Bread as Mediating Material: Tactile Memory and Touch

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The compilation of recipes in Ms. Fr. 640 is the result of interest in craft practice in early modern Europe. At this time, artisans and practitioners began committing their knowledge to paper, an impulse that both revealed the wealth of their technical knowledge and the challenge of using words to describe

processes.1 Their reliance on the senses in their practice is evident in many of these writings, and Ms. Fr. 640 is no exception; the manuscript's position between various genres of technical writing makes this reliance even more significant.2 Other essays have treated the author-practitioner's references to the visual appearance of materials; this essay, however, will focus on the tactile qualities of everyday materials and their role as mediating devices3 between familiar and unfamiliar processes, with bread and the experience of baking as a case study.4 Using a familiar process such as baking bread, the author-practitioner elucidates a less familiar technique by assuming that the reader has tactile memories of bread. In this essay, the tactile experience of bread making and its capacity to mediate is illuminated by the Aristotelian theory of memory, its reception by medieval authorities, and current neuroscientific research on touch and tactile memory.

Ms. Fr. 640 is an intriguing manuscript that features an array of different recipes for such incongruous processes as disguising a horse, molding sulfur, plucking forehead hairs, and making mustard. As such, it sits somewhere between the miscellany and the encyclopedia.5 Indeed, the author-practitioner's struggle for

a structure reminiscent of the encyclopedia, most noticeable in his efforts to group related recipes together, is offset by the nature of the manuscript as a work in progress, with sections interrupting others and certain folios rendered all but illegible by an abundance of marginal notes and additions.

The experimental quality of the manuscript makes classifying it difficult. Its use of vernacular French and its wide array of topics align it with books of secrets.6 And yet, the fact that so many of the recipes in Ms. Fr. 640 are works in progress distances this manuscript from this genre. The books of secrets generally did not include experimental content, as William Eamon argues, but instead adopted an authoritative tone that encouraged the reader to follow the procedure to the letter.7 The experimentation evident in Ms. Fr. 640 might constitute the work necessary for compiling a book of secrets, which would have been elided in the final version.8

The recipe collection is another genre in which to locate Ms. Fr. 640. Certainly, the manuscript is similar to a recipe collection in medium, form, genesis, and content. A recipe book simultaneously functions as a repository of knowledge and as an *aide-mémoire*, offering up new information to its readers and

engaging their know-how through references to tacit knowledge. 9 Corrections and additions were not foreign to this genre. The author-practitioner demonstrates varying degrees of involvement with the recipes he records in Ms. Fr. 640. Some recipes he clearly tried and reworked, while others he appears to have copied from elsewhere and perhaps never attempted. Recipes in recipe books were often collected through personal relationships with members of a community.10 In Ms. Fr. 640, certain recipes appear to be the result of contact or even relationships with artisans, as seen, for example, on fol. 61v (http://edition640.makingandknowing.org/#/folios/61v/f/61v/tl) where the author-practitioner describes how Germans make *chassis*.

Despite its similarities to a recipe book, Ms. Fr. 640 features few culinary recipes, and none for bread, although foodstuffs are ubiquitous in the manuscript. The essay "*Pain, Ostie, Rostie*: Bread in Early Modern Europe" examined evidence for the physical presence of bread in artisanal contexts, and it showed the particularity and variety of what constituted bread and the widespread familiarity with bread and its baking in early modern Europe.11

Ms. Fr. 640 features several passing references to bread that, while appearing unremarkable, in fact point to several significant features, notably the sensory and embodied process of making, and the tactile memories presupposed in the reader (Table 1).

Table 1: Recipes that use bread to evoke sensory memories and impel actions

Transcriptions and translations from 2019 version of Ms. Fr. 640.

Folio	Recipe Title	Description	Bread Quotation
29r (http://edition640.makingandknowing.org/#/folios/29r/f/29r/tl)	Stucco for molding	Recipe to make stucco	“knead it as if you wanted to make bread” “firm as bread dough that one is ready to put in the oven”

Folio	Recipe Title	Description	Bread Quotation
84r (http://edition640.makingandknowing.org/#/folios/84r/f/84r/tl)	---	---	“reheating it at the mouth of the oven, after the bread has been taken out”12
114v (http://edition640.makingandknowing.org/#/folios/114v/f/114v/tl)	Second cast	Recipe to cast animals in clay molds	“separate them with strength as if you wanted to tear apart a loaf of bread”
129v (http://edition640.makingandknowing.org/#/folios/129v/f/129v/tl)	Animals dried in the oven for a long time	Instructions to dry animals in an oven	“dry them in an oven, after the bread has been taken out” “promptly dry them in the oven, which is hot enough, like

Folio	Recipe Title	Description	Bread Quotation
			when one takes out the bread”
130r (http://edition640.makingandknowing.org/#/folios/130r/f/130r/tl)	Animals dried in an oven	Instructions to dry animals in an oven	“then one finishes drying it in an oven when the bread is drawn”

These references in Ms. Fr. 640 touch on various stages in the production of bread, from kneading to baking to eating. For example, fol. 29r (http://edition640.makingandknowing.org/#/folios/29r/f/29r/tl) presents a recipe for making stucco that instructs the reader to handle the material in ways analogous to bread making: “knead as if you wanted to make bread.”13 It is striking that the word *paste*, meaning “dough,” is used to refer to the mixture of all the ingredients that are to be kneaded in such a manner, a designation that may have come naturally to the author-practitioner as two of the ingredients for stucco—flour and water—are essential elements for making bread.14 Logically,

the kneaded mixture is then likened in firmness to “bread dough that is ready for the oven.”

Baking comes next in the production cycle of bread making. An important group of recipes refers to the temperature of the oven after baking bread to indicate the heat of the oven for processes unrelated to bread baking, such as drying animals. These recipes curiously relate to others on fol. 140v (http://edition640.makingandknowing.org/#/folios/140v/f/140v/tl) for casting in wax and sulfur, in which the physical material of the mold is bread. While the recipes for casting animals specify the temperature of the oven to be “as hot as when bread has been taken out,” in those for casting in wax and sulfur the author-practitioner states that “bread straight from the oven is best” to make the molds, implying a similar degree of heat for two different processes. Even so, the injunction to use bread straight from the oven may not be as helpful as it appears. Bread can be composed of a variety of ingredients, and baking requirements vary accordingly.15 The consistent reference in Ms. Fr. 640 to an oven might offer a clue to the kind of bread baked, and thus to how hot the oven might have been. Indeed, wheat bread required a moderately heated oven, unlike bread made with other flours, which could be baked at lower

temperatures before the hearth in earthenware pots.16 The abundance of wheat available in Toulouse makes it likely that the author-practitioner meant wheat bread.17 Furthermore, we might speculate that the oven to dry animals should not have been so hot as to singe their fur, thus the moderate heat for wheat bread seems likely.

The cycle of bread making concludes with its consumption. On this point, a recipe on fol. 114v (http://edition640.makingandknowing.org/#/folios/114v/f/114v/tl) instructs the reader to pull apart two halves of a mold "as if you wanted to tear bread apart," referring to bread ready for eating. Here again, the differing consistencies characteristic of different bread varieties renders this reference less than straightforward. A coarser rye bread would require more force to tear than a fine, light wheat bread. Regardless of what kind of bread one was accustomed to eating, this simile prompts a vivid memory that every reader would share: breaking bread for a meal. Thus, a familiar action is used here to illuminate the unfamiliar or less familiar one of pulling apart two halves of a mold for casting.

The role of bread baking in the manuscript recalls the embodied nature of craft knowledge and betrays a "sensory appreciation"

for the feel and form of materials.18 This sensory knowledge finds its parallel in the writings of Theophrastus Bombast von Hohenheim, known as Paracelsus (1493–1541).19 Seeking a new philosophy, this medical reformer extolled knowledge from experience, encouraging artisans to listen to their materials.20 Paracelsus considered craft activities a "form of worship" whereby knowledge of nature was acquired through a quasi-mystical fusion of the body of the artisan with that of the material he worked.21 Repetition was a core practice of making. 22 In this manner, making could become akin to a religious ritual, a meditative act repeated over and over until it became second nature.

Bread speaks eloquently to the potential spiritual dimensions of embodied craft practice. The act of kneading, in which human flesh and bread-flesh become as if one, may have reminded an artisan of material transformations of religious sacrament, ritualized practice, and the enspiriting of matter. In the Eucharist, bread transforms into the flesh of Christ, whereas in the act of baking, the body of the baker becomes part of the bread as sweat and saliva permeate the dough.23 An eighteenth-century eyewitnesses described how the agony of the baker—

bare-chested, crying, and groaning—reverberated as he threw his body into the act of kneading.24 The repetitive, integrating motion of kneading gives life to bread, allowing it to breathe, coaxing its life force, the yeast, to rise through the dough.

The union of human body and bread is, of course, most complete in the act of eating. Galen of Pergamon, the renowned second-century Greek physician, described the relationship between eating and cognitive functions like memory. Galen's humoral theory elaborated the gradual transformation of foodstuffs into the four humors—blood, black bile, yellow bile, and phlegm—that nourished the flesh of the body.25 Food was further rarefied into vegetable spirits and was later refined by the heart into vital spirits.26 It was ultimately concocted by the brain into animal spirits.27 For Galen, nourishment was integral to the healthy functioning of the human body, and eating poorly could lead to bad humors that bore negatively on cognitive functions.28

There is a long tradition of ancient and Christian thought dealing with the relationship between the material and the immaterial, perhaps best exemplified by the Eucharist, evoking both simultaneously. The problem of matter is considered in

Aristotle's *De memoria et reminiscentia* and Thomas Aquinas's *Summa Theologiae*. In the first, Aristotle expounds on how memories are formed as an image of an object that travels from the outer senses (sight, hearing, smell, touch, and taste) through to the internal senses (imagination, memory, common sense, estimation, and cogitation) by way of the animal spirits.29 The corporeal senses thus function as springboards for the formulation of mnemonic images. That the internal senses are superior precisely because they lack corporeality, as Grant Williams argues, was succinctly stated by Aquinas: "Thus the intellect, which abstracts species not only from matter, but even from the individuating material conditions, has more perfect knowledge than the senses, which, while they receive the form of things known without matter, do not do so without these material conditions."30 The abstracted matter is acquired through the senses, of which touch is the most sensitive. Aquinas, in his *Commentary on Aristotle's De Anima*, makes an argument for touch being the most embodied of the five senses:

> *Yet it might seem that mental capacity corresponded rather to excellence of sight than of touch, for sight is the more spiritual sense, and reveals better the differences between things. Still, there are two reasons for maintaining that excellence of mind is proportionate to fineness of touch. In the first place touch is the basis of sensitivity as a whole; for obviously the organ of touch pervades the whole body, so that the organ of each of the other senses is also an organ of touch, and the sense of touch by itself constitutes a being as sensitive. Therefore, the finer one's sense of touch, the better, strictly speaking, is one's sensitive nature as a whole, and consequently the higher one's intellectual capacity. For a fine sensitivity is a disposition to a fine intelligence.31*

For Aquinas, then, human intelligence is best sparked by the sense of touch because it is the most sensitive.

Recent neuroscientific work resonates with Aquinas's argument. The mechanisms that perceive touch have been shown to be the same as those that make tactile memories, linking both functions intimately.32 Tactile memories are formed implicitly, and tactile information is stored without a person being aware of perceiving the information.33 In other words, according to recent research, we are highly sensitive to tactile stimuli and remember them although we may not have noticed acquiring the memories. In bread making, the process of kneading becomes familiar through repetition and forms tactile memories over time. According to this research, both touch and tactile memory are multisensory, involving tactile as well as visual elements, which renders more vivid the memories of tactile experiences. Tactile memories often involve a visualization of the touch event, which may make employing the tactile information easier.34 Thus when the author-practitioner invokes the memory of pulling bread apart, what comes to mind is both the tactile experience of tearing a loaf of bread and the visualization of this act.

The sense of touch is multisensory also because it is made up of several sensory systems: the kinesthetic, which enables us to perceive movement; the cutaneous, which involves perceiving

through the skin; and the haptic, which may also be called active touch, and characterizes those tactile perceptions that are initiated by the perceiver, rather than those in which he or she is a passive receiver of touch.35 These sensory systems play a role in our experience of the life of bread. Kneading and eating involve haptic and kinesthetic touch through the movement of the hands and their interaction with bread. Taking bread out of the oven involves these two sensory systems in addition to the cutaneous, as heat is perceived through the skin.

The primacy of the kinesthetic and haptic sensory systems for our experience of the life of bread is enabled by the hand, which carries out all of these processes. The hand is well-suited to perform these tactile processes for several reasons. First, the hand, unlike the eye, is both a sensory and a motor organ.36 The hand can thus move and perceive at the same time, for instance, gathering tactile information as it kneads dough. Second, the fingertips are more sensitive to tactile stimuli than other parts of the body, thus they collect more information for the creation of tactile memories.37 These memories make processes such as kneading or pulling bread apart familiar to their performer. Third, as Raymond Talis argues, human intelligence “develops

in parallel with manipulative precision and not with increasing visual acuity and more complex visual awareness.”38 The intellect is therefore more closely associated with the sense of touch than with that of sight. The hand thus simultaneously acts, knows, and communicates.39

The writings of the author-practitioner and other artisans attempt to convey their embodied—often visceral and ineffable—knowledge in words. Their use of material mediators, such as bread, draw on tactile memories and tacit know-how, and employ similes to overcome the problem of expressing embodied knowledge in words. Bread, with its symbolic and material multivalence, exemplifies this practice.

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