receptors) revel in symphonies of olfactory input. Luca Turin in *Secret of Scent*, imagines the olfactory world to be enveloping, like a hologram.<sup>15</sup> Human vocabularies for describing olfactory experience are considered to be as impoverished as our olfactory receptors. Nonetheless, there exist systematic attempts such as the 'Wine Aroma Wheel' of A.C. Noble to collect and arrange all useable adjectives.<sup>16</sup> Many are essentially descriptions of microbial decompositions including moldy, earthy, sulfur, lactic, sweaty and wet wool. Even the adjectives evocative of flowers and fruits such as citrus, berry, and floral are microbial by-products that we happen to interpret as fresh scents. Perhaps, as Rachel Herz suggests, this is because we don't use odors to construct abstract schemas of our world. Animals, like rodents, who rely primarily on their sense of smell to negotiate the world, likely do think in smell, and certainly some of our primate ancestors did as well. But for modern humans, vision and hearing-language are the sensory information sources we use to construct abstract representations to make sense and survive in the world. Because we don't rely on odor images in this way, this ability has not been specially selected for and hence has become weak.<sup>17</sup>

What we humans have left of olfaction is so basic that it seems directly connected to the reflexes of the brain. Thus richly transformed microbial products (our delicious

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fermented food or your disgusting, decomposing food) defy normal vocabulary but rather require immediate, thoughtless reactions (good! bad!) – as true shibboleths. Perhaps this is why (as our learned commentators have shown) fermented foods (if they are not simply eliciting an exclamation) require elaborate, invented vocabularies and convoluted justifications for their inevitable, defining presence in all human cultures.

It's through our cultural-linguistic rationalizations that we construct our 'abstract schemas,' our 'maps' of the world, while our tastes and smells add value to the places on the map through the strong emotional charge our memories of them evoke. These complex maps, such as the Jewish cultural justifications we discussed, compensate for our olfactory deficiencies. We can't always immediately see, taste, or smell what (or who) might kill or love us, but our cultural taboos protect us, when our physiological capacities alone just aren't enough!

### Notes

1. The discussion of bacteria that follows comes from Betsey Dexter Dyer, *A Field Guide to Bacteria*. Ithaca, NY: Cornell U. Press, 2003.
2. Dangerous strains of microbes that are developed through careless human practices with stockyard animals and with mass-produced vegetables, especially involving cavalier use of antibiotics, have caused some of the most deadly cases of food poisoning on record. These may include invasion well past the intestines into the body and antibiotic resistance. Such stockyard microbes (carelessly encouraged by irresponsible human practices) are *not* part of any culture's normal fermented cuisines and are *not* considered relevant in this paper.
3. John Cooper, *Eat and Be Satisfied: A Social History of Jewish Food*. Northvale, N.J.: Jason Aronson, 1993, 4–9, 37–42, 148–151.
4. David Kraemer, *Jewish Eating and Identity Through the Ages*. London: Routledge, 2009, 22.
5. David Kraemer, 68.
6. Solomon ben Abraham Adret, *Torat ha-buyit ha-arokh veha-katsar*, ed. Moshhe ben Yitzhak Me'ir Baron. Jerusalem: Mossad Harav Kook, 1995, v. 2: 512–3 (Spain, thirteenth century).
7. Maria Diemling, "As the Jews Like to Eat Garlic": Garlic in Christian-Jewish Polemical Discourse in Early Modern Germany', in *Food and Judaism*, ed. Leonard J Greenspoon, et al. Omaha, NE: Creighton University Press, 2005, 215–234; John Cooper, 155–7.
8. Diemling, 228, quoting the complaint of a German Jewish rabbi about the stench of his Polish Jewish cook's gefilte fish.
9. Solomon ben Abraham Adret, 499–503.
10. Judges 9:13, cited in a discussion about the preeminence of wine over other fruits in b. Berakhot 35a.
11. Judah Loew ben Bezalel, 'Drush al ha-Mitzvor', in *Derashot Maharal Mi-Prag*, ed. Moshe Shlomo Kasher (Jerusalem: Makhon Torah Shlema, 1958), 82–3.
12. *Ibid.*, 83.
13. *Ibid.*, 89.
14. *Ibid.*
15. Luca Turin, *The Secret of Scent: Adventures in Perfume and the Science of Smell*. New York: Ecco, 2006, 9.
16. Ann C. Noble, *Wine I.Q. Learning and Reference Guide*, 1996.
17. Rachel Herz, *The Scent of Desire: Discovering Our Enigmatic Sense of Smell*, 1st ed. New York: William Morrow, 2007, 88.