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Two Unusual Mind Diagrams in a Late Fifteenth-Century Manuscript (UPenn Schoenberg Collection, LJS 429)

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Two Unusual Mind Diagrams in a Late Fifteenth-Century Manuscript (UPenn Schoenberg Collection, LJS 429)

Abstract

University of Pennsylvania Libraries, Lawrence J. Schoenberg Collection, MS LJS 429, is a small booklet containing materials of natural philosophy, chiefly related to the effects of cosmic forces on human biology. Two of its diagrams illustrate the mentalizing process of the Aristotelian-Thomist psychology anima sensitiva, or the process through which sensory experience is formed as a mental perception. This essay points out the ways in which these diagrams differ from a standard (Thomist) medieval model of Mind. During the very late Middle Ages, the analysis of Mind as anima sensitiva and mens appears to shift from being action-based (analysed in terms of abilities and powers) to being substantive-based (analysed in terms of substantial agents using material tools). I will suggest that these two diagrams unusually model “faculty psychology” in a way that seems to foreshadow one we associate more with the time of Descartes, and even of Locke and Hume.

Keywords

Manuscript studies, early drawings of mental activity, UPenn LJS 429, history of psychology, philosophy of mind, Margarita philosophiae

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Reviews

Two Unusual Mind Diagrams in a Late Fifteenth-Century Manuscript (UPenn Schoenberg Collection, LJS 429)

Mary J. Carruthers
New York University

University of Pennsylvania Libraries, Lawrence J. Schoenberg Collection, LJS 429, is a booklet of fourteen paper leaves, each page measuring 200 × 138 mm, that has been dated to between 1485 and 1499. It is of German provenance, most likely Mainz. In modern times, it has been consecutively paginated in pencil, from 1 to 27 (the last verso being left blank), but the paginator neglected the verso side of page 9; this is now numbered page [i]. After folding, it was sewn, but the stitches are now missing. It contains materials of natural philosophy, chiefly related to the effects of cosmic forces on human biology—the humours and their cosmic qualities, the temperaments, and similar matters. Although it announces itself on page 1 as "diffinicio philosophia secundum isidorum," its materials are not actually Isidorean. The texts, which are unassigned, are brief discussions in the Aristotelian-Thomist tradition of divine creation, cosmic and human nature (qualities, temperaments, and humours chiefly), and some discussion of basic logical method.

The booklet's interest for this essay lies in its full-page colored scientific diagrams; these are mostly of an astrological or biological nature that can be referred easily enough to the texts. But two schematic diagrams of human mental process, on pages [i] and 11, stand out as unusual. There is no textual material "de anima" in this booklet, so these two pages are not explained as

illustrations of any of its texts. Each is drawn and colored on the reverse side of cosmic diagrams, which are on pages 9 and 10. The leaves 9-[i] and 10-11 are both "fold-overs," initially wider than the rest (as the drawings on them indicate), but folded over along the outer margin to match in size the other leaves in the booklet.[1]

Each head image (pp. [i] and 11) schematically diagrams the mentalizing process of what is usually called in Aristotelian-Thomist psychology *anima sensitiva*, or "sensory soul." It is the process through which any external experience received through our biological senses is formed as a mental perception and cognition, and is also made recollectable. The whole process in the brain was also identified with *mens* (mind). This was distinguished from the immaterial, illuminating intellectual activity, *intellectus*, through whose "light" we can understand and judge truth and error in terms of ideas, but it is of course fundamental to it. Their combination is *intelligentia*. The two mental "heads" in LJS 429 are not like any other medieval pictures of the mind that I have seen, whether made around this same time (1500) or earlier. In this essay I will point out what seem to me their significant differences from a standard (Thomist) medieval model of Mind. I will suggest that these two unusually model "faculty psychology" in a way that seems to foreshadow one we associate more with the time of Descartes, and even of Locke and Hume.

There are very few detailed diagrams of the human mind's abilities (*vires*, *potestates/potentiae*) in medieval manuscripts made before 1450. The most widely known now, a small head painted in C.U.L. MS Gg. 1.1, folio 490v, dates from around 1330, the early years of the reign of Edward III of England (fig. 1). It shows—as the text it accompanies makes clear—"caput hominis," with its four "potentias interiores scilicet sensum commune ymaginacionum estimatiua & memoratiua" (the interior powers—that is, common sense, imaginings, judging, and remembering).[2] The first section of this brief text is

1 This manuscript has been fully digitized and can be viewed via its permanent link: http://hdl.library.upenn.edu/1017/d/medren/9948274463503681. The fold of p. [i] is 1.5 inches wide; that of p. 11 is 0.75 inches wide.

2 The author cites "Thomas in prima parte summa [Aquinas, *Summa theologica* Ia, Q79, article 4]" as his governing authority, while acknowledging throughout that the source on

headed "De distinctione sensum interiorum & organis eorum/ & rationibus & actibus" (Concerning the division of the interior senses together with their organs and their rationales and activities). These activities all take place within the brain, *cerebrum*, which contains within its material a large sac-like space, running from front to back. This opening has within it three enlarged connected areas, or *ventricula*, located in the front, middle, and back, containing also a *porta* (gateway). This *porta* is called the *vermis* (worm): it is not itself a body, but rather a narrowing between two of the larger areas.[3] It functions as a gatekeeper, regulating the movement of our imagined and cognized perceptions in some recollectable form and their re-membering for the intellect to use as it requires for understanding truth and falsity, and fully comprehending what something is as an idea. Perceptions derived from particular sense experiences cannot be so judged, for only the intellect is capable of general understanding and judgment. Control of the *vermis* is thus conscious and rational—for in sleep and similar mental states, when the *vermis* is wholly relaxed, the mind pours out its sensory remnants indiscriminately as dreams (*somnia*) and various hallucinations (*visiones*). In this way, the *vermis* is a tool of rational consciousness and remembering, certainly not unthinkingly glandular (as, much later, Descartes's focus on the pineal gland helped to make it.)[4]

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which the manuscript drawing is based is Avicenna's "Liber de anima," that is, Book 6 of his "naturalia." For this illustration. see P. N. R. Zutshi, Paul Binski, and Stella Panayotova, *Western Illuminated Manuscripts: A Catalogue of the Collection in Cambridge University Library* (Cambridge: Cambridge University Press, 2011), item 149, pp. 139–41. There is a separate tradition, likely of Arabic provenance, of highly schematic diagrams showing how the external senses communicate through the head to *communis sensus* in the brain.

3 Though in later discussions the term *ventricula* became standard, they were also called *cellulae* (tiny rooms). The *Margarita* picture shows them as enlarged areas within a single anatomical structure, not as separated from each other. The head schematic in Gg. 1.1 (see fig. 1) labels the mental actions in separate schematic circles with clear channels of communication (the *nervi*) among them.

4 The *vermis* was located variously from the end of the fourth century CE (when psychic functions were first assigned—by Christian clerics—to particular areas of the brain) until the time of Vesalius. From the mid-twelfth century, the influential accounts were those of Qusta ibn Luqa ("De differentia spiritus et anime," translated by John of Seville) and Ibn al-Jazzar ("De oblivione"), translated by Constantinus Africanus. In these works, the *vermis*, though somewhat differently described, was situated between the medial and posterior brain areas, as shown in figure 1. From the fifteenth century, a position between the anterior and medial

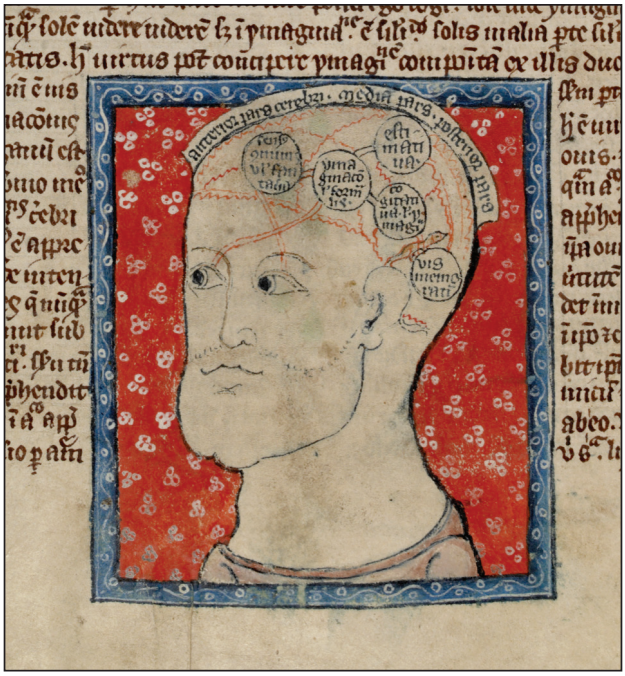

FIGURE 1. Cambridge, University Library MS Gg 1.1, fol. 490v. Britain, West Midlands, ca. 1330.

areas became common in illustrations, as in figure 2; this is its position in the highly influential medical encyclopedia, also by Constantinus, known as *Pantegni*. See Edwin Clarke and Kenneth Dewhurst, *An Illustrated History of Brain Function* (Berkeley: University of California, 1972); Charles Burnett, "The Chapter on the Spirits in the *Pantegni* of Constantine the African," in *Constantine the African and ʿAli ibn al-ʿAbbas al Maǧūsī: The Pantegni and Related Texts*, ed. Charles Burnett and Danielle Jacquart (Leiden: Brill, 1994), 99– 120; Gerrit Bos, "Ibn Al- Ǧazzār's Risāla Fin-Nisyān and Constantine's *Liber De Oblivione*," in *Constantine the African and ʿAlī ibn al-ʿAbbās al-Maǧūsī: The Pantegni and Related Texts*, ed. Charles Burnett and Danielle Jacquart (Leiden: Brill, 1994), 203–32; Gert-Jan Lokhorst and Timo T. Kaitaro, "The Originality of Descartes' Theory About the Pineal Gland," *Journal for the History of the Neurosciences* 10 (2001): 6–18; Gert-Jan Lokhorst, "Descartes and the Pineal Gland," *The Stanford Encyclopedia of Philosophy,* Winter 2017, ed. Edward N. Zalta, available at https://plato.stanford.edu/archives/win2017/entries/pineal-gland/.

Thus, anatomically, within the skull and its inner membranes, the brain consists of material surrounding an open area of three connected "ventricles" (*ventricula*)—enlargements rather like a set of little stomachs or wombs ("stomach" and "womb" are also meanings of *venter*)—within which takes place the full complex of combined activities by which particular material data received from the external senses are cognized and made useful (recollectable and thus think-able) for the procedures of rational, intelligent thinking. The medium for the continuous communication necessary to achieve this is the "animated spirits" (*spiritus*, *animalia*)—natural movements conducted through channels called *nervi* (nerves), which activate the various phases of the perception-conceptualizing complex occurring in the brain's ventricles. The composition of these "spirits" (or the "pneuma" in many Greek texts) was never fully defined; their movements were commonly likened to the ripples in a pond caused when a pebble—or a sense datum—drops in, but the "spirits" were not conceived to be liquid. Nor were they air. They seem most like a kind of electricity, a motive and activating current that flows through nervi within and throughout natural bodies, including the brain.[5]

This High Medieval model of Mind—*mens* or *anima sensitiva*—is well depicted in an image (fig. 2) printed in a widely circulated early sixteenth-century German natural encyclopedia, *Margarita philosophiae*. Likely the work of a cleric named Gregor Reich, it is one of the earliest printed encyclopedias (and indeed printed books), with editions in 1503, 1504, 1512, and

5 The medieval model assigns cognitive function to both perception and intellect, for acting within *anima sensitiva*, reasoning and imagining act together (*co + agito*, 'cogitate') to produce the sense-derived concepts with which, by remembering, intelligence works. As Katherine Tachau has wisely observed, "Crucial to Aristotle's theory and to Avicenna's reformulation is the location of essentially cognitive functions in both the sensitive and intellectual realms of the soul." Philosophers from Descartes on, however, often conflated the two realms, with the result that historians need to keep in mind that "when one has described a late medieval scholar's views on either sensitive cognition or intellectual cognition, one has not yet treated that scholar's entire account of natural cognition." Katherine H. Tachau, *Vision and Certitude in the Age of Ockham: Optics, Epistemology, and the Foundations of Semantics, 1250–1345* (Leiden: Brill, 1988), 10, n. 19.

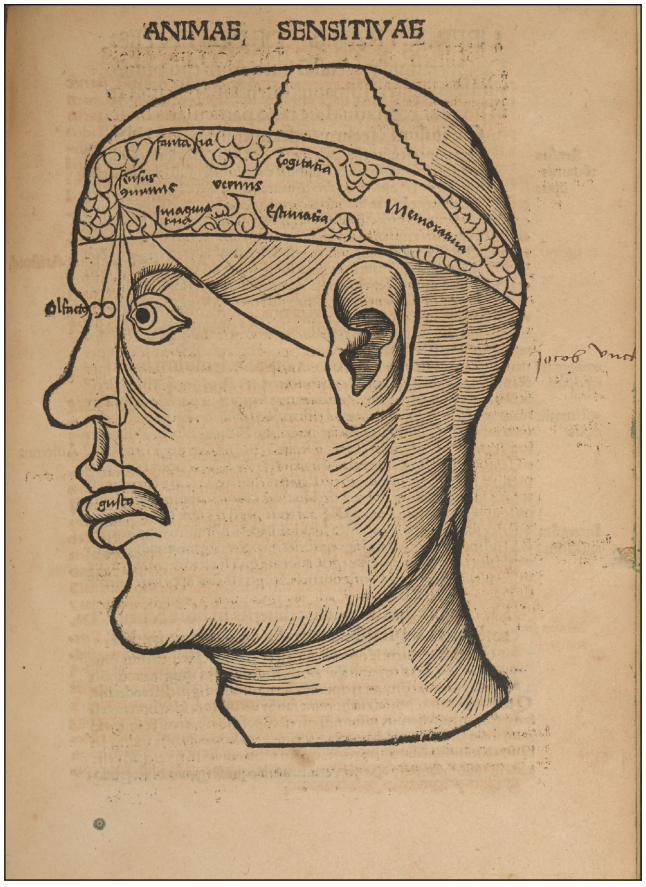

FIGURE 2. Gregor Reich (?), "Potentii anime sensitiue," *Margarita philosophiae*. Basel, 1504. Philadelphia, University of Pennsylvania Libraries, 39 R275.

later.[6] The central cavity within the brain, its three "wombs" clearly depicted, are labeled in accord with standard medieval university teaching, with the phased activities of "fantasia/imaginativa" in the front ventricle, "cogitativa/estimativa" together in the middle ventricle, and "memorativa" in the back.

6 The *Margarita philosophiae* has been digitized fully by several libraries, and its images are readily viewable online.

Data from the various senses (including touch, which traditionally came to the brain from the heart area, not shown in this particular image) all gathers in the "sensus communis" at the very start of the mentalizing process, shown in this figure by simple lines from the sense organs converging in the forebrain. In this model of mental activity, all mental images are formed of combined data—there is no concept at this time of separate "olfactory memory" or "visual memory" and the like. And, since the data from all the senses are combined at the start of the perceptual process, all mental images are multisensory in nature.[7]

The *vermis*-gate in the *Margarita* image is the narrowing between the front and middle ventricles, between [*vis*] *imaginativa/fantasia* and [*vis*] *cogitativa/estimativa*. By the late fifteenth century, illustrators had positioned it here, but the consensus of medieval traditions placed it between *vis cogitativa* (cogitation ability), and *vis memorativa* (recollection ability).[8] The entire picture is labeled "De potentiis anime sensitiue," and the various activities (or "faculties"), paired up in their respective ventricles, are labeled with adjectives modifying the master noun, *potentia* (power, ability). Notice especially how the *Margarita* figure shows mental abilities as phases of a single complex mentalizing process, one continuous movement without barriers between its stages, from reception (*sensus communis*) to fully formed perception to recollectable notion. The *vermis* in this diagram, while shown constricted, is open to the flow of "animate spirits."

In contrast, the drawing on page 11 of LJS 429 (fig. 3) shows each mentalizing ability in a separately delineated location. These locations have also been colored differently to emphasize their separation. The *vermis* is drawn as a thick enclosed body, folded between perception, cognition, and memory, eventually opening not within but *outside* the physical brain altogether, to commune directly (note its ears and mouth) with the (immaterial) intellect, which—being immaterial—cannot be portrayed.

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7 They are also all cognized with desire and feeling (positive or not), the function of Aristotelian "estimativa"; see Mary Carruthers, *The Book of Memory,* 2nd ed. (Cambridge: Cambridge University Press, 2008), 60–68.

8 See note 4.

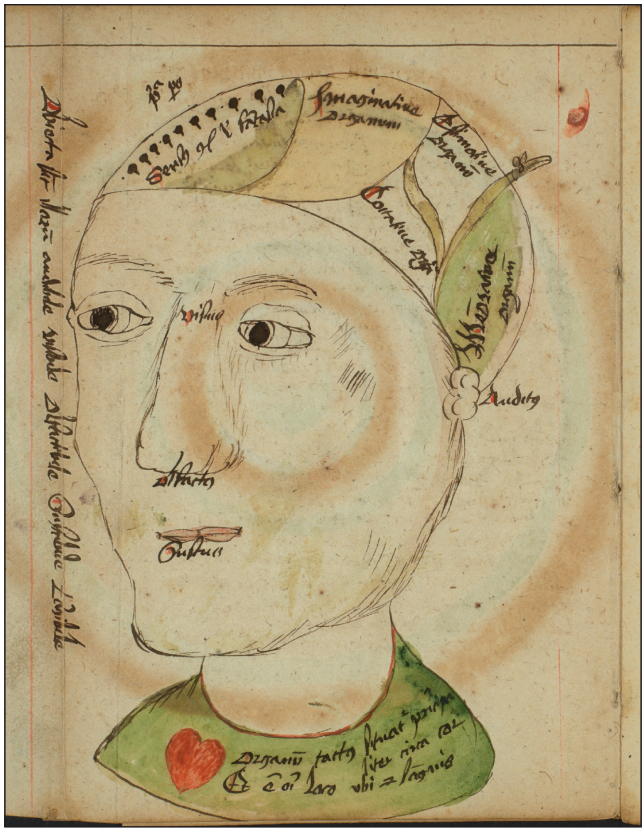

FIGURE 3. Philadelphia, University of Pennsylvania Libraries Schoenberg Collection, LJS 429, p. 11.

The labeling of these two images is even more telling. The *Margarita* illustration uses the conventional language of Scholastic works on the conceptualizing abilities of the sensory soul, labeling each with an adjective modifying *vis* or *potentia*. In figure 3, however, these are all called *organa* (organs): *imaginative organum, estimative organum, cogitative organum*, *memorative organum*. In the front of the brain is *sensus communis* (as *fantasia*, a noun), receiving all those single data points from external sense organs. I think the conceptual contrast between these two diagrams is startling. An "organ" (*organum* means "instrument") has to be a substantial thing, something *an agent uses* to act. This is confirmed by the fact that each activity is

expressed grammatically as though it were itself a substantive noun in the possessive singular—for example, *organum imaginativ[a]e* (using the standard medieval Latin spelling of *-e* for *-ae*)—and not the modifier of a noun, as in *vis imaginativa, potentia cogitativa*, and the like. In other words, in the picture on LJS 429, page 11, each power is personified as a particular agent using a different material instrument. These substantial agents, together with the material "organ" each requires, have also each been fully localized within the brain.[9] Very much on the analogy of the five external senses, each "faculty" has acquired its own particular enabling physical organ (as the nose is the instrument for smelling, for example) and its own anatomically distinctive "place."

The other head diagram (or "mind picture") in this manuscript is reproduced in figure 4. Entitled "Caput phisicus," it is a simpler schematic than the one shown in figure 3, but it is also of considerable interest. It shows the brain's mental faculties within a band drawn around the middle of the head, with the pair "sensus-ymaginacio" and the pair "fantasia-estimativa" pictured in intersecting circles.[10] Each pair is separated from the other functions, and no connection is indicated among them. At the back of the headband, "memoria" is in a circle by itself. The picture does not indicate any ventricular system within the brain, nor any communication channels

9 The text (but not the diagram) in C.U.L. MS Gg. 1.1, fols. 490–91, from which I quoted earlier, also speaks of "organs" of the "interior sense" in accord with its source, Avicenna's "Liber de anima," using *organum/a* for what many writers at the time (1330) still called the brain's "ventricles." Several historians, particularly those studying late medieval ideas about vision and perspective, have commented on Avicennan "dualism" as profoundly if gradually influencing post-Thomist ideas about the mind—perhaps these diagrams in LJS 429 show this tendency as well. See E. Ruth Harvey, *The Inward Wits: Psychological Theory in the Middle Ages and the Renaissance* (London: Warburg Institute, 1975); Tachau, *Vision and Certitude in the Age of Ockham*; Suzanne Conklin Akbari, *Seeing Through the Veil: Optical Theory and Medieval Allegory* (Toronto: University of Toronto Press, 2004).

10 The faculty of "estimation" was not judgment as we now understand it, but an environmentally reactive ability that all animals share, including humans—somewhat like modern "instinct" but more consciously aware since it encompasses feelings like fear, attraction, and neutrality, and also some choosing ability, such as where to build a nest. There was debate over its definition, but medieval philosophers gave *vis estimativa* a cognitive role, and all agreed that it is a mental ability shared variously by all animated creatures (i.e., those that move).

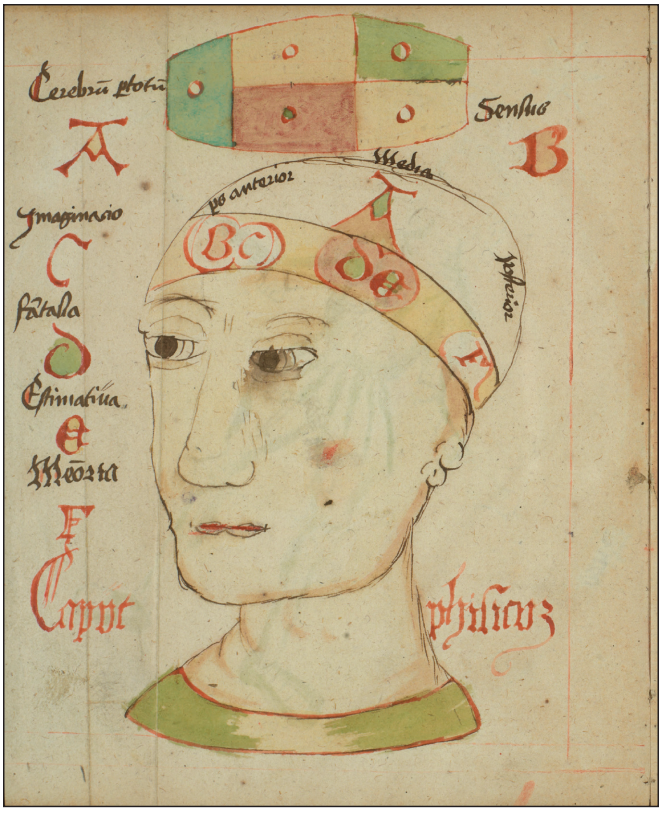

FIGURE 4. Philadelphia, University of Pennsylvania Libraries Schoenberg Collection, LJS 429, p. [i].

for "animate spirits." But most unusual of all, the drawing does not indicate any reasoning faculty within the head—no "cogitatio" or (as it was often also called, especially later in the Middle Ages) "cognitio." Nor does it show any *vermis*. Indeed, rational activity of any sort is not part of this diagram. It too seems a Cartesian forerunner in its strictly physical understanding of "caput phisicus" and "cerebrum per totum" (under the letter A in the diagram), the whole material brain.

The point of my comparisons is to show how, during the very late Middle Ages, the analysis of Mind as *anima sensitiva* and *mens* appears to shift from being action-based (analyzed in terms of abilities and powers) to being

substantive-based (analysed in terms of substantial agents using material tools). The primary meaning of the noun "faculty" itself shifted tellingly over this same period (both in Latin and in English), from being a synonym of "facility"—the name of an *ability* to act in a certain way as well as the *act* itself—to becoming the name of a substantial *thing,* the *agent* who performs the activity (and today even the physical building in which those agents perform). Just such a shift from activity to agent, it seems to me, is demonstrated by these images. It is apparent in their graphics and also from their labeling. This shift is gradual, uneven, and, in its beginnings, also quite local, but between the late thirteenth and the mid-seventeenth centuries it clearly had percolated through university circles in Europe, bringing into being the new, modern subject of psychology, and consigning *anima,* as "soul," to theology and pastoral care, then even later, via nineteenth-century Romanticism, to aesthetics.[11]

11 A great deal has been written about these subtle and complex changes: places to start include John Marenbon, *Later Medieval Philosophy* (London: Routledge, 1991), on developments in late medieval philosophy, and Marjorie Hope Nicolson, *Mountain Gloom and Mountain Glory: The Development of the Aesthetics of the Infinite* (Ithaca, NY: Cornell University Press, 1959), on the Romantics' aesthetic ideas. Contemporary psychology is changing yet again, in directions that reemphasize the role of feeling and emotion in cognition, and also the interconnectedness of brain activities, demonstrated by neuroimaging. Places to start include Antonio Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain* (New York: Putnam, 1994), on the role of feeling in thinking, and Nick Chater, *The Mind Is Flat: The Illusion of Mental Depth and the Improvised Mind* (London: Allen Lane [Penguin], 2018), on how contemporary brain imaging supports a different model of perceptual cognition (interestingly more like the medieval one) than that which has dominated twentieth-century behavioral psychology.

Appendix

(The scribe uses many standard abbreviations, which I have expanded with italics.)

Figure 3

The texts on LJS 429, p. 11:

The labels on the brain regions are, left to right: "Sens*us communis vel* fan*t*asia"; "Imaginative organum"; "Estimative organu*m*"; "Cogitative orga*num*"; "Me*m*orative organu*m*." (The final *–e* in these phrases is a common medieval alternate spelling of *–ae*, the genitive singular ending of first declension feminine nouns.) Above *sensus communis* is written "p*rim*a p*ar*s." The *vermis* is drawn in two sections; one part separates imagination and estimation from cogitation, and the other separates those faculties from memory—most atypically, its head is drawn outside the skull altogether. It does not appear to be an open channel between cerebral areas, but is more like a large worm with big ears (a visual pun for *vermis*, as was customary in such drawings).

The sense organs are labeled: "Audit*us*" (ear); "Visiv*us*" (eyes); "Olfact*us*" (nostrils); "Gustus" (mouth). At the neck, marked by a heart: "Organu*m* tactus situa*tur* pri*n*cipa / liter circa cor / Et e*st* o*m*ni loco vbi *est* sa*n*guis." Note that in Aristotelian-based accounts of the senses, the sense of touch—which is general throughout the body "in every place where there is blood"—was thought to be received first in or near the heart and thence transmitted to *sensus communis*.

Along the left side, on the fold-over: "Obiecta si*n*t illaru*m* audibile visibile olfactibile gustibile tangibile."

Figure 4

The texts on LJS 429, p. [i]:

Along the left side, left to right and top to bottom: "Cerebru*m* p*er*totu*m*" above "A"; "Sensus" above "B" (across right); "Imaginacio" above "C"; "Fa*n*tasia" above "D"; "Estimativa" above "E"; "Me*m*oria" above "F." The areas within the brain are labeled as follows: at the front "p*ar*s anterior," then "Media," then "posterior." The titulus at the bottom reads "Caput phisicus."

List Of Manuscripts Cited