

**A Feast of Senses:
Grinding Spices and Mixing “Consonances” in Jacques of Liège’s
Theoretical Works***

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Abstract: Sensory experiences conjured up in medieval and Renaissance theory treatises involve hearing, seeing, and often smelling. In the works examined in this paper, music theory, cooking, and pharmacy were drawn together by virtue of a commonality of methods. According to 14-th century music theorist Jacques of Liège, palatal sensations accumulating within a multi-course meal would lead to superior gastronomic satisfaction; and repetitious rubbing and mincing would increase the scent released by the *species aromatische*. The intellect should work in similar ways: repetition and accumulation of previously analyzed and learned concords must be applied towards a better understanding of those still to be learned. The joy derived from hearing sound mixtures is similar to the satisfaction an Epicurean cook experienced from retaining the few *aromata* deemed most delicate to the palate.

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*Take good spices, that is, ginger, cloves, cinnamon, and galingale,¹
and grind them in a mortar; then take a handful of sage and grind well in
the same mortar with the spices; then take eggs and hardboil them;
remove the yolk and grind with the sage; blend with wine, cider,
or malt vinegar; take the egg white and chop finely and add to the sage
mixture; put in pig’s trotters or (other) cold meat and then serve.*

MS London, British Library, Add. 32085, ff. 117v-119v,

“How One Should Make Food and Spiced Wine,” no. 3
Sage sauce²

* An earlier version of this article was presented at the Medieval and Renaissance Music Conference, Vienna, 7–11 August 2007.

¹ Lat.: *cyperus longus*; also called galangal.

² “Sagee;” see Constance B. Hieatt and Robin F. Jones, “Two Anglo-Norman Culinary Collections Edited from British Library Manuscripts Additional 32085 and Royal 12.C.xii,” *Speculum* 61 (October 1986): 859–882, at 863 (for the Anglo-Norman text) and 874 (for the modern English translation). The authors date the first manuscript in the late thirteenth century; the second belongs in the first four decades of the fourteenth century. They were both redacted in Anglo-Norman and thus printed in the article in question; a modern English translation is provided in *ibid.*, 873–879.

*For how could anyone be a good cook if his taste is not exquisitely delicate?
... Nor will anyone be able to practice music optimally if his ears are not cleaned.*
Francesco Salinas¹

*A good cook is half a physician, for the chief physic (the counsel
of a physician excepted) doth come from the kitchen.*
Andrew Borde²

In a succinct piece published in 1974 and suggestively titled “Unfamiliar Sources – Or Cooking With Music,”³ Madeau Stewart proposed that a whole body of sources that might include references to music and its making had remained unexplored. Stewart believed that, once identified and investigated, unexpected – and apparently improbable – suppliers of information such as conversation manuals, fashion and calligraphy books, and even cookbooks would yield surprising results.

In those examined by Stewart, references are mostly to musical instruments as objects of material culture; the cookbooks she brought to attention are not likely to touch upon the conceptual side of music. Yet conversely, examination of music theory treatises shows that medieval and Renaissance music theorists speak from time to time of mundane delights such as fine food and wine, and pungent flavors and smells. Sensory experiences conjured up in works of theory involve hearing, seeing, and sometimes smelling – as noted by Christopher Page in his study on Tinctoris’s use of olfactory comparisons.⁴

Some music theorists described the semitone as “the sweetness and condiment of all song;”⁵ some likened the musician (both theorist and composer) to a cook – the

¹ *Francisci Salinae Burgensis Abbatis Sancti Pancratii de Rocca Scalegna in regno Neapolitano, et in Academia Salamanticensi Musicae Professoris, de Musica libri Septem, in quibus eius doctrinae veritas tam quae ad Harmoniam, quam quae ad Rhythmum pertinet, iuxta sensus ac rationis iudicium ostenditur, et demonstratur* (Salamanca, 1577), *Liber quartus*, 227.

² Andrew Borde (or Boorde, 1490–1549, English physician, author of a *Dietary*, *Breviary*, and of the *Fyrst Boke of the Introduction of Knowledge*), quoted in Alan S. Weber, “*Queu du Roi, Roi des Queux*: Taillevent and the Profession of Medieval Cooking,” *Food and Eating in Medieval Europe*, ed. Martha Carlin and Joel T. Rosenthal (London: The Hambledon Press, 1998): 145–152, at 152.

³ *Early Music* 3 (July 1974): 157–159.

⁴ Christopher Page, “Reading and Reminiscence: Tinctoris on the Beauty of Music,” *Journal of the American Musicological Society* 49 (Spring 1996): 1–31, especially 17–21; Page (*ibid.*, 17) quotes a passage from Tinctoris’s *Liber de arte contrapuncti* and remarks that the theorist’s discussion of works by Ockeghem, Dunstable, Binchois, Dufay and other masters “invokes the beauty of their music in language that refers to the way their compositions *smell*.”

⁵ See the theoretical corpus known as *Ars nova*, in *Philippi de Vitriaco Ars nova*, ed. Gilbert Reaney, André Gilles, and Jean Maillard, *Corpus scriptorum de musica* 8 ([Rome]: American Institute of Musicology, 1964), 21: “Semitonium, ut dicit Bernardus, est dulcedo et condimentum totius cantus, et sine ipso cantus esset corrosus, transformatus et dilaceratus (The semitone, as St. Bernard says, is the sweetness and condiment of all song, and without it the song would be gnawing [harsh, corrosive], changed, and dismembered).” Unless otherwise noted, all translations are mine. An electronic version of this text is available in TML as VITARNO TEXT. For a nineteenth-century edition, see *Scriptorium de musica medii aevi nova series a Gerbertina altera*, 4 vols., ed. Edmond de Coussemaker (Paris: Durand, 1864–76; reprint ed., Hildesheim: Olms, 1963; henceforth CS), 3: 13–22; this statement appears on p. 18. The phrase was used again in Johannes Szydlow’s *Musica*, for which see Waclaw Gieburowski, *Die “Musica Magistri Szydlowite:” ein polnischer*

way sixteenth-century French writer Montaigne likened himself to one when penning his *Essays* as a book “concocted according to a clever recipe . . .,” with “the elements of style . . . measured out as in a sauce,” and with the tale itself “containing a variety of ingredients, like a stew.”¹ Others still regarded consonances and medicines as analogous, for in their opinion music theory and pharmacy shared a number of methods for measuring and mixing ingredients that produced a final, stable, and efficient compound.

The association of auditory, olfactory, and palatal sensations, an Aristotelian stance coming from the *De anima* and *De sensu et sensibilibus* (of which more, later) appears to be a common *locus* in fourteenth-century treatises, or in works by Renaissance theorists who were familiar with classical Greek.² Yet I propose that complex theoretical discourse on music was occasionally sprinkled with references to palatal and odoriferous stimuli as described in more mundane works: medieval cookbooks, herbals, antidotaries, gardening treatises, and household accounts classified spices, herbs, and medicines in “simple” and “compound,” and prescribed rubbing, grinding, shredding, and mixing as primary methods; this in turn can shed further light on the nature and “making” of intervals as sound mixtures.

1. The spices

The fourth book of Jacques of Liège’s *Speculum musicae*,³ possibly begun in Paris –

Choraltraktat des XV. Jahrhunderts und seine Stellung in der Choraltheorie des Mittelalters, mit Berücksichtigung der Choraltheorie und-Praxis des XV. Jahrh. in Polen, sowie der Nachtridentinischen Choralreform (Poznań: St. Adalbert, 1915), 9–72, at 28; the tract itself was published from MS Gniezno, Biblioteka Katedralna 200, which is described in *The Theory of Music from the Carolingian Era up to c. 1500 in the Czech Republic, Poland, Portugal, and Spain*, ed. Christian Meyer, Elzbieta Witkowska-Zaremba, and Karl-Werner Gumpel, Répertoire International des Sources Musicales [henceforth RISM] BIII/5 (Munich: Henle, 1997), 23; an electronic version of the text is available in TML as SZYDMUS TEXT. For the phrase “semitonium est dulcedo et condimentum totius cantus” see also Page, “Reading and Reminiscence,” 20.

¹ See Michel Jeanneret, *A Feast of Words: Banquets and Table Talk in the Renaissance*, transl. Jeremy Whiteley and Emma Hughes (Chicago: University of Chicago Press, 1991), 132; the passage (and Jeanneret’s book) were first brought to my attention by Susan F. Weiss’s “Medieval and Renaissance Wedding Banquets and Other Feasts,” *Food and Eating in Medieval Europe*, 159–174, at 164, n. 15.

² Page (“Reading and Reminiscence,” 18) notes that musicians from the generation of Tinctoris (but also some of his predecessors) “were following Aristotle’s thinking” when positing a direct relation between the senses of hearing and sight, and that associating hearing with smell was much less common.

³ The modern edition is Jacobus Leodiensis, *Speculum musicae, Liber quartus*, ed. Roger Bragard, Corpus scriptorum de musica 3/4 ([Rome]: American Institute of Musicology, 1965), 1–126. An electronic version of the text is available in TML as JACSP4 TEXT. The treatise has been preserved in three manuscripts, of which only one is complete: thus MS Paris, Bibliothèque Nationale, lat. 7207 has the complete text of the seven books; MS Paris, Bibliothèque Nationale, lat. 7207A includes books I–V; and MS Florence, Biblioteca Medicea-Laurenziana has a small number of chapters from books I, II, V, VI, and VII, respectively; see Jacobus Leodiensis, *Speculum musicae*, ed. Roger Bragard, 7 vols. (Rome: American Institute of Musicology, 1955–73), 1: v. A full description of these manuscripts is in *ibid.*, 1: ix–xix, as well as in Roger Bragard, “Le *Speculum musicae* du compilateur Jacques de Liège I,” *Musica disciplina* 7 (1953): 60–104, at 65–79. For catalogue descriptions, see *The Theory of Music from the Carolingian Era up to 1400: Italy*, ed.

where he had been a student¹ (and perhaps a professor as well)² – and concluded in his native town around 1330 is a monumental discussion of musical consonances. In the late-1990s Sarah Fuller published a study including, among other things, a discussion of the music theorist's views on the sense of hearing as expounded in this book; Fuller concluded that "this hearing is relatively divorced from actual phenomena... and is configured in close conformity to an established Boethian tradition that privileges the intellect over sensory perception."³ This small niche of relativity is, indeed, intriguing, and I propose to take it as the point of departure of my exploration of Jacques's take on the senses of taste and smell.

Jacques opened his fifty-chapter analysis with a prologue (titled Chapter 1) advocating the value of repeating information from previous books: such reiteration, he said, should not be seen as superfluous; rather, repetition increases the knowledge of the subject and improves the memorization of it. To further strengthen his argument, Jacques compared the repetitiveness of intellectual operations – more specifically, those he wanted applied to musical concepts – with the repetitiveness necessary in the recognition and comprehension of sensory signals. In doing so, he stressed the senses of taste and smell. His thesis was that the ability to differentiate among the tastes of different courses of the same meal enables one to gain a better knowledge of one flavour through full understanding of another. The multitude of distinct palatal sensations, he maintained, as well as the gradual accumulation of these within the context of a multi-course meal would lead to superior gastronomic satisfaction. "Who or what," inquired Jacques, "can prevent the intellect from working the same way?"

"The *species aromaticae* (aromatic spices)," the writer went on to say, "release greater scent the more they are minced (or rubbed)."⁴ In similar fashion, Jacques argued,

Pieter Fischer, RISM BIII/2 (Munich: Henle, 1968): 35–36 (for the Florentine manuscript); *The Theory of Music: Manuscripts from the Carolingian Era up to c. 1500: Addenda, Corrigenda*, ed. Christian Meyer, Giuliano di Bacco, Pia Ernstbrunner, Alexander Rausch, and Cesarino Ruini, RISM BIII/6 (Munich: Henle, 2003): 189–190 (for MS 7207) and 190 (for MS 7207A).

¹ See Oliver Strunk, *Source Readings in Music History*, 5 vols., rev. ed. Leo Treitler (New York: Norton, 1998), 2: 269. A few excerpts from Book VII (pp. 5–7 and 86–95, respectively, in Bragard's edition) were translated by Strunk and revised by James McKinnon; they are printed in *ibid.*, 2: 269–278; as they bear little relevance to the present discussion, they will not be examined in this article.

² For further discussion of Jacques' identity, see Roger Bragard, "Le *Speculum musicae* du compilateur Jacques de Liège II," *Musica disciplina* 8 (1954): 1–17, at 2–3; Frederick Hammond and Oliver B. Ellsworth, "Jacobus of Liège [Jacobus Leodiensis, ?Jacobus de Montibus, ?Jacobus de Oudenaerde, Jacques of Liège]," *Grove Music Online*, ed. L. Macy (accessed 22 October 2007), <<http://www.grovemusic.com>> and the bibliography there cited; and, very importantly, Karen Desmond, "New Light on Jacobus, Author of *Speculum musicae*," *Plainsong and Medieval Music* 9 (2000): 19–40. Desmond proposes that "Jacobus" might be equated with *Magister* Jacobus de Montibus, canon at the collegiate church of St. Paul in Liège; she adduces hitherto unknown evidence documenting this Jacobus as a recipient of payments in goods from the church as well as a land owner, and she hypothesizes that he died sometime between 1337 and 1343.

³ Sarah Fuller, "'Delectabatur in hoc auris': Some Fourteenth-Century Perspectives on Aural Perception," *Musical Quarterly* 82, Special Issue: "Music as Heard" (Autumn 1998): 466–481, especially 469–473.

⁴ See Jacobus Leodiensis, *Speculum musicae, Liber quartus*, ed. Bragard, 5: "Nonne de eisdem cibariis fercula distincta parantur gustui, ut quod sapit uno modo magis sapiat et altero, et sic

... consonances will be compared to each other with respect to their general similarities (or conformities) and specific differences; their height and depth (*intentio* and *remissio*); their order; their quality of being simple or composite; their being whole or part; they will be compared with respect to intervals, species, perfection and imperfection; and they will be compared with respect to some other proportions, as the [following] chapters show.¹

This prologue encapsulates the general medieval fascination with analogies. As such, it could in itself call for further exploration; even more interesting, however, is the specific analogy Jacques chose: I propose that the bringing together of consonances, food, and spices was not gratuitous, and that Jacques believed this particular combination was the most appropriate in the given context.

First, and before delving into gastronomy, one notices that, after Boethius,² Aristotle is by far the most frequently quoted authority throughout Book IV. Jacques's sources are the *De anima* and *De sensu et sensibilibus*, closely followed by the *Metaphysica*. Given the subject matter of the book itself, the availability, since the thirteenth century, of Latin translations of these and other works of Aristotle;³ and the exhibition by Jacques of unquestionable erudition, these are precisely the references one expects. In his *De anima* the Philosopher posited that "the species of flavor are, as in the case of color, simple, i.e. the two contraries, the sweet and the bitter, secondary, viz. the succulent and the saline; between these come the pungent, the harsh, the astringent, and

amplius satiatur appetitus? Quid prohibet quin sic fieri possit ex parte intellectus? Etiam species aromaticae, cum plus teruntur, plus redolent." Page ("Reading and Reminiscence," 21–22) indicates that Tinctoris was mostly concerned with the association of *redolent* and "sweet" – as in the "sweet" perceived through the sense of smell. Jacques of Liège's invocation of *species aromaticae*, on the other hand, seems to refer to a rather wide variety of both odors and flavors, for spices both smell and taste, either in their "unprepared" state or while being rubbed or pounded.

¹ Ibid.: "Comparabuntur autem hic ad invicem consonantiae quantum ad convenientias ipsarum generales et differentias, quantum ad intensionem et remissionem, quantum ad ordinem, quantum ad simplicitatem et compositionem, quantum ad totum et partem, quantum ad intervalla, quantum ad species, quantum ad perfectionem et imperfectionem, et quantum ad aliquas alias proportiones prout occurrent et ostendent capitula."

² From Boethius's *De musica* Jacques quotes and discusses only Books I and II; see Bragard, "Le *Speculum musicae* II," 14. For a complete list of texts that have been identified as Jacques's sources, see id., "Le *Speculum musicae* I," 97; and id., "Le *Speculum musicae* II," 2–3.

³ *De anima* and *De sensu* were part of the curriculum in natural philosophy, physics, and physiology; *Metaphysica* was studied together with the pseudo-Aristotelian *De causis*; for details, see, among others, Hastings Rashdall, *The Universities of Europe in the Middle Ages*, new ed. by F. M. Powicke and A. B. Emden, 3 vols. (London: Oxford University Press, 1936; reprint ed., London, 1951), 1: 356–363, and especially n. 2 to pp. 360–362; Cornelius O'Boyle, *The Art of Medicine: Medical Teaching at the University of Paris, 1250–1400* (Leiden: Brill, 1998), especially 5–7; William A. Hinnebusch, O.P., *The History of the Dominican Order: Intellectual and Cultural Life to 1500*, 2 vols. (New York: Alba House, 1973), 2: 23–28; *Chartularium universitatis Parisiensis*, I, 277–279, in Lynn Thorndike, *University Records and Life in the Middle Ages* (New York: Columbia University Press, 1949), 64–65.

the acid; these pretty well exhaust the varieties of flavor.”¹ The Stagirite viewed sweet and bitter as the most fundamental “simples” belonging in the reign of flavor, but further asserted the supremacy of the sweet within the eight species of flavor by noting, in *De sensu*, that “nourishment is effected by the sweet.”² In fact, Hippocrates had already asserted this much by including the category of sweet among nutriment.³

To return to music theory: what is, therefore, a consonance described from this perspective? First, it must be pointed out that “consonance” is Jacques’s word for “interval” in a most general sense;⁴ consequently, I shall use “interval” for Jacques’s “consonance,” and “concord” for the modern “consonance.”⁵ Intervals, whether successively or simultaneously produced, belong in one general class, where they share one or more commonalities: in effect, Jacques takes them to be a *genus proximum* separated from other *genera* through possession of a set of common attributes that makes them distinct and identifiable as what they are. This is Aristotelian in both spirit and letter. The prime attribute of intervals, however, consists in the ability of any of them, as sound mixtures, to be expressed in a numerical ratio;⁶ to this, another factor should be adjoined: all intervals belong in the realm of sensory perception – specifically, the sense of hearing (and, at this point in Jacques’s discourse, not the sense of sight, smell, taste, or touch).⁷ This exclusive definition, though, should be taken with a grain of salt, for over the subsequent fifty chapters the theorist will cast upon it a variety of interpretive shades.

¹ Translation from the Greek; see Aristotle, *De anima* (“On the Soul”) 422b, transl. J. A. Smith, *The Complete Works of Aristotle: The Revised Oxford Translation*, ed. Jonathan Barnes, 2 vols., Bollingen Series 71 (Princeton: Princeton University Press, 1984), 2: 641–692, at 672.

² Translation from the Greek; see Aristotle, *De sensu et sensibilibus* (“Sense and sensibilia”) 442a; transl. J. I. Beare, *The Complete Works of Aristotle: The Revised Oxford Translation*, 2: 693–713, at 701.

³ Hippocrates, *Nutrimet* 27; for an English translation from the Greek see Hippocrates, “Nutrimet,” *Hippocrates: The Complete Works*, 3 vols., transl. W. H. S. Jones, reprint ed., The Loeb Classical Library (Cambridge, Mass.: Harvard University Press, 1962), 1: 333–361, at 353; the original Greek is on p. 352.

⁴ This view is independently expressed in Fuller, “Delectabatur,” 480, n. 23.

⁵ For a magisterial analysis of Jacques’s “consonance” division and hierarchy, as well as the criteria applied by the theorist in his manifold classification of “consonances,” “concords,” and “discords,” see Frank Hentschel, *Sinnlichkeit und Vernunft in der Mittelalterlichen Musiktheorie: Strategien der Konsonanzwertung und der Gegenstand der musica sonora um 1300* (Stuttgart: Franz Steiner, 2000), 44–65. I would like to extend my thanks to the author for kindly bringing this work to my attention and sharing his erudition with me.

⁶ See Jacobus Leodiensis, *Speculum musice, Liber quartus*, ed. Bragard, 6: “Item in hoc omnes conveniunt consonantiae quia sonorum cuiuslibet mixtio ad aliquam certam in numeris reducibilis est proportionem.” See also Hentschel’s discussion of the Aristotelian foundation of this and all sections on numerical ratios, *Sinnlichkeit und Vernunft*, 45–46.

⁷ See Jacobus Leodiensis, *Speculum musice, Liber quartus*, ed. Bragard, 6: “Et ideo, cum ad consonantiam requiratur vox vel sonus non solum unus sed plures et ipsorum mixtio et correspondens in numeris proportio, generaliter in his consonantiae conveniunt et in hoc etiam quod determinatum respiciunt sensum, scilicet auditum;” and further (*ibid.*, 7): “Item in hoc omnes conveniunt consonantiae quia sic auditum respiciunt, quod non alium sensum. Sunt enim obiectum non visus, non olfactus, non gustus, non tactus, sed, quantum ad sensus exteriores, solius auditus.”

Yet not all intervals are pleasing to the ear, the writer says; some are more so, some much less, and some only in a mediocre degree: music is made with “consonances” both pleasing and unpleasing (to the sense of hearing).¹ Every degree in between two extremes (for the sound of some “consonances” is “suave and sweet,” [these are the perfect concords, see below] while that of others is “rough” [perfect discords]²) is, indeed, a “consonance,” provided that it can be expressed in a clear ratio or it involves some proportion. Thus the “consonances” of the Ancients become Jacques’s “concords,” and ancient “dissonances” become “discords,” with each category further subdivided into three classes whose arrangement is continuous from perfect (or pure) to imperfect and median concords, to median, imperfect, and perfect discords;³ these, one could argue, are the six degrees of sonorous gratification corresponding to Aristotle’s eight species of flavour: the latter, too, are gratifying to the sense of taste in a range of intensities.

According to Aristotle, numerical ratios play an important role as far as savours and flavours are concerned; from the perspective of the present topic, such a statement strengthens the alliance of musical intervals and palatable and odoriferous mixtures; by extension, the alliance of intervals and colours is strengthened as well, for the Philosopher asserts:

As the intermediate colors arise from the mixture of white and black, so the intermediate savors arise from sweet and bitter; and these savors, too, severally involve either a definite ratio or else an indefinite relation of degree between their components, either having certain numbers at the basis of their mixture and motion, or else being mixed in proportions not arithmetically expressible. **The flavors which give pleasure in their combination are those which have their components joined in a definite ratio.** [emphasis mine]⁴

* * *

Jacques bases his definition of “simple” and “composite” not on Aristotle, but on Euclid and on one of the period’s widely applauded etymological encyclopaedias: the

¹ Ibid., 6: “Omnis igitur consonantia in hoc convenit cum alia ut ad minus suam ad consistentiam duos distinctos requirat sonos, simul vel successive prolatos, miscibiles ad invicem vel mixtos, sive mixtio illa suavis sit et placeat auditui, sive non;” and further (ibid., 16): “Unde fit, ut generaliter sumendo consonantias, quaedam auditui placeant, quaedam ipsum offendant, et, inter has et illas, quaedam plus, quaedam minus, quaedam mediocriter.”

² Ibid., 12: “Item, quarundam consonantiarum voces sunt suaves et dulces et aliquarum rudes, et harum et illarum quaedam plus, quaedam minus.”

³ Ibid., 93–105. Jacques himself tells us that when Boethius referred to “dissonance” he meant “discord” (ibid., 102): “Dissonantia, inquit, est duorum sonorum sibi permixtorum ad aurem veniens aspera atque iniucunda percussio (Dissonance, he says, is a stroke of two reciprocally mixed sounds, coming to the ear in a harsh and infelicitous way);” by the same token, Boethius’s “consonance” can be equated with Jacques’s “concord” (ibid., 94): “Intendit enim Boethius solas illas describere consonantias quarum concordant voces (Boethius intends to describe only those consonances whose sounds are in agreement [form a concord] with each other).”

⁴ *De sensu et sensibilibus* 442a, transl. Beare, 702.

Derivationes of Uguccione da Pisa (Ugutio Pisanus), Bishop of Ferrara (d. 1210)¹ – a work that, besides being a gigantic accumulation of Classical and medieval knowledge, was also Dante’s dictionary.² In addition to such illustrious philological parentage, Jacques’s phraseology evokes more down-to-earth formulas employed in contemporary botanical and pharmaceutical lore: both herbs (taken as herbs-and-spices) and medicines were classified as either “simple” (individual plants described and illustrated in herbals and pharmaceutical books) or “compound.” As described by Matthaeus Platearius (d. 1161) in his enormously popular *De simplicibus medicina* (or *Circa instans*) – a *summa* of Salernitan botanical-medical knowledge translated into French around 1300 as *Le livre des simples medicines*,

A simple medicine is that which remains in the state it is produced by nature, like the clove, the nutmeg, or other, similar ones; or one that, although changed by virtue of some artificial preparation, is not mixed with another medicine, like tamarinds which, once the skin is removed, are artificially crushed ...³

¹ Also identified in Jacobus Leodiensis, *Speculum musicae, Liber quartus*, ed. Bragard, 23; and in Bragard, “Le *Speculum musicae* II,” 2–3. For a facsimile reproduction of the original Latin manuscript of 1236, now MS Munich, Bayerische Staatsbibliothek Lat. 14056, see Uguccione da Pisa, *Derivationes*, with a presentation by Giovanni Nencioni (Florence: Accademia della Crusca, 2000). The first critical edition of the *Derivationes* – a work to whose writing Uguccione dedicated four years of his life (1197–1201, while at the Abbey of Nonantula) – is in Uguccione da Pisa, *Derivationes*, 2 vols., ed. Enzo Cecchini and Guido Arbizzoni, Edizione nazionale dei testi mediolatini 11/6 (Florence: SISMEL edizioni del Galluzzo, 2004). Apart from the original writing, the work borrows heavily from Osbern of Gloucester, Isidore, Nonius, and Gellius. Uguccione, teacher of Pope Innocent III and noted jurist (he is the author of the celebrated *Summa in Decretum Gratiani*) had “a passion for ‘etymologizing’ and ‘deriving’ that far outstrips in its fantasies all his creditors;” see Jean Holzworth, “Hugutio’s *Derivationes* and Arnulfus’ Commentary on Ovid’s *Fasti*,” *Transactions and Proceedings of the American Philological Association* 73 (1942): 259–276, at 259.

² See Jacobus Leodiensis, *Speculum musicae, Liber quartus*, ed. Bragard, 23: “Simplex dicitur uno modo quod est indivisibile, partes carens, quomodo punctus simplex dicitur, quia punctus est, cuius pars non est, secundum Euclidem ... Et distinguitur, secundum Hugutionem, simplex a simplo, quia simplex caret parte, simplum vero partes habet, non qualescumque, sed eiusdem generis ... (Simple is said about something that is indivisible, for it lacks parts – like the dot is said to be simple for it has no parts, according to Euclid ... And, according to Hugutio, *simplex* should be distinguished from *simplum*, for *simplex* lacks parts, yet *simplum* has parts, not just any parts, but of the same kind.)”

³ The edition used in this article is Matthaeus Platearius, “Liber de simplicibus medicina,” in *Practica Io. Serapionis dicta breuiarium. Liber Serapionis de simplicibus medicina. Liber de simplicibus medicina, dictus circa instans. Practica Platearii* (Impressum Venetijs; Mandato [et] expensis nobilis viri domini Octavianus Scoti, per Bonetum Locatellum, 17 kal. Januarias 1497), ff. 186ra–211vb; this definition appears on f. 186ra: “... Simplex autem medicina est: que talis est qualis a natura producitur: vt gariofilus: nux muscata et similia: vel que licet aliquo sit mutata artificio: non est alii medicine commixta: vt tamarindi: que abiectis corticibus artificio conquassantur ...”. For the French translation, see *Livre des simples medicines: Codex Bruxellensis IV.1024, A Fifteenth-Century French Herbal*, with introduction by Carmélia Opsomer, transl. Enid Roberts and William T. Stearn, 2 vols. (Antwerp: De Schutter, 1984); this version included additional sources, such as the *Tacuinum sanitatis*, the pseudo-Aristotelian *Secreta secretorum*, and medical dicta by prominent Italian physician Gentile da Foglino (d. 1348). Another French text, from a

According to Jacques, however, intervals are never simple, strictly speaking, for any interval results from the compounding of two pitches apt to trigger aesthetically positive or negative judgments.¹ One might say that intervals are mixtures of “simples,” just like compound medicines, such as unguents, waters, and mixtures are. The latter involved more than one ingredient, and were used in instances when simples were either not efficient enough, or, on the contrary, had violent effects that needed to be moderated through blending; lastly, compounds possessed dissimilar qualities coming from dissimilar simples – which in turn could address dissimilar symptoms manifesting simultaneously, or cure different parts of the body affected at the same time by different ailments.

The *Compendium de musica*, another theoretical work of the fourteenth century attributed to Jacques of Liège, touches upon the sense of hearing “rejoicing” in sound mixtures, or compounds, and likens this to the way an epicurean cook retained – from a variety of *aromata*, and by dismissing some of the flavours – just a few that he deemed most delicate to the palate.²

Again, the *aromata* here are taken in a collective sense, meaning a gathering of herbs or spices denoting pleasant flavour and implying pleasant odour. The focus is not on the pharmaceutical or medical connotations of the *species aromaticae*, but on the culinary ones; within the latter taste reigns supreme, with smell a close second. The palette of associated senses widens, as sight, too, will experience satisfaction through perception of good mixtures of simple elements: for, the text continues, “undoubtedly, the ear delights in mixtures of sounds just like the eye delights in mixtures of colours and the palate in mixtures of flavours.”³ We are about to luxuriate in a sensory feast at this point – and we are reminded, too, of yet another Hippocratic adage: “Sweetness, in varying degrees, can appeal to the sense of sight, being aroused by colors and other

manuscript in the Bibliothèque Nationale in Paris, is printed in *Le livre des simples medicines, d'après le manuscrit français 12322 de la Bibliothèque Nationale de Paris*, transl. and adapted by Ghislaine Malandin, with a codicological study by François Avril, and an historical, botanical, and medical commentary by Pierre Leutaghi (Paris: Éditions Ozalid et textes cardinaux, 1986).

¹ Jacobus Leodiensis, *Speculum musice, Liber quartus*, ed. Bragard, 24: “Quantum autem ad primum modum, si stricte sumatur nulla consonantia simplex est cum quaelibet duas requirat voces simul mixtas dura vel suavi, secundum sensus iudicium, mixtione...” (As for the first mode [of simplicity], if strictly taken no interval is *simplex*, since a consonance requires that any two sounds be mixed together, whether reason judges this mixture to be harsh or suave); and further (ibid., 26): “Potest autem ex dictis inferri nullam consonantiam simplicem esse, quantum est ex parte materiae, cum quaelibet duas requirat voces...” (From the aforesaid things one can infer, however, that no consonance is *simplex* insofar as its material aspect – since a consonance requires any two sounds...).

² Jacobus Leodiensis, *Jacobi Leodiensis Tractatus de consonantiis musicalibus, Tractatus de intonatione tonorum, Compendium de musica*, ed. Joseph Smits van Waesberghe, Eddie Vetter, and Erik Visser, *Divitiae musicae artis A/IXa* (Buren: Knuf, 1988), 88–122, at 121: “Sed et Epicureus cocus aromatum varietate et, ut ita dicam, quadam alienatione saporum quamplurimos gutturi retinuit dulcissimos.” An electronic version of the text is available in TML as JACCDM TEXT. For a catalogue description, see *The Theory of Music from the Carolingian Era up to 1400*, ed. Joseph Smits van Waesberghe, Peter Fischer, and Christian Maas, RISM BIII/1 (Munich: Henle, 1961): 58–62.

³ Ibid.: “Itaque nimirum sonorum mixtures auris gaudet, ut oculos colorum vel guttur saporum...”

beautiful combinations.”¹ In fact, in his extensive discussion of sense and reason in medieval music theory Frank Hentschel has observed, with respect to the “epicurean” passage above, that it bestows the highest significance upon pure sensuality.²

Philosophically, of course, the association of sound, flavour or savour, and odour in this passage is in line with yet another Aristotelian dictum – to wit, that concord of several units is better or more effectual than each of these units taken singly: “... the objects of sense are pleasant when e.g. acid or sweet or salt, being pure and unmixed, are brought into the proper ratio; then they are pleasant: and in general what is blended – a concord – is more pleasant than the sharp or the flat alone.”³ Such general alliance and cross-correspondence of senses is once more emphasized in Book Four of the *Speculum musice*, where Jacques writes: “The sense of hearing, with respect to sounds, is like the sense of sight with respect to colours, the sense of smell with respect to odours, the sense of taste with respect to flavours, and the sense of touch with respect to primary qualities.”⁴

Furthermore, a remarkable metaphor had already been used by the author or authors of the thirteenth-century *Summa musice* (long attributed to Johannes de Muris and, as such, dated to the earlier part of the next century) to associate aural perception and taste. Here the writers included a line said in reference to a wife in the Sixth Satire of Juvenal⁵ and subsequently widely used in medieval Christian literature: “Thus when the song is neglected it shall be harsh, inept//It is perceived by the ear as having more aloe than honey.”⁶ Placing aloe and honey in such close position was originally meant to denote the sharp contrast between their respective flavours: while aloe is bitter, honey is sweet; when used by the authors of the *Summa musice*, the phrase becomes, in fact: while cultured sound is palatable and nourishing in the highest degree (for “sweetness” is, in Aristotelian terms, the highest ranked flavour and the source of nourishment), uncultivated sound-emission is not.

At the core of this metaphor the sense of smell is involved on equal terms with that of taste: the juice of a certain type of aloe (*caballinum*) was known to be not only

¹ Hippocrates, *Nutrimet* 27; see Hippocrates, “Nutriment,” transl. Jones, 352.

² See Hentschel, *Sinnlichkeit und Vernunft*, 187.

³ Aristotle, *De anima*, 426a–426b, transl. Smith, 678.

⁴ Jacobus Leodiensis, *Speculum musice, Liber quartus*, ed. Bragard, 15: “Proportionaliter enim sic auditus ad sonos se habet, ut visus ad colores, olfactus ad odores, gustus ad sapes, tactus ad qualitates primas.” Page (“Reading and Reminiscence,” 20) refers to this passage in a context including a similar remark by Englebert of Admont.

⁵ For the identification of this quotation, see M. B. Ogle, “Further Notes on Classic Literary Tradition,” *Modern Language Notes* 29 (December 1914): 243–247.

⁶ “Nature viciū nemo ridere tenetur.//Sic dum negligitur cantus sit durus, ineptus;//Plus aloes quam mellis habens est aure receptus;” see *The Summa Musice: A Thirteenth-Century Manual for Singers*, ed. Christopher Page, Cambridge Musical Texts and Monographs (Cambridge: Cambridge University Press, 1991), 139–211, at 194. An electronic version of the text is available in TML as PEPESUM TEXT. The original is in Juvenal, *Satyræ* 6. 181: “huius enim rari summique voluptas/nulla boni, quotiens animo corrupta superbo//plus aloes quam mellis habet;” for a modern edition and English translation, see *Juvenal and Persius*, transl. G. G. Ramsay, rev. and reprint ed., Loeb Classical Library (Cambridge, Mass.: Harvard University Press, 1965), 96–97: “These high and transcendent qualities lose all their charm when spoilt by a pride that savours more of aloes than of honey.”

bitter-tasting, but also foul-smelling – an attribute duly recorded in all classical and medieval herbals and pharmaceutical formularies – for instance, in the late-thirteenth-century *Herbal* of Rufinus.¹ Thus long before Tinctoris's time, when late thirteenth-century writers chose to manipulate music – or particular aspects of it – as part of a rhetorical vocabulary, they performed a “movement across boundaries of sense, or synaesthesia.”² in this case, they spoke of sound coming to the ear not only as an aural entity, but as an already metamorphosed compound involving additional palatal and olfactory stimuli. The high degree of similitude of the latter two had, in fact, been alleged by Aristotle, who in *De sensu et sensibilibus* remarked that “odor and savor ... are... almost the same physical affection ...”³

Yet between the two senses that perceive odour and flavour, respectively, the latter (i.e., taste, which in turn is simply touch transformed) comes first, for

... savors, as a class, display their nature more clearly to us than odors, the cause of which is that the olfactory sense of man is inferior in acuteness to that of the animals, and is, when compared with our other sense, the least perfect of all. Man's sense of touch, on the contrary, excels that of all other animals in fitness, and taste is a modification of touch.⁴

What kinds of spices did Jacques have in mind when he wrote his passages on *aromata*? According to Dioscorides's *De materia medica* – a text composed ca. 47 A.D., translated into Latin (perhaps in incomplete versions) by the third century, widely consulted by medieval physicians, herbalists, and pharmacists alike, and frequently quoted in works of medicine and pharmacy of the period⁵ – *aromata* were herbs originally from India or the Arab lands or “some other part of the world.” The main quality of these exotic products resided in their capacity to give out fragrant odour transmitted through the air. Dioscorides does not appear to have considered the flavour of *aromata*; his description as quoted in the *Herbal* of Rufinus was concerned with the role of these incense-generating bodies in the context of religious rituals of the ancient world – in other words, his focus was on olfactory rather than palatal sensation.⁶

¹ See *The Herbal of Rufinus*, ed. Lynn Thorndike and Francis S. Benjamin (Chicago: University of Chicago Press, 1945), 15: “*Dyascorides*: Aloes herba est amarissimi suci ... *Circa instans*: Aloes ex suco herbe fit cuius tria sunt genera: cicotrinum, epaticum et caballinum ... Caballinum autem nigrum obscurum est et fetulentam habet substantiam; amarissimum et orribilem pretendit saporem vel odorem.” Rufinus's sources (*ibid.*, xvi, xxi, and xxvii-xxxix) include Dioscorides's *Herbal*, Mattheus Platearius's *Circa instans*, Macer (identified by Thorndike as Odo of Meung or “some other post-Carolingian poet”), Alexander “the philosopher” (of unknown identity, “Alexander” might have been the author of a commentary on the *Antidotarium* of Nicholaus), the masters of Salerno, Isaac, *Synonyms*, Rufus, and Galen.

² As described in Page, “Reading and Reminiscence,” 21.

³ *De sensu et sensibilibus* 440b, transl. Beare, 700.

⁴ *Ibid.*

⁵ For the transmission of this text to the Latin West, as well as for extant illustrated copies of it and its derivative texts, see Minta Collins, *Medieval Herbals: The Illustrative Traditions* ([London and Toronto]: The British Library and University of Toronto Press, 2000), 148–238.

⁶ See *The Herbal of Rufinus*, ed. Thorndike, 44. “*Aromata*: Dioscorides: sunt que flagrant odore que India vel Arabia mittit vel alie regiones. Nomen autem aromatum traxisse videtur, sive quod

Classical botany and pharmacy aside, the most complete repertory of aromatic spices used in culinary masterpieces by Jacques of Liège's contemporaries is found in the *Viandier* of Guillaume Taillevent (ca. 1310–95), master cook to the Valois kings. Written in the first half of the fourteenth century¹ and most likely incorporating the work of at least one unknown French predecessor,² this cookbook is highly relevant for the *haute cuisine* of the period under examination. The oldest preserved manuscript of the text includes the following list of *fines especes* (or *bones especes*): “ginger, cinnamon, cloves, grain of Paradise, long pepper, mace, powdered spices, cinnamon flour [?], saffron, galingale, and nutmeg.”³ An early fifteenth-century version of the text adds “laurel leaves, lores [unidentified], cumin, sugar, almonds, garlic, onions, chives, and shallots” to the preceding enumeration.⁴

Furthermore, gastronomy, medicine, and pharmacy in the Middle Ages were perceived as close allies: the widely read *Epidemics* of Hippocrates included the following recommendation: “As to diseases, make a habit of two things – to help, or at least to do no harm;”⁵ Galen’s translation of it as “Primum non nocere” continued with “let food be your medicine and medicine be your food,” and this was a precept well-known to the medical profession. In the early fourteenth century Henri de Mondeville, physician to Philip the Fair of France stated as a matter of fact that bringing patients to a state of equilibrium (with respect to balancing out the four humours of the body) was more easily achieved through administration of appropriate diet than through administration of medicines.⁶

aeris imposita divinis invocationibus apta videntur, seu quod ferre aeri inseri ac misceri probantur, nam quod est odor nisi aer contractus?”

¹ See Guillaume Taillevent, *Le Viandier de Guillaume Tirel dit Taillevent*, ed. Jérôme Pichon and Georges Vicaire [1892], rev. ed. Sylvie Martinet (Geneva: Slatkine Reprints, 1967). For further discussion of Taillevent’s activities, see Weber, “*Queu du Roi, Roi des Queux*.”

² See Taillevent, *Le Viandier*, 229; and *ibid.*, 231–252 for a facsimile reproduction of the late-thirteenth-century manuscript containing the text of the cookbook in question.

³ “Gingembre, canelle, giroffe, graine de paradis, poivre lonc, macis, especes en poudre, fleur de canelle, saffran, garingal, noys mugaites;” this list appears before the *explicit* of MS Paris, Bibliothèque Nationale, fonds français 19791, and is printed in Taillevent, *Le Viandier*, 3–34. For the grain of paradise and its mention in Chaucer’s *Canterbury Tales*, see Paul E. Beichner, “The Grain of Paradise,” *Speculum* 36 (April 1961) : 302–307, at 302–303. For cinammon varieties, their geographic distribution, as well as their growth, harvesting, transportation, and commercial uses, see W. Desborough Cooley, “On the Regio Cinnamomifera of the Ancients,” *Journal of the Royal Geographical Society of London* 19 (1849) : 166–191.

⁴ “Feuilles de laurier, lores, commin, sucre, amandes, aulx, ongnons, ciboules, escalognes;” the list belongs in MS Rome, Biblioteca Apostolica Vaticana, Christine of Sweden fund 776 (*olim* 233 and 2159), and is printed in Taillevent, *Le Viandier*, 73–136.

⁵ Hippocrates, *Epidimion* 1.11.11–12; for an English translation, see Hippocrates, “Epidemics I and III,” in *Hippocrates: The Complete Works*, 1: 139–288, at 165.

⁶ See Marie-Christine Pouchelle, “Une parole médicale prise dans l’imaginaire: alimentation et digestion chez un maître chirurgien du XIV^e siècle,” *Pratiques et discours alimentaires à la renaissance: Actes du Colloque de Tours 1979*, ed. Jean-Claude Margolin and Robert Sauzet (Paris : G.-P. Maisonneuve et Larose, 1982), quoted in Weber, “*Queu du Roi, Roi des Queux*,” n. 24. For Mondeville and his *Cyurgia*, written ca. 1306–1320, see Robert S. Gottfried, *Doctors and Medicine in Medieval England, 1340–1530* (Princeton, NJ: Princeton University Press, 1986), 218–219.

In a joint gastronomic and medico-pharmaceutical context the *species aromaticae* in combination with herbs and other natural products were used in treating various physical ailments. In classical times Pliny the Elder had noted in his *Naturalis historia* that “the true nature of each plant can only be fully understood by studying its medical effect;”¹ he specified that anise and dill were “for the kitchen and for doctors,” that “sacopenium, employed for adulterating laserwort, was also grown as a garden plant, but only for medicinal purposes,”² and praised the curative virtues of mustard – a ubiquitous condiment.³

In the *Herbal* of Rufinus pulverized *sal gemma*, common salt, and *species aromaticae* sprinkled on some dish as a *mixtum compositum* were recommended in the treatment of arthritis sufferers;⁴ a cataplasm (poultice) made of equal parts of powdered *bistorta* (a herb with roots similar to galangal or galingale) and *species aromaticae* aided in childbirth.⁵ Furthermore, Rufinus had unsuccessfully experimented on himself the effect of one of these compound medicines involving crushed leaves of laurel – yet another ingredient commonly listed among the spices of medieval cooking recipes.⁶

That the same spices were regarded as both medical and culinary articles was a theory further disseminated through the *Circa instans* of Matthaeus Platearius, a work that enjoyed formidable popularity throughout the Middle Ages in both its Latin and French versions: modern scholarship has noted that “its manuscripts are legion,” and that “there were few medieval libraries which did not possess at least one copy.”⁷ The French version, *Le Livre des simples medicines* recommends that boiled cabbage seasoned with coriander, pepper, cumin, and garlic be administered to the sick.⁸

Finally, modern historians of pharmacy have stressed that spices such as “galangal, grains of paradise, and saffron [all of which abound in medieval cooking recipes – the latter, used mostly for colouring] were used in medicine either for their

¹ The edition used in this article is Pliny, *Natural History. With an English Translation in Ten Volumes*, 5: *Libri XVII–XIX*, transl. H. Rackham, The Loeb Classical Library (Cambridge, Mass.: Harvard University Press, 1961); this reference is to *Naturalis historia* 19.52 (for the Latin text, see p. 540: “... verum autem cuiusque natura non nisi medico effectu pernosci potest;” for Rackham’s translation, see p. 541).

² *Naturalis historia* 19.52 (for the Latin text, see p. 526: “... anesum et anetum culinis et medicis nascuntur, sacopenium, quo laser adulteratur, et ipsum in hortis quidem, sed medicinae tantum;” for Rackham’s translation, see p. 527).

³ *Ibid.*, 19.54 (for the Latin text, see p. 528: “... et acerrimum sapore igneique effectus ac saluberimum corpori sinapi;” for Rackham’s translation, see p. 529: “... and mustard, which with its pungent taste and fiery effect is extremely beneficial for the health”).

⁴ See *The Herbal of Rufinus*, ed. Thorndike, 281: “[Alexander]: *Sal gemma* calidus est et siccum ... Pulvis salis gemme et salis communis et aromaticarum specierum super cibos aspersus multum conferit arteticis, id est, qui patiuntur in articulis.”

⁵ *Ibid.*, 59: “*Bistorta*: Ad conceptum adiuvandum fiat emplastrum ex pulvere bistorte in quantitate libris et specierum aromaticarum in eadem quantitate.”

⁶ *Ibid.*, 17: “Ego Rufinus pistavi septem folia laureole cum mastice et vino et expressi sucum per petiam et bibi illud (I, Rufinus have crushed seven leaves of laurel with mastix and wine; and I squeezed the juice through a cloth and drank it);” see also the editor’s discussion of this particular occurrence (*ibid.*, xxxv).

⁷ See *Livre des simples medecines; Codex Bruxellensis IV.1024*, 1: 11 and 13.

⁸ *Ibid.*, 1: 124.

supposed therapeutic effect or to mask an ingredient too bitter for the ordinary palate.”¹ In addition, spices were effective in the preservation of other simples: for instance, after having been marinated in sweet wine, *passuli* (raisins) were sprinkled with ground cumin and other *species aromaticae* and bound in ficus leaves; in this manner they could be kept for two years.²

All cookbooks of the period make it clear that spices and herbs were crucial in late medieval gastronomy: in the late thirteenth-century Anglo-Norman cookbook that is now MS British Library, Additional 32085, all recipes but one call for spices. Similar examples are found in the early fourteenth-century cookbook preserved in MS British Library, Royal 12.C.xii. In fact, the use (some modern historians call it the “riot”³) of spices and herbs was so widespread that the writer of the first book included a recipe expressly describing how to cook *without* them: he or she did so by penning instructions on “Making broth without herbs.”⁴

Most of the spices used in medieval cookery and pharmacy were imported from distant lands [see Figure 1, Figure 2], and were very expensive; they were accordingly described in medieval travel accounts.⁵ Among modern historians, Alan S. Weber has shown that the keeping of spices in fourteenth-century French royal and aristocratic households was entrusted to the master cook, and their transfer – together with the “transfer and safekeeping of large sums of money and goods” – was the job of

¹ See Leslie G. Matthews, *A History of Pharmacy in Britain* (Edinburgh and London: Livingston, 1962), 24. See also Marie-Thérèse Lorcin, “Les ‘meschantes herbes des jardins,’” in id., *Pour l’aise du corps: Confort et plaisirs, médications et rites*, *Medievalia* 22 (Orléans: Paradigme, 1998): 61–74; Lorcin shows that even medical recipes collected in 1362 by a physician from Strassbourg from his woman-servant incorporated exotic spices, albeit in small quantities; by contrast, in recipes written by physicians or apothecaries at approximately the same time, these same spices made up 31.5% of the ingredients.

² See *The Herbal of Rufinus*, ed. Thorndike, 230: “*Passuli* [i.e., *uva passa*]: Post ablunt in vino dulci et superaspergunt pulverem cymini et aliarum speciarum aromaticarum et ligant in foliis ficus et ita conservant per duos annos;” see also Marie-Thérèse Lorcin, “L’universitaire et la servante: deux manières de soigner au XIV^e siècle,” *Pur l’aise du corps*, 85–97, at 94.

³ Bridget Ann Henisch, *Fast and Feast: Food in Medieval Society* (University Park, Pa: Pennsylvania State University Press, 1976), 101.

⁴ “A fere bruet sanz herbes;” see Hieatt and Jones, “Culinary Collections,” 63–64 (for the Anglo-Norman text) and 875 (for the modern English translation).

⁵ Desborough-Cooley (“On the Regio Cinnamomifera,” 181–182) refers to a fourteenth-century Arabic description of the coast of Ceylon “covered with trunks of the cinnamon tree,” and to the writings of Marco Polo, Jordan de Severa, and Juan de Hese showing cinnamon “among the chief productions of Malabar.” He goes on to quote from mid-fourteenth-century author Marino Sanuto, whose description includes specific references to spices as “articles of moderate weight and great price or value – as cubebs, cloves, nutmeg, mace ...” or “of greater weight and less price – as pepper, ginger, frankincense, canella, and the like” that “come to Alexandria by way of Aden ...;” alternate routes for the importation of spices were from Bagdad and Tabriz through the Mediterranean; or through Chaldea and Persia.

Galien liure
7. des simp.

Matthi. sur
le 1. liure de
diolcoride.

Cet l'annee certains iettons & lions, & en fait ieuer i eicorce, qui est ce que nous
appelons Canelle, laquelle est vendue à sa taxe aux estrangers n'estant permis à autre
faire couper ce bois. Galien diët la Canelle estre de subtile parties chaude au tiers
degré, ayant quelque legere astriction au moyen de quoy elle incise & dissout les su-
perfluitez du corps & fortifie les membres: Elle est fort propre à csmouoir les mois
aux femmes, arrestez par trop grande abondance & epaisseur d'excréments, de sorte
qu'ils ne se euacuent suffisamment. Elle sert à faire bonne bouche & aromatiser les
medecines & faire hypocras, & donner goust aux faulces. On fait de la Canelle vne
eau excellente, laquelle est souveraine contre toutes les maladies froides de faillance
de cœur, preseruant de la peste, & contrariant aux venins. Sa description est telle.
Prenez vne liure de la meilleure Canelle que la pourrez choisir, & l'ayant vn peu con-
cassée, la ietterez dans vn vaisseau de verre, avec quatre liures de bonne eau rose & de-
mye liure de bon vin blanc, le tout ferez infuser par l'espace de vingt quatre heures le
mouuant souuent, puis mettez à distiller au baing marie, selon l'arc les vaisseaux &
recipients bien lutez ensemble, à fin que l'esprit ne respire.

Trois cents cinquante sixiesme figure.

L'image de l'arbre qui produit la Canelle.



Autre

Figure 1. Ambroise Paré, LES OEUVRES D'AMBROISE PARÉ ... AVEC LES FIGURES ET PORTRAICTS, TANT DE L'ANATOMIE QUE DES INSTRUMENTS DE CHIRURGIE, ET DE PLUSIEURS MONSTRES (Paris, 1579): Indigenous people gathering cinnamon bark. Wellcome Library, London. (Reproduced by permission.)



Figure 2. Ambroise Paré, *LES OEUVRES D'AMBROISE PARÉ ... AVEC LES FIGURES ET PORTRAICTS, TANT DE L'ANATOMIE QUE DES INSTRUMENTS DE CHIRURGIE, ET DE PLUSIEURS MONSTRES* (Paris, 1579): Indigenous people collecting pepper grains. Wellcome Library, London. (Reproduced by permission.)

the provisioner;¹ and Leslie G. Matthews perused English well-to-do household accounts (contemporaneous with documents examined by Weber) revealing that large quantities of spices were inventoried alongside other valuable possessions kept in the wardrobe – such as the one of Thomas Button, Bishop of Exeter (d. 1307), which contained “many pounds weight of almonds, rice, sugar, ginger, cassia, galangal, pepper, grains of paradise, saffron, cloves, cubebs, aniseed, and liquorice.”²

¹ See Weber, “*Queu du Roi, Roi des Queux*,” 150–151, and *ibid.*, n. 21, for a quote from the original French of eighteenth-century French historian Le Grand d’Aussy’s description of the master cook’s duties under the Valois.

² See Matthews, *History of Pharmacy*, 23.

If not ground but served in their original, pristine condition as superior treats at the end of a meal, spices were placed on special plates, which were subsequently stored in some well-protected space, such as the counting house or even the jewel house.¹ Larger and better equipped monasteries, too, had a room (*drinarium pigmentorum*) for the safekeeping of drugs made from precious spices.² Furthermore, in his commentary on *Le Livre des simples medicines*, Pierre Leutaghi stressed that preserving such costly articles as well as extending their potency was made possible by keeping them in airtight leather bags and silver containers – objects not without a value of their own.³

Early twentieth-century historian William Mead noted that “during the early Middle Ages spices were prized like jewels,”⁴ and although in the high Middle Ages prices of *aromata* came down as a result of commercial growth and enterprise, “they were never cheap.”⁵ In fact, their cost was prohibitive for anyone but royalty, nobility, the well-to-do bourgeoisie, and the higher clergy – that is, the socially and economically privileged.⁶ On account of both cost and scarceness, spices accompanied rich and noble travellers on their journeys: in the early summer of 1378 Edmund Mortimer, Earl of March, and his suite went from London to Scotland: they took with them three pounds of saffron, sixteen pounds of powdered ginger, and eight pounds of ground pepper.⁷

From the anonymous *Le Menagier de Paris*,⁸ composed by a Paris *bourgeois* around 1394 and incorporating a formidable body of instructions for his young bride on how to run a household,⁹ we know how much the *épiciers* of that city charged for the most frequently used spices; their prices are shown in Table 1, below:

¹ See Henisch, *Fast and Feast*, 172, for Edward IV’s spice dishes, stored in such a place; and *ibid.*, 104, for the locked box “which may be seen beside the cook on a misericord in St. George’s Chapel, Windsor.”

² See Matthews, *History of Pharmacy*, 21 (quoting Loren C. Mackinney, *Early Medieval Medicine* [Baltimore: N.p., 1937]): a ninth-century plan for the monastery of St. Gall included a special room for the keeping of drug stock.

³ See Platearius, *Le livre des simples medicines, d’après le manuscrit français 12322*, 297: “Les épices et les drogues exotiques coûteuses appellent des precautions particulières: le Safran reste bon pendant 10 ans dans un petit sac de cuir bien serré ...”

⁴ William Edward Mead, *The English Medieval Feast* (Boston: Houghton Mifflin Company, 1931), 73.

⁵ *Ibid.*

⁶ For this, as well as the concept of “class feeding” in the Middle Ages, see Stephen Mennell, *All Manners of Food: Eating and Taste in England and France from the Middle Ages to the Present*, 2nd ed. (Chicago: University of Illinois Press, 1996), 46 and 53.

⁷ Martha Carlin, “Provisions for the Poor: Fast Food in Medieval London,” *Franco-British Studies* 20 (1995): 35–48, at 41.

⁸ A nineteenth-century edition was published as *Le Ménagier de Paris. Traité de morale et d’économie domestique composé vers 1393 par un bourgeois parisien*, 2 vols. (Paris: Crapelet pour la Société des Bibliophiles Français, 1846; reprint ed., Geneva: Slatkine Reprints, 1966), 2 [henceforth *Le Menagier de Paris*, ed. Pichon]. A twentieth-century edition is in *Le Menagier de Paris*, ed. Georgine E. Brereton and Janet M. Ferrier, with a foreword by Beryl Smalley (Oxford: Clarendon Press, 1981) [henceforth *Le Menagier de Paris*, ed. Brereton and Ferrier].

⁹ What can be inferred about the author’s biography is discussed in *Le Menagier de Paris*, ed. Brereton and Ferrier, xxi–xxvii.

Table 1. *Le Menagier de Paris*: Cost of Imported Spices¹

Article	Weight	Price
almonds	1 <i>livre</i> (pound)	14 <i>deniers</i> (pennies)
powdered “colombin” ginger ²	1 <i>livre</i>	11 <i>sols</i> (shillings) = 132 <i>deniers</i>
ground cinnamon	1 <i>livre</i>	5 <i>sols</i> = 60 <i>deniers</i>
“mesche” ginger ³	1 <i>quarteron</i> (quarter-pound)	5 <i>sols</i> = 60 <i>deniers</i>
long pepper	1 half- <i>quarteron</i>	4 <i>sols</i> = 48 <i>deniers</i>
galingale	1 half- <i>quarteron</i>	5 <i>sols</i> = 60 <i>deniers</i>
mace	1 half- <i>quarteron</i>	3 <i>sols</i> 4 <i>deniers</i> = 40 <i>deniers</i>
green laurel leaves	1 half- <i>quarteron</i>	6 <i>deniers</i>
saffron	1 ounce	3 <i>sols</i> = 36 <i>deniers</i>

Closer to Jacques’s own time, all these spices and many others were already included in the ordinances of February 1349 (50) and May 1351 regarding taxes on commodities entering the city of Paris.⁴

Exorbitant prices also triggered the widespread counterfeiting of pharmaceutical concoctions, a practice that prompted thirteenth-century writer John of Garland to pen an angry diatribe against apothecaries who “for the sake of gain, mingle or adulterate confections with electuaries, roots with herbs, zedoary⁵ with ginger, pepper with cumin, cloves with cinnamon, aniseed with maratro, wax with tallow, and sugar with liquorice.”⁶ In the same vein, Platearius’s articles on individual spices frequently include a word of caution against pharmaceutical fraudulence.

How much did the spices used for sumptuous dinners cost? Judging by the one probably given in 1379 by the Abbé de Lagny for *Monseigneur* de Paris, the President

¹ *Le Menagier de Paris*, ed. Brereton and Ferrier, 186. Reckoning money in fourteenth-century England, France, and the Low Countries was based on the following system: 1 *livre* (£; pound) = 20 *sous* ([*sols*] s.; shillings); 1 *sou* = 12 *deniers* (d.; pennies); to this, the mark was added on the English side.

² I.e., imported from Quilon, on the Malabar coast; *ibid.*, 319. n. 7 to p. 186.

³ I.e., imported from Mecca; *ibid.*

⁴ See *Le Menagier de Paris*, ed. Pichon, 112, n. 31: “Toutes ces épices figurent dans les ordonnances de février 1349(50) et 3 mai 1351, relatives à des droits supportés par certaines denrées à l’entrée de Paris. On y voit que le poivre, le sucre, le gingembre, la cannelle, le ris, l’anis, le safran et le girofle venoient à Paris par balles, et que le cubèbe (employé aussi quelquefois dans la cuisine), le macis, la graine de paradis, le poivre long, les noix muguettes, l’espice (nard), le garingal, le citoual, les dattes, les pignons, etc., venoient sans doute par plus petites quantités, puisqu’ils sont taxés par livre (4 deniers en 1350, et 6 en 1351) (All these spices were listed in the ordinances of February 1349[50] and 3 May 1351 concerning taxes on certain commodities entering Paris. One sees there that pepper, sugar, ginger, cinnamon, rice, aniseed, saffron and clove came to Paris in bales, and that cubeb pepper [sometimes also employed in the kitchen], mace, grains of paradise, long pepper, nutmeg, spikenard, galingale, zedoary, dates, pine kernels, etc. came, no doubt, in smaller quantities – since they are taxed by the pound [4 *deniers* in 1350, and 6 in 1351]).”

⁵ A cheaper spice – the French *citoual*.

⁶ Quoted in Matthews, *History of Pharmacy*, 24.

of the *Parlement*, the attorney general (*procureur*), the king's lawyers (*avocats du roy*), and his other counsel,¹ the grand total paid for the almond, ginger, saffron, and cinnamon used in the cooking of *potages*² alone amounted to 534 *deniers* (pennies),³ or 44 *sols* (shillings) and 6 *deniers* (pennies) – and this, without even considering the cost of unnamed spices incorporated into the wine served at the end of the meal.

These are, indeed, very high prices: by comparison, the daily pay of a watchman in Paris between 1299 and 1305 as reported by Richard H. Rouse and Mary A. Rouse from French royal accounts was 1 *sol* (*sou*; shilling);⁴ and Peter Spufford reports that the daily pay of a building worker in England in the 1350s was 3 *deniers* (pennies).⁵ If multiplied by six (to account for the total wages accumulated in a six-day work week) the first amount, 6 s. (shillings) would have been almost sufficient to pay for one *quarteron* (quarter-pound) of ginger from Mecca or one half-*quarteron* of galingale; and the second, 18 *deniers* (pennies) would have sufficed to buy a little more than one *livre* (pound-weight) of almonds and about the seventh part of one *livre* of powdered ginger in a Parisian spice shop towards the close of the century.

Prices commanded by books in the thirteenth and fourteenth century in Paris offer yet another excellent term of comparison – for these would have been familiar to the theorist from Liège. The University of Paris was in absolute control of the book trade in that city, so much so that “beginning with an *ordonnance* of Philip the Fair in 1307, the sworn *libraires* of the university were exempted from paying the *taille*, and later kings reaffirmed this exemption and added to it.”⁶ Table 2 below shows a comparison of book and spice prices:

¹ For the probable date of this event, as well as the identification of the characters partaking in this diner, see *Le Menagier de Paris*, ed. Pichon, 104, n. 6.

² *Potage* is any meal cooked in a pot – in this case, a whole course comprised of fish dishes that were served with spiced sauces.

³ My calculation of the final cost is based on the specific quantities of spices used: six pounds-weight of almonds, one half-pound of powdered ginger, one half-ounce of saffron, two ounces of *memus espices* (a mixture of cloves and cardamom; see *Le Menagier de Paris*, ed. Brereton and Ferrier, 320, n. 186), one quarter-pound of powdered cinnamon, and one half-pound of *dragee* (a white or ruby colored, powdered spice believed to aid in digestion and usually served with desert; see *ibid.*, 183 and 317).

⁴ The information is from the Royal Accounts for the years 1285–1314; see Richard H. Rouse and Mary A. Rouse, *Illiterati et uxorati: Manuscripts and Their Makers: Commercial Book Producers in Medieval Paris, 1200–1500*, 2 vols. (Turnhout: Harvey Miller Publishers, 2000), 1: 128.

⁵ See Peter Spufford, *Money and Its Use in Medieval Europe* (Cambridge: Cambridge University Press, 1988), 235. In a related work (Peter Spufford, *Handbook of Medieval Exchange* [London: Offices of the Royal Historical Society, 1986], xxiv), the author shows that “in France the system of *livre*, *sou*, and *denier parisis*, based on the *denier parisis* until it ceased to be struck in 1365, continued in use for at least another century and a half.” Maps of medieval currencies are printed in *ibid.*, xxii, and in *Money and Its Use*, 294. By 1390, the daily pay of skilled building workers in southern England had increased to 5 d.; see Carlin, “Provisions for the Poor,” 45, n. 47.

⁶ See Rouse and Rouse, *Illiterati et uxorati*, 1: 75.

Table 2. Prices of Books in Paris Compared to Spice Prices, 13th-14th centuries

Book and date copied or sold	Price	Spice quantity and date priced
1 pecia ¹ rented from a sworn <i>libraire</i> associated with the University, 1286	1 <i>denier</i> (penny) or 1 half- <i>denier</i> ²	0
1 pecia copied by professional scribe, ca. 1300	12 <i>deniers</i> ³	1 <i>quarteron</i> of green laurel leaves; or 1/3 of 1 ounce of saffron, ca. 1379-90
Themistius, <i>Commentary</i> on Aristotle's <i>De anima</i> , ca. 1300	6 <i>deniers</i> ⁴	1 half- <i>quarteron</i> of green laurel leaves; or 1/6 of 1 ounce of saffron, ca. 1379-90
Alexander, <i>Commentary</i> on Aristotle's <i>Meteorology</i> and <i>Physiognomy</i> , ca. 1300	9 <i>deniers</i> ⁵	¾ of a half- <i>quarteron</i> of green laurel leaves; or ¼ of 1 ounce of saffron, ca. 1379-90
Petrus Lombardus, <i>Summa</i> , ca. 1300	3 <i>sous</i> ⁶ (<i>sols</i>) = 18 <i>deniers</i>	1 ½ <i>quarterons</i> of green laurel leaves; or 1 ounce of saffron, ca. 1379-90
Petrus Comestor, <i>Historia scolastica</i> , ca. 1300	3 <i>sous</i> ⁷ = 18 <i>deniers</i>	same as above
Gratian, <i>Decretum</i> , 1289	40 <i>livres paris</i> ⁸ (Parisian pounds) = 800 <i>s.</i> = 10600 <i>d.</i>	twice the price paid for spices used for <i>potages</i> only for Abbé de Lagny's dinner, 1379
Vincent of Beauvais, <i>Speculum historiale</i> , 1334	40 <i>livres paris</i> ⁹ = 800 <i>s.</i> = 10600 <i>d.</i>	same as above

¹ Section of a standard text that was rented from the *libraire*, copied, and then returned.

² From the book price list for 1286; see *Chartularium universitatis Parisiensis*, I, 644–649, in Thorndyke, *University Records*, 112–117.

³ In this late-thirteenth or early-fourteenth-century instance, the scribe was paid for copying Thomas Aquinas's *Summa contra gentiles* for Pierre de Limoges, a Parisian master who died in 1306; see Rouse and Rouse, *Illiterati et uxorati*, 1: 87 and 350, n. 122. Later fourteenth-century examples involving payment for the writing and copying of liturgical books containing music include one Master Pierre, who, sometime between 1388 and 1399 received 60 francs for “notating and writing three Antiphonaries” for the Charterhouse at Champmol, near Dijon; one “Master Pierre Dame Dieu, scribe,” who in 1398 was paid the same amount for writing and notating two Antiphonaries for the same Charterhouse; and one Jehan de Moulin was paid 4 francs to complete yet another Antiphonary that had been started by some other scribe; see Frances Caroline Steyn, *Three Unknown Carthusian Liturgical Manuscripts with Music of the Fourteenth to the Sixteenth Centuries in the Grey Collection, South African Library, Cape Town*, 2 vols., *Analecta cartusiana* 167 (Salzburg: Institut für Anglistik und Amerikanistik Universität Salzburg, 2000), 1: 17–18. Steyn quotes information from the 1388–1398 accounts kept by the head/administrator of the library at Champmol. According to these accounts (*ibid.*, 17), payments for other book-related operations were as follows: 2 francs 7 *gros* for the illumination of the first three antiphonaries on this list, and 18 *gros* for the binding of them; and 20 francs for the “illuminating and floriated in blue and vermillions, for sewing, treating, and binding” of the antiphonaries copied by Pierre Dame Dieu.

⁴ See Rouse and Rouse, *Illiterati et uxorati*, 1: 128.

⁵ *Ibid.*

⁶ *Ibid.*

⁷ *Ibid.*

⁸ Sold in 1289 by the Parisian illuminator Honoré d'Amiens; see *ibid.*

⁹ Sold in 1334 by the Parisian *libraire* Geoffroy de St.-Léger the Younger to Gérard de Montaigy, “advocate of the lord king in parlement;” see *ibid.*, 2: 194.

From all of this one might surmise that Jacques of Liège's comparison of musical intervals and spices involved an implicit appraisal: as far as their sensory potency was concerned, intervals were of a calibre that warranted their inclusion in *similes* involving things so dear, rare, sought after, and jealously kept as *species aromata*. Furthermore, from an intellectual standpoint categorizing and analyzing the structure of intervals could be easily likened to the meticulous classification of spices and their uses – and this was precisely the point the writer made in the Prologue to Book Four of his *Speculum*.

Additionally, the very recourse to this specific comparison might be a hint at Jacques's own social – perhaps even economic – position: he might well have been someone familiar with the culinary habits of those who could afford the cost of *aromata*; beyond realizing the mere literary strength of such a figure of speech, he must have been aware of its socio-economic connotations as well. If at the end of a professorial career at the University of Paris the music theorist retired to Liège, he might have witnessed first-hand the financial plenty in which the prince bishop there basked throughout the 1330's: it was then that, in preparation for the opening of military hostilities, both Edward III of England and Philip VI of France sought to purchase alliances with gold; the Bishop of Liège (at the time, Adolph de la Marck [1288–1344]¹) was one of Philip's payees, and the subsidy came "largely in the form of golden écus."² Furthermore, Pope Clement V's 1313 appointment of the twenty-five-year old Adolph as Bishop had been based on Philip the Fair's personal initiative and express recommendation: the position itself was regarded as vital in forging and maintaining political and economic alliances involving the Papacy, the kingdom of France, and the Empire.³

The Bishopric of Liège was "important, rich, of great repute,"⁴ and the bishop had remarkable control over the economic life in the territory under his jurisdiction.⁵ La Marck's wardrobe, like the one of his English homologue, the Bishop of Exeter, must have contained, in addition to substantial stocks of wine, wheat, and meat, quantities of costly spices as well. Again, if, as suggested by Karen Desmond, the author of the *Speculum musice* can be equated with *Magister* Jacobus de Montibus, then this man was not only "well-established in Liège by 1334, a well-regarded member of the community, a significant landowner, and an important figure in the chapter of St. Paul,"⁶ but was also one designated in that church's account books as the recipient of payments of goods involving imported spices such as pepper and almonds.⁷

¹ Confirmed, consecrated, and vested 1313; see Alain Marchandisse, *La fonction épiscopale à Liège aux XIIIe et XIVe siècles: Étude de politologie historique*, Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège 272 (Genève: Librairie Droz, 1998), 491.

² See Spufford, *Money and Its Use*, 277-8, for this and other subsidies paid by the French king to the Count of Flanders and to John the Blind, Count of Luxemburg and King of Bohemia.

³ Marchandisse, *La fonction épiscopale à Liège*, 177, 202, and 212.

⁴ *Ibid.*, 205.

⁵ For details, see *ibid.*, 429–430.

⁶ Desmond, "New Light on Jacobus," 31.

⁷ *Ibid.*, 29 and especially 37 (for a transcription from the 1336 account: that year Jacobus received important quantities of pepper, almonds, wax, as well as capons and hens, wheat, barley, oats, peas or beans, and beech-wood). Many spices, however (and herbs that were used to spice up the flavor of some dish) did not have to come from abroad; instead, they were grown in European gardens.

2. Mortar, Pestle, and Monochord

Let us now return to Jacques of Liège's statement on the direct relation between rubbing and releasing scent: in a wider philosophical sense mincing, rubbing, or wiping would arguably cause larger bodies, sharing attributes or being similar to each other in a general way (*genus proximum*) to be broken down and reduced to their simplest components; performing such an operation would most probably aid in identifying the specific difference (*differentia specifica*) setting these components apart from each other. On the one hand, such a take would involve once again thoughts of Aristotelian natural philosophy. On the other hand, the very fact that Jacques was so intent on bringing in gastronomy must cause us to resort again to the art of cooking:

Had spices and herbs been used in the Anglo-Norman "herbless" recipe introduced earlier in this article, they would have been either shredded or ground (in a mortar) or both; in this particular case the meat itself was to be ground. In fact, there is no recipe in this collection that would **not** involve shredding, pounding, grinding, rubbing, wiping, crushing, crumbling, or some other form of reducing herbs and spices as well as meat, boiled eggs, bread, fruit, flower petals, or other ingredients to their smallest parts or to a homogenous powder:

Spices made the medieval heart beat faster, the medieval palate quiver with delight, and the medieval kitchen boy shudder with distaste. If bought in their natural state, much tedious pounding with pestle and mortar was needed to reduce them to precious, pungent dust.¹

Medieval monasteries reserved a plot for the herb garden, and experts drew the plans and cultivated the gardens of noble establishments: a case in point is Master John Gardener, an Englishman whose vast experience, related in a book titled *Feat of Gardening*, spanned the first half of the fourteenth century (see John H. Harvey, "Vegetables in the Middle Ages," *Garden History* 12 [Autumn 1984]: 89–99, at 91). Lavender, sage, coriander, mint, mustard, thyme, hyssop, savory, calamint, dill, and others were listed by Master John among the herbs that had to be planted or sown each April so that they could be ready for a September harvest (ibid., 92). The fact that both the man and his book belong in the history of English gardening should not rule out Continental handling of the same herb-and-spice repertory: comparison of the *Feat of Gardening* to its nearly-contemporary French counterparts (such as the *Viandier* of Taillevent or *Le Menagier de Paris*) makes it clear that the basic herbs and condiments were mostly the same on both sides of the Channel. Harvey (ibid., 93) notes that *Le Menagier* included a list of plants "closely similar" to the one found in the *Feat of Gardening*. On this account Mead (*The English Medieval Feast*, 73) has rightly noted that "the French were as addicted to spices as the English, if not more so," while Constance B. Heatt ("Making Sense of Medieval Culinary Records: Much Done, But Much More to Do," *Food and Eating in Medieval Europe*, 101–115, at 105) stated that "the *haute cuisine*" of Western Europe was an international one. Both in England and on the Continent herbs must have paled in comparison with exotic spices for the very reason that the former could be grown locally, were too readily available, and thus were too cheap (Henisch, *Fast and Feast*, 109). From time to time, however, an indigenous species such as the "English herb" (*herba britannica*) was considered so unique and indispensable in the treatment of maladies and infections of the mouth that its keeping required no less than a silver vase (see Platearius, *Le livre des simples medicines, d'après le manuscrit français 12322*, 297: "La poudre de l'Herbe britannique, précieuse contre les maux et les pourritures de la bouche, mérite l'abri d'une vase d'argent [bien qu'il s'agisse d'une plante indigène]").

¹ Henisch, *Fast and Feast*, 74–5; Henisch goes on to show that some shopkeepers did grind and pack the spices in sheepskins before they were sent to clients. If such was not the case, then it was

The shredding of herbs and the grinding of *aromata* before consumption would enhance their taste and smell – an effect obviously known to the music theorist; ingestion and digestion would also be facilitated. Even herb seeds could be pounded in a mortar before being sown in the ground: this was done to improve the palatable quality of the future plant, as noted by Pliny the Elder long before Jacques’s time.¹ Rubbing was recommended by Platearius in the detection of counterfeit medicines: if a dishonest apothecary would use the species of aloe known as *aloen aculabin* (i.e., *caballinum*) instead of the hepatic or the *cicotrin* (which were the varieties of choice), the impropriety could be detected thus: “when [*aloen aculabin*] is torn and rubbed between the fingers, it releases a most foul smell, which is not found in the hepatic or *cicotrin* varieties.”² This must be the variety to which Juvenal had referred, and which became part of the gastronomic metaphor used by the authors of the *Summa musice*.³

From Jacques’s own perspective as a music theorist, the breaking down of intervals into their smallest components is clearly akin to tearing, grinding, shredding, and rubbing, for “tearing” these musical entities apart would reveal their inner core and intensify their authentic “flavour.” Additionally, and from an intellectual standpoint, it would certainly make them easier to analyze and comprehend – in other words, it would make them “palatable” in a cerebral sense so that they could be used in the making of a perfect, rationally satisfying musico-speculative dish.

In retrospect, Jacques’s culinary metaphors for rational thinking seem pale in comparison to the bold similes used in Renaissance literature, where the trend became so prominent that, according to Michel Jeanneret, “food for the mind and food for the body were expressed in the same terminology.”⁴ Like the shredding, pounding, and grinding of herbs and spices, the carving of meat as described, for instance, in Vincenzo Cervio’s *Il Trinciante* (The Carver) of 1581 invites reflection on food being “divorced from any gastronomic intentions,” and used as “an illustration of technical dexterity, and of a *science* [emphasis mine] which is both anatomical and botanical.”⁵ Carving,

the job of the household servants to use the mortar and pestle, or that of a specialized man, such as a pastry cook working for a fee.

¹ *Naturalis historia* 19.158 (for the Latin text, see Pliny, *Natural history*, 5: 522: “Ab aequinoctio verno seritur apium semine paulum in pila pulsato: crispus sic putant fieri aut si satum calcetur cylindro pedibusve;” for Rackham’s translation, see *ibid.*, 523: “Parsley [celery] sowing begins at the vernal equinox. The seed being first gently pounded in a mortar: it is thought that the parsley is made crisper by this process, or if the seed is rolled or trodden into the earth after being sown”).

² See Platearius, “Liber de simplici medicina,” f. 186ra: “discernitur tamen: quia cum frangitur et digitis confricatur stas fetidissimum sentitur; quod in epatico seu cicotrio non est.” An English translation from the French is found in Platearius, *Livre de simples medicines; Codex Bruxellensis IV.1024*, 1: 55.

³ Taillevent went so far as to include recipes of meals for the sick in his *Viandier*; one of these required incorporation of ground chicken bones and powdered sugar into the prescribed concoction; see Taillevent, *Le Viandier*, 24: “Pour malades. Couleis d’un poulet. Cuiséz en eaue tant qu’il soit bien pourri de cuire; et broiés à tous les os en un mortier ... et qui veult poudre de sucre par dessus ... (Cook the chicken in water until well boiled; and grind it together with all its bones in a mortar ... and if you wish, [add] powdered sugar on top ...).”

⁴ Jeanneret, *A Feast of Words*, 35.

⁵ *Ibid.*, 59–61.

therefore, with its intricate subtleties of finger-and-arm movement coupled with a high level of precision in tool manipulation (knife and fork, in this case) can and does serve as a muscular simile for equally complex intellectual processes, where “art triumphs unreservedly over nature.”¹

Grinding was necessary not only for the sake of squeezing out essential flavours and savours, but for more practical reasons as well: medieval dishes were eaten with spoons, not forks.² Potages, spiced sauces, and all manners of mushy concoctions were, therefore, the only way to ingest food besides using one’s fingers (or one’s knife for the carving of the meat). In fact, the presence of semi-liquid foods – bread-based soups among them³ – was so widespread at medieval tables that, in addition to spoons, “fingers” of bread were readily available to “sop up sauces and gravies.”⁴

The role of the mortar and pestle in medieval food preparation can hardly be over-emphasized: the solicitous and detail-oriented husband who authored the *Menagier de Paris* advised his wife to “first pound the spices and use the mortar,”⁵ and subsequently listed both objects in his inventory of kitchen utensils, alongside a variety of pots, pans, and plates, big and small.⁶ In modern times, William Mead’s study of countless recipes concluded that “probably the most important aids to the medieval cook after the great cauldrons that hung over the open fire were his mortar and pestle.”⁷

¹ Ibid., 61.

² Mead, *The English Medieval Feast*, 149.

³ Mennell, *All Manners of Food*, 48, remarks that soups were the basis of French medieval diet. And while Mennell quotes Louis Stouff (*Ravitaillement et alimentation en Provence aux 14e et 15e siècles* [Paris: Mouton, 1970]) to show that the specific ingredients of such dishes can only be inferred, there is evidence more recently collected from contemporary recipes that most, if not all soups incorporated crumbled or crushed bread alongside crushed or powdered spices and herbs: for instance, Recipe 15: “Hawthorn pottage,” Recipe 16: “Rose pottage,” Recipe 17: “Strawberry pottage,” Recipe 18: “Blackberry pottage,” in MS London, British Library, Add. 32085; see Hieatt and Jones, “Two Anglo-Norman Culinary Collections,” 864-865 (for the Anglo-Norman text) and 875-876 (for the modern English translation).

⁴ Henisch, *Fast and Feast*, 159-160.

⁵ *Le Menagier de Paris*, ed. Brereton and Ferrier, 172: “*Primo que en toutes saulses et potages lyans en quoy on broye espices et pain, l’en doit premierement broyer les espices et oster du mortier. Car le pain que l’en broye après requeut ce qui des espices est demouré; ainsi on ne pert rien, ce que on perdroit qui feroit autrement* (First, that in all sauces and thick pottages for which spices and bread are ground, one must first grind the spices, and use a mortar. For the bread that is ground afterwards requires the [flavor] left over from the spices; this way, nothing is lost of what could be lost if this were done otherwise).”

⁶ Ibid., 187: “*Ausquelles couvient deux granz poz de cuivre pour .xx. escuelles, deux chaudieres, .iiii. couloueres, ung mortier et ung pestail ...*” (For these [i.e., for the preparation and serving of food at one of the banquets described in this section] one needs two large copper pots for twenty *escuelles* [i.e., small, deep plates from which food was normally shared by two people], two cauldrons, four *couloueres* [i.e., small containers used in the drawing of the wine from the barrel], a mortar and a pestle ...). An example from Bruges, penned ca. 1338-1344, comes in the form of marginal decorations for the *Romance of Alexander* showing two kitchen boys deeply engaged in pounding and grinding. The manuscript, a *Romance of Alexander*, is now Oxford, Bodleian Library 264, and the illustration appears on f. 170v; it is reproduced in Henisch, *Fast and Feast*, 132.

⁷ Mead, *The English Medieval Feast*, 44.

Bridget Ann Henisch's examination of medieval methods of cooking and menus also emphasizes the omnipresent mortar and its uses in grinding both spices and herbs.¹

Decomposing substances into their minutest components was a matter of course in a pharmaceutical context as well: the medieval druggist or his underlings used mortar (*pila*, -ae) and pestle (*pistillum*, -i) to crush, grind, pound, and re-mix medicaments – many of which included plants, herbs, and *aromata*. Representations of physicians, apothecaries, or their assistants and apprentices actively engaged in using both objects abound in illuminated manuscripts and *incunabula*. [see Figure 3] Ss. Cosmas and Damian, patrons of physicians and surgeons in the Western world, were sometimes represented holding pestles and mortars. In fact, the heraldic sign of the pharmacists' trade was and still is the mortar and pestle.



Figure 3. HERBARIUS ZU TEUTSCH (HORTUS SANITATIS; Augsburg, 1496), fol. Aiii verso: Apothecary's shop with apprentice pounding medicines. Wellcome Library, London. (Reproduced by permission.)

¹ Henisch, *Fast and Feast*, 138–139.

Leslie G. Matthews brings in ample evidence from the British Isles, where twelfth- and thirteenth-century manuscripts based on the medical works of Roger of Salerno, or a *Leechbook* from the mid-fifteenth century depict “massive mortars” used for grinding spices and “stamping herbs.”¹ Still from England, the 1390/91 accounts of Henry, Earl of Derby, suggest a kitchen that was formidably well equipped with all sorts of accoutrements, including a variety of pestles and mortars.² Whether made of stone or bronze, these mortars were considered very valuable items and were thus recorded in contemporary household inventories.³

Although not an exact replica, with respect to aspect or function, of either mortar and pestle or the carving knife, the monochord (of which more, later) assumes the role of a dissecting, grinding, and re-mixing tool of surgical precision. On it intervals are meticulously generated, distributed, counted, analyzed, and classified, or “sifted” – to use yet another utensil-based metaphor coined by the author of the fourteenth-century *Quatuor principalia musice*;⁴ through it numerical ratios can be understood and compared to each other. As a mental model, the monochord is both a detailed list of intervals and an instrument for the intellectual investigation of these; it is also the one man-made device – a tangible object, a sound-emitting instrument – facilitating interval memorization on a systematic basis.⁵ In the context of a predominantly oral culture, where knowledge “is still associated with an act of sensory perception,”⁶ the monochord as a concept and a tool feeds and supports a memory that, like the Renaissance memory described by Jeanneret, is “full of words heard, spoken and recited; ... a muscular and acoustic memory which feels sounds, chews them and stores them like organic matter.”⁷

As a visual icon the monochord can be adjoined to the impressive repertoire of memory aids recently assembled and discussed by Anna Maria Busse Berger.⁸ Its ubiquitous presence in medieval and Renaissance music theory treatises is a fact needing

¹ Matthews, *History of Pharmacy*, 12–13.

² Henisch, *Fast and Feast*, 139.

³ Matthews, *History of Pharmacy*, 16–17; see Plate V for a reproduction of a two-handle English bronze mortar made around 1300.

⁴ See MS Oxford, Bodleian Library, Digby 90, f. 12r: “De dispositione literarum in monachordo per quas toni et semitonia cetereque consonantie proporcionaliter cernuntur.” For a catalogue description, see *The Theory of Music: Manuscripts from the Carolingian Era up to c. 1500 in Great Britain and in the United States*, ed. Christian Meyer, Michel Huglo, and Nancy C. Phillips, RISM BIII/4 (Munich: Henle, 1992), 121. A nineteenth-century edition of the treatise is printed in CS 4: 200–298; this passage is in *ibid.*, 208. An electronic version is in TML as QUAPRIB1 TEXT, QUAPRIB2 TEXT, QUAPRIB3 TEXT, and QUAPRIB4 TEXT. A complete, digitized facsimile of the manuscript is found at *Early Manuscripts at Oxford University*, <http://image.ox.ac.uk>. A modern edition is in Luminita Florea-Aluas, “The *Quatuor principalia musicae*: A Critical Edition and Translation, with Introduction and Commentary,” Ph.D. Dissertation, Indiana University, 1996, <http://www.ams-net.org/ddm/fullResult.php?id=1704>

⁵ See Jacobus Leodiensis, *Speculum musice, Liber quartus*, ed. Bragard, 18–19: “Capitulum 10: Consonantiarum collatio quantum ad positionem vel situm quem habent in monachordo ... Adhuc, ut amplius tactarum consonantiarum numerus in memoria firmetur ...”

⁶ Jeanneret, *A Feast of Words*, 130.

⁷ *Ibid.*

⁸ See Anna Maria Busse Berger, *Medieval Music and the Art of Memory* (Berkeley: University of California Press, 2005), especially chapters 2 and 3.

no extensive discussion, for it is a matter of common knowledge that diagrams of the utensil abound. Some, like the ones found in MSS Oxford, Bodleian Library, Digby 90¹ and Bodley 842² (both of the fourteenth century) amount to very complex drawings showing complete collections of intervals and corresponding numerical ratios. Text-wise, entire chapters (and, sometimes, whole sections) of theoretical works are devoted to this topic. Book Four alone of Jacques's *Speculum musice* includes two staggeringly detailed chapters on a variety of methods and criteria for generating and grouping intervals on the monochord – a subject to which I shall return below.³

3. The order of courses

Another thing we learn from the Prologue to Book Four is that intervals, like ingredients in a tasteful dish or like several courses that are part of the same meal, must be introduced in a certain, significant order: thus cognition of one interval will ensure identification of the next one, just like separate culinary concoctions served in a prescribed sequence at one table become known to the palate individually and progressively.

Nor is the use of such an image a singular occurrence, for the order of courses became a much-used metaphor for the arrangement of the parts of speech in Renaissance literature; there, Jeanneret noted,

The affinity between food and words can also relate to the order of consumption: the menu and works of literature are both laid out and are there to be experienced, according to a similar rhythm: in a meal, there are to be as many courses as there are acts in a play and parts in a rhetorical discourse, namely five ...⁴

In order to gain a better comprehension of Jacques of Liège's concept and method of interval arrangement, we need to revisit the menus prepared for the tables and banquets of the nobles – for it is clearly to these that the writer's invocation of multi-course meals points. The rest of the population, when not in a state of semi-starvation, had to content itself with a rather limited number of meals and, within each of those, with a drastically limited number of courses: in France, for example, following a sumptuary ordinance issued in 1294 by Philip the Fair, the maximum number of dishes that could be served for the “grand mangier” by any subject of the crown was two plus a “potage au lard” (pot-cooked meal incorporating fat); for the “petit mangier” the number

¹ See, for instance, ff. 16r and 18r.

² See, for instance, ff. 3 v and 10 r, which belong in Theinred of Dover's *De legitimis ordinibus pentachordorum et tetrachordorum*. Part of this manuscript (not Theinred's treatise, though) is edited as the *Breviarium regulare musicae*, MS Oxford Bodley 842, ed. André Gilles and Gilbert Reaney ([Rome]: American Institute of Musicology, 1966). For a catalogue description, see RISM BIII/4, 110–115. A complete, digitized facsimile of the manuscript is found at *Early Manuscripts at Oxford University*.

³ Chapters 10 and 49; see Jacobus Leodiensis, *Speculum musice, Liber quartus*, ed. Bragard, 18–20 and 119–122, respectively.

⁴ Jeanneret, *A Feast of Words*, 180, in reference to Erasmus's *Colloquies*.

of courses was to be limited to one dish and one side dish.¹ A similar limit was imposed upon the English in a 1336 statute of Edward III.²

Fauvel, the corrupt horse and protagonist of the *Roman de Fauvel*, in his debauchery sat at a banquet table adorned with “good and fine meats, roosters and jellied birds, swans, peacocks, partridges, pheasants, herons”³ and an astounding variety

¹ The complete text of Philip’s ordinance against luxury is printed in Paul Lacroix, ed., *Recueil curieux de pièces originales, rares ou inédites, en prose et en vers, sur le costume et les révolutions de la mode en France* (Paris: Administration de librairie, 185?), 3–6: “Nuls ne donra au grand mangier, que deux mès, et un potage au lard, sans fraude. Et, au petit mangier, un mès et un entremès. Et, se il est jeûne, il pourra donner deux potages aux harens, et deux mès, ou trois mès, et un potage. Et ne mettra en une escuelle, que une manière de char, une pièce tant seulement, ou une manière de poisson, ne ne sera autre fraude. Et sera comptée toute grosse char pour mès, et n’entendons pas que fromage soit mès, se il n’est en paste, ou cuit en yauue (No one will give for the *grand mangier* more than two meals and a pot-cooked meal with fat – and let there be no fraudulence. And, for the *petit mangier*, one meal and one *entremets*. And, if it is a fasting day, he can give two pot-cooked meals of herring, and two meals or three, and one *potage*. And he will not put on a plate but one kind of meat – one piece only –, or one kind of fish, nor will there be any other fraudulence. And any large piece of meat shall count as a meal – one piece only; and let us not take cheese as a meal if it is not a cream, or if it is boiled in water).” See also Weber, “*Queu du Roi, Roi des Queux*,” 154, for a similar quote from Le Grand d’Aussy’s *Histoire de la vie privée*. The author of *Le Menagier de Paris* (ed. Brereton and Ferrier, 135) advises his wife about feeding the servants, thus: “Toutesvoyes, belle seur, aux heures pertinentes faictes les seoir a la table, et les faictes repaistre d’une espece de viandes largement et seulement, et non pas de plusieurs delitables ou delicatives; et leur ordonnez ung seul beuvage nourrissant et non entestant, soit vin ou autre, et non de plusieurs (Anyway, fair sister, at the appropriate times make them seat at the table and make them eat one kind of meat only, and not several delectable or delicate things; and assign them a single drink, nourishing but not inebriating, either wine or something else – and not several).”

² Since “evils, grievances, and mischeifs” (among which general impoverishment topped the list) had happened to both the “great men” and the “lesser People ... through the excessive and overmany sorts of costly Meats,” the king “... ordained and established that no man, of what estate or condition soever he be, shall cause himself to be served in his house or elsewhere, at dinner, meal, or supper, or at any other time, with more than two courses, and each mess of two sorts of victuals at the utmost, be it of Flesh or Fish, with the common sorts of pottage, without sawce or any other sort of victuals ... except on the principal Feasts of the Year ... on which Days and Feasts every man may be served with three courses at the utmost, after the manner aforesaid.” 10 Edward III, Statute 3 (A. D. 1336); see Great Britain, *Statutes of the Realm. Printed by Command of His Majesty King George the Third, in Pursuance of an Address of the House of Commons of Great Britain from Original Records and Authentic Manuscripts*, eds. T. E. Tomlins, W. P. Taunton, J. Raithby et al., 11 vols. ([London: The Record Commission], 1810–28), 1: 278–279. The feast days allowing for three-course meals were established as follows: Christmas Eve and Christmas Day, St. Stephen’s Day, New Year’s Day, the Days of the Epiphany and of the Purification of Our Lady, Easter Eve and Easter Day, Whitsunday and the morrow, Trinity Day, the Nativity of St. John, St. Peter’s and St. Paul’s Day, the Days of the Assumption and the Nativity of Our Lady, and All Saints Day (ibid., 279).

³ See *Le premier et le second livre de fauvel in the Version Preserved in B. N. f. fr. 146*, ed. Paul Helmer (Ottawa: The Institute of Medieval Music, 1997), 282: “Et alerent aus tables seoir//Grant foison poist on veoir//De viandes bonnes et fines//Chapons y ot oisons gelines//Cignes paons perdriz fesanz//Hairons butors qui sont plaisanz//Et venoison de maintes guises ...” A facsimile edition of the manuscript is in *Le Roman de Fauvel in the Edition of Mesire Chaillou de Pestain*:

of venison and fish – all served with spiced sauces such as “sausse vert” and “cameline.”¹ The accompanying wines were not only delicious, but also expensive² – presumably from having had their taste improved through addition of costly spices (such as the ginger from Alexandria and India, and other “bonnes” and “fors [strong] espieces,” all sweet, that graced the end of the meal³). Their quality – or at least the quality of the ideal “good wine” – is the theme of “Bon vin doit,” a three-voice motet copied on f. 45r of MS Paris, Bibliothèque Nationale, f. fr. 146.⁴

Obviously, the banquet in *Fauvel* is allegorical – but one of the best sources for authentic fourteenth-century ostentatious menus is, again, *Le Menagier de Paris*, whose author devotes a long chapter to “some dinners and suppers of the great seigneurs and others.”⁵ These “disners” and “souppers” were divided into meat and fish meals; most importantly, of the twenty-four menus described in the text most were comprised of anywhere from three to six lavish, elaborate courses, and only one involved less than three.⁶

A Reproduction in Facsimile of the Complete Manuscript Paris, Bibliothèque Nationale, fonds français 146, with introduction by Edward H. Roesner, François Avril, and Nancy Freeman Regalado (New York: Broude Brothers, 1990).

¹ “Green sauce” might refer to *vertjus*, i.e., verjus, an uncooked sauce made from green grapes (or any other acid fruit) and salt; for a recipe of verjus made from sorrel, see *Le Ménagier de Paris*, ed. Brereton and Ferrier, 258. At least two different recipes were used for “sausse vert:” one, for fish, was made with parsley or rosemary; the other involved several ground spices and herbs, such as ginger, cloves, and marjoram; see *ibid.*, 259. *Cameline*, i.e., *sauce cameline*, is a spiced sauce very popular in France and England; it is made with *poudre cameline* (*cameline* powder) comprised of ginger, cinnamon, saffron and almonds ground in a mortar, soaked in wine, then mixed with ground bread, boiled in water, and sprinkled with sugar; for the complete recipe, as well as the winter and summer varieties of it, see *ibid.*, 258.

² *Le premier et le secont livre de fauvel*, ed. Helmer, 282–283 : “Vins y ot bons et precieus//A boire moult delicieus//Citouaudez rosez florez//Vin de gascoigne coulerez//De montpellier et de rochele//Et de garnache et de castele//Vin de beaune et de saint pourcain//Que riche gent tientent pour sain ... (There were wines, good and costly//Very delicious to drink//[Spiced up with] zedoary, rosé wine, blue//Colored wine from Gascony//Wine from Montpellier and La Rochelle//And from Garnache and Castille//Wine from Beaune and St. Pourçain//That is considered healthy by the rich).” Two thirteenth-century French motets from Codex Wolfenbüttel mention “good clarified wine,” Rhine and Auxerrois wines, and rosé wines; the text and historical context are discussed in Mary E. Wolinski, “Drinking Motets in Medieval Artois and Flanders,” *Yearbook of the Alamire Foundation* 6, ed. Bruno Bouckaert, Eugene Schreurs, and Ivan Asselman (Leuven: Neerpelt, 2008), 9–20 at 11–15.

³ *Ibid.*, 285–288 : “Et donnerent especes bonnes//Douce a trestoutes personnes//Gingimbraz dalixandre et dynde ...”

⁴ Modern editions are printed in *Le Roman de Fauvel*, ed. Leo Schrade, with a new introduction and notes on performance by Edward H. Roesner, *Polyphonic Music of the Fourteenth Century* 1 (Monaco : Éditions de l’oiseau-lyre, 1984), 71; and *Le premier et le secont livre de fauvel*, ed. Helmer, 377. The text runs as follows: *Triplum*: “Quant ie le voi ou voire cler//Volentiers m’i vuel acorder//Et puis si chante de cuer cler//Cis chans veult boire.” *Motet*: “Bon vin doit l’en a li tirer//Et li mauves en sus bouter//Puis doivent compaignons chanter//Cis chans veult boire.” *Tenor*: “Cis chans veult boire.”

⁵ *Le Menagier de Paris*, ed. Brereton and Ferrier, 174–184.

⁶ *Ibid.*, 178, menu no. 36.

An assortment of courses and, within these, an assortment of dishes of skillfully combined savours, odours, and colours make up a well-appointed table. Jacques explains that thirty-six intervals and, within these, a variety of concords and discords make up a well-appointed monochord.¹ Medieval cookbooks show how, after discriminating selection of ingredients as codified in recipes, menus can be created and tables can be set. The *Speculum musice* shows how, following exhaustive examination of intervals, the monochord can be laid out – somewhat in the manner of a musical “table.” Once again the theory of one art mirrors the theory of another, and the monochord itself doubles as a mirror reflecting at once intellectual speculation on music and physical reality of sound.²

The object, as represented in medieval iconography, was made of a large plank, probably two to three feet long, with two bridges erected upon it to support a stretched string;³ the icon drawn on f. 47r of MS Oxford, Bodleian Library 842 renders it to perfection, and includes, traced on the body of the instrument, floral ornaments that may be replicas of the original decorative carvings. In similar fashion, most fourteenth-century tables – such as the ones drawn on ff. 32v and 33r, respectively, of MS Paris, Bibliothèque Nationale, fr. 146⁴ in exemplification of Fauvel’s culinary excesses – were no more than wooden planks balanced upon two wooden legs; they, like the monochord, were portable utensils, able to be moved around, dismantled, and reassembled.⁵

In the diatonic version of the monochord described by Jacques, the tool itself extends from *Gammaut* to *ela*.⁶ On this space, like dishes of various consistencies, sizes,

¹ See Jacobus Leodiensis, *Speculum musice, Liber quartus*, ed. Bragard, 19: “Tactae consonantiae 36 satis proprie in nostro continentur monochordo ...”

² On the significance of the term *speculum* in medieval philosophy in general, and Jacques’s treatise in particular, see F. J. Smith, “The Division and Meaning of the *Speculum Musicae*,” *Tijdschrift van de Vereniging voor Nederlandse Muziekgeschiedenis* 21/1 (1968): 5–24, especially 14–18.

³ See Cecil Adkins, “The Technique of the Monochord,” *Acta musicologica* 39 (January 1967): 34–43, at 34–35. For an illustration of the tool reproduced from Athanasius Kircher’s *Musurgia universalis*, see *ibid.*, 35. The variant described in the fourteenth-century *Quatuor principalia* is built from (or on the model of) a musical instrument, as follows: “Accipiatur aliquo instrumentum sonum emittens; ut pote vielle cistolle et huiusmodi; super quod corda diligenter extendatur; et in capite et circa finem duo semiferia ponantur cordam portancia; quas greci magadas vocantur (Let one take some sound-emitting instrument, such as *vielles* and *cistolles* and such similar ones; on this instrument, let one diligently stretch a string; and let one place at both ends two bridges bearing the string – which bridges are called *magadas* by the Greeks);” see MS Oxford, Bodleian Library 90, f. 11v; CS4: 208; and Florea-Aluas, “The *Quatuor principalia*,” 224. Indeed, the shape of the monochord in this manuscript resembles that of a musical instrument similar to those mentioned in the text.

⁴ See *Le Roman de Fauvel in the Edition of Mesire Chaillou de Pesstain*, introd. Roesner, Avril, and Freeman, ff. 32v and 33r: the tables are covered with tablecloths and set with wine goblets, cups, plates, and knives.

⁵ See *Le Menagier de Paris*, ed. Brereton and Ferrier, 187: “tables, tresteaulx [i.e., wooden planks supported on four legs], fourmes [i.e., benches] et similia” could be rented and transported to one’s house – in this particular case, for the sum of 5 francs; see also *ibid.*, 321, n. to p. 187.

⁶ Jacobus Leodiensis, *Speculum musice, Liber quartus*, ed. Bragard, 18: “Dico igitur quod extendendo monochordum nostrum a Gammaut usque in ela, et non ultra ...”

flavours, and savours on a dinner table, a number of intervals (some of them concords and some discords, both of pure as well as intermediate degrees) are artfully arranged and mixed.¹ Each interval has an assigned place at this “table;” and some intervals appear more than once: for instance, the octave (diapason) can be found in fourteen locations; the diesis occurs seven times; other intervals may be found twice, or three times, or four, and so on.²

Furthermore, this mixing follows an intelligently devised plan. In a conceptual sense, the monochord is a comprehensive enumeration – just like a menu is one; as a real object, however, it is a flat surface prepared for a methodical arrangement of ingredients, simple or composite. The process itself of arranging these ingredients transcends mere mechanical ordering and assumes both aesthetic and moral attributes, for a concord – albeit an “imperfect” one, such as the tone – will occupy a place of equilibrium and honour between two discords “that are not used, just like virtue holds the midpoint among vices.”³ Should we convert this statement into a visual scheme, we could, in fact, understand it as a deliberate attempt by Jacques to concoct an arrangement based on symmetry – a pattern that is both cerebrally and sensually gratifying.

Nor is this an isolated occurrence of the concept: later in the same chapter we are told that, preceded by seven concords and followed by another seven, the octave “is placed in the middle of all concords, like the sun [is placed] in the middle of planets and the king in the middle of his people”⁴ – both similes not unlike those used by the Italian physician Pietro Torrigiano de’ Torrigiani (d. ca. 1320) with respect to the placement and importance of the heart within the human body.⁵ Furthermore, if the unison and double octave – the intervals positioned at both ends of the series demonstrated on this monochord – are to be counted as part of the series itself, then eight “consonances” precede and eight follow the octave; thus, again, the octave occupies a central position, equidistant from both extremes – with which it shares the distinction of being a most perfect concord.⁶ The octave, therefore, may be seen as the mouth-watering, fragrant, showy center-piece strategically placed in the middle of a festive table; and unison, octave, and double-octave are objects of perfection treasured like the silver salt-cellars used at elaborate banquets and situated in equally privileged positions.⁷

¹ Ibid., 119.

² Ibid., 18: “Diapason ibi in 14 locis reperitur, diesis in 7 locis.”

³ Ibid., 120: “Situatur autem hic tonus inter duas consonantias perfecte discordantes et quarum usus non est, sicut virtus inter vitia medium tenet.”

⁴ Ibid., 121: “...Et potest ex dictis esse manifestum quod, sicut 7 concordiae praecedunt diapason, sic 7 concordiae mediant inter ipsam diapason et bis diapason quae, secundum Antiquos est ultima et maxima consonantia et concordia. Secundum hoc igitur diapason ponitur in medio concordiarum, ut sol in medio planetarum, et rex in medio gentis suis.”

⁵ See Per-Gunnar Ottosson, *Scholastic Medicine and Philosophy: A Study of Commentaries on Galen's Tegni, ca. 1300–1450* (Naples: Bibliopolis, 1984), 222–224.

⁶ Jacobus Leodiensis, *Speculum musicae, Liber quartus*, ed. Bragard, 121.: “Item, computando tam unisonum quam bis diapason quae sunt extremae, octo consonantiae praecedunt diapason et octo sequuntur eandem, et sic in medio per aequalem distantiam ab extremis illis consonantiis perfecte concordantibus situatur, et, illarum trium concordiarum quae sunt unisonus, diapason et bis diapason, duae extremae, et directius medians inter illas, perfectissimae sunt inter omnes.”

⁷ See *Le Menagier de Paris*, ed. Brereton and Ferrier, 183 (“saliers d’argent”), and *ibid.*, 316, n. to p. 183.

In fact, diagrams of the monochord show that a symmetrical arrangement of visual ingredients was deliberately sought by their *scriptor* (or *pictor*): the icon drawn on f. 13r of MS Digby 90 is divided along a vertical axis separating left from right; within the space reserved for the octave (which occupies the whole of the left-hand side of the scheme) horizontal cross-symmetry is achieved among the four semicircles representing the fifth and the fourth (two on each side of the divide), and semicircles for the octave mirror each other with respect to an horizontal axis. [see Figure 4]

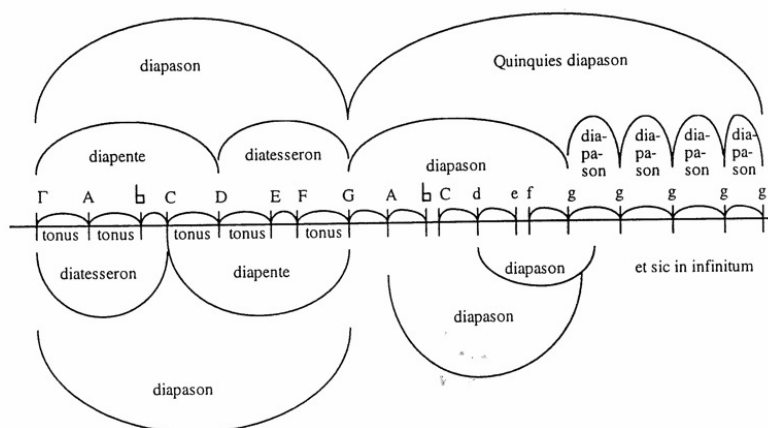


Figure 4. The *Quatuor principalia musice*, 1351. Division of the monochord.¹

In the same vein, and showing a similar fascination with symmetrical arrangements, a figure in Chapter 15 in Book IV of the *Speculum musice*, copied on f. 177r of MS Paris, Bibliothèque Nationale, lat. 7207 is turned into a visual *summa* of ten intervals, from *diesis* (semitone) to *diapente* (fifth), that can be generated on the monochord.² Symmetrical manipulation of space in this instance results in multiple semicircles signifying lesser intervals (semitone, tones, minor and major thirds, and perfect fourths), gradually raising from and falling back upon a horizontal base, while a gigantic semicircle standing for the fifth embraces and subsumes them all.

“This,” Jacques concludes in what might be called a comparative apotheosis with a morale, “is the way concords are mixed with discords, the imperfect ones with the perfect, just like in this world good things [are mixed] with the bad, virtues with vices.”³

4. A Renaissance Epilogue

Earlier in this article I referred to spices as medicaments – thus briefly introducing medieval medicine as an art sister to cooking and, by extension, a cousin to music theory

¹ Florea-Aluas, “The *Quatuor principalia*,” 228 (reproduced by permission); also transcribed in CS4: 210.

² “Collatio consonantiarum quantum ad intervalla;” see Jacobus Leodiensis, *Speculum musice*, *Liber quartus*, ed. Bragard, 33–37 for this section; the diagram is printed on p. 35: in addition to the semicircle for the fifth, it includes four semicircles for the two versions of the second (semitone and tone, respectively), three semicircles for the two versions of the third, and two semicircles for the fourth.

³ Jacobus Leodiensis, *Speculum musice*, *Liber quartus*, ed. Bragard, 122.

as well. In doing so, I was implying that medicine and music might have been seen as sharing some common territory other than “the music of pulse,” sound-based therapy, or the transfer of anatomical concepts onto music theory (all topics already scrutinized¹). I furthermore submit that this is an idea echoed as late as the earlier part of the sixteenth century:

In Book IV of *De harmonia instrumentorum opus*, published in 1518, Franchino Gaffurio quoted freely a rather large excerpt from Aristides Quintilianus’s *De musica*,² a work he had translated for him into Latin in 1494.³ The passage delved into the notion that the two, insofar as scientific disciplines, were related through numbers, more specifically, through application of numerical ratios in both cases. In music such ratios were clearly apparent in consonant intervals; in medicine (better, perhaps: in pharmacy) “the qualities of medicaments are effective in no other way but by virtue of size.”⁴ In other words, Quintilianus’s stance – wholeheartedly adopted by Gaffurio – was that potency in music resulted from correct dosage of intervals (which, in turn, could be expressed through mathematical ratios), just like the potency of medicaments resulted from correct dosage of their primary ingredients, or simples. The first part of the sentence clearly holds on to the Pythagorean doctrine of music as an art of number, and is preceded by extensive references – again, closely based on Quintilianus – to the role numbers and proportions play in both medical and musical terminology.⁵

¹ See Nancy G. Siraisi, *Arts and Sciences at Padua: The Studium of Padua before 1350*, Studies and Texts 25 (Toronto: Pontifical Institute of Mediaeval Studies, 1973), 94–107; id., “The Music of Pulse,” *Medicine and the Italian Universities, 1250–1600* (Leiden: Brill, 2001): 114–139; and Luminita Florea, “The Body Animal and Human as a Simile: Aristotelian and Galenic Anatomy in Late Medieval Books of Music Theory and Practice,” *Philobiblon* 10–11, ed. István Király (Cluj, Romania: Cluj University Press, 2006): 74–123.

² See *Aristidis Quintiliani de musica libri tres*, ed. R. P. Winnington-Ingram, Bibliotheca scriptorum graecorum et romanorum Teubneriana (Leipzig: Teubner, 1963); an English translation is available as Aristides Quintilianus, *On Music in Three Books*, transl. with an introduction by Thomas J. Mathiesen (New Haven: Yale University Press, 1983).

³ See Quintilianus, *On Music*, transl. Mathiesen, 6; for a discussion of the manuscript (now in Verona, Biblioteca Capitolare, MS CCXL [201] misc.), see F. Alberto Gallo, “Le traduzioni dal Greco per Franchino Gaffurio,” *Acta musicologica* 35 (1963): 172–174.

⁴ “Rursus medicamentorum qualitates non alio modo quam per qualitatum dimensiones efficiuntur,” see Franchino Gaffurio, *Franchini Gaffurii Laudensis Regii Musici publice profitentis: Delubrique Mediolanensis Phonasci: de Harmonia Musicorum Instrumentorum Opus* (Milan: Gotardus Pontanus, 1518; reprint eds., Bologna: Forni, 1972; New York: Broude Bros., [1979]), f. LXXXViv. An electronic version of Book Four is found in TML as GAFHAR4 TEXT. An English translation is available in Franchinus Gaffurius, *De Harmonia Musicorum Instrumentorum Opus*, trans. Clement A. Miller, Musicological Studies and Documents 33 ([Rome]: American Institute of Musicology, 1977); this particular phrase was not translated, therefore I am giving it in Mathiesen’s translation of Quintilianus’s text: “Medicine skillfully executes the qualities and powers of drugs in no other way than through symmetries by quantities” (Quintilianus, *On Music* 3.8.2, transl. Mathiesen, 172).

⁵ “Medicine itself presents everything through numbers, both the perception of palpitations and the proportions of periodic fevers. Of which, those analogous to the consonant ratios – to the duple, such as the daily; to the sesquialteran, such as those appearing as a symptom every third day; and to the sesquitercian, such as those appearing as a symptom every fourth day – in no wise

Elsewhere in Quintilianus we read yet another comparison involving, on the one hand, compound medicines, and on the other hand, quantitative musical entities – in fact, a version of the passage referred to above:

For just as in the case of healing drugs, no one certain substance is naturally disposed to heal the sufferings of the body, but a substance commingled from many does good perfectly, so also here, the melody does little for right action, but perfect self-sufficiency is made up complete from every one of the parts.¹

Gaffurio the Humanist might have based massive portions of his music theory treatises on Classical authorities, but he must have been aware of the realities of daily life in Italian cities as well: while music was being sung, played, and written about by the healthy, recipes were written and medicaments were concocted for the sick; and we do have, for instance, accounts from the years 1491-1493 showing the exact quantities of simples that were used to produce compounds, as well as the corresponding amounts of money charged by apothecaries in Rome.² Medicines (like spices) were minutely weighted articles, and intervals were equally mensurable entities. Incidentally, in the

increase the hazard...” (Quintilianus, *On Music* 3.8.2, transl. Mathiesen, 172). Miller’s translation of this passage from Gaffurio (*De Harmonia Musicorum Instrumentorum*, 205) runs as follows: “It is well known that medicine in all its aspects establishes through numbers the detection of seizures and the proportions of intermittent fevers. Some of these are similar to consonant proportions, as an alternate fever to duple, tertian fever to hemiola, and quartan fever to a fourth; these do not completely bring the danger of death.”

¹ Quintilianus, *On Music* 1.12.3, transl. Mathiesen, 93. Other passages relating music and medicine are in *ibid.*, 2.16.4 (see transl. Mathiesen, 150–151) and 2.4.1 (transl. Mathiesen, 118), respectively; they run as follows: “For even the wise men of the Children of Asclepius do not present on every side the viforous types of drugs, shrinking before the weakness of their underlying nature. We must make the mixture not through bare opposites (for this is unsuitable and repellent) but rather through harmoniously arranging the means with the extremes;” and “For just as one and the same drug applied equally to one passion in many bodies would not be similarly efficacious and would heal according to the moderation or severity of the wounds – the former more quickly, the latter more slowly – so also melos moves the more adaptable child immediately, while it captivates the less adaptable child after a long time.” On the close relationship in Greek thought between music and medicaments, see *ibid.*, 118, n. 23 and the bibliography there cited.

² For instance: “Siroppi violati oncie 1, siroppi de bisantis, melis rosati colati ana oncia ½, aquae feniculi, endiviae et capillorum veneris ana oncia 1, misce;” see Ivana Ait, *Tra scienza e mercato: gli speciali a Roma nel tardo Medioevo*, *Fonti e studi per la storia economica e sociale di Roma e dello Stato pontificio* 7 (Rome: Istituto nazionale di studi romani, 1996), 287–291: this is a medicament account issued by the Collegio dei Notai Capitolini (CNC), now kept in the Archivio di Stato di Roma, showing the medicaments that were administered between 1491 and 1493 to Giovanni Gueri and his family (*ibid.* 83). Other medicaments involving the compounding of simples, as well as the amounts charged by the apothecary in the same document are as follows: “Al dì 14 ditto (i.e., the month of February 1491) per lui portò lo figlio una medicina fatta con agarici eletti dracma 1, salis giemme scrupolo 1, diacassie dracme 6, diafinicon dracme 2 ½, eletuario de psilio dracme 1 ½ distemperata cum decotione (*sic*) pectoralis fiat potus; bol. 30;” and “Al dì ditto (i.e., 4 September 1491) per lo ditto una medicina fatta cum florum trium cordialium, folliculorum sene ana dracme 1, polipodii contusi dracme 2, passularum oncie 1, cinamonii dracme 1, aqua bugolosse, melisse, endivie, aqua quantum sufficit in qua dissolve dicaptoliconis dracme 8, fiat potus.”

early modern period apothecaries in Rome and other large Italian cities were often pastry cooks as well: thus the pharmacist “Giacomo de Vallatis, for the famous lunch offered by Pope Paul II to the French ambassadors, was charged not only with providing a variety of specialties for the banquet, but downright with adorning and applying gold-leaf on every single thing, including the poultry and meat.”¹ Both mortar and pestle in many an apothecary’s shop continued to perform double duty, just like they used to do in the Middle Ages: they pounded the spices for the making of both medicines and food.

Later in the sixteenth century Francesco Salinas who, according to Claude V. Palisca “aimed to navigate between these extremes [i.e., Pythagorean and Aristoxenian] and profit by both the senses and mathematics”² expressed his conviction that discriminating among sensory qualities pertains to senses themselves. His plea was phrased in terms involving a comparison of sensory acuteness manifest among musicians, painters, and **cooks** as practitioners of their respective arts:

... consonances and the remaining musical intervals have been recalled from the uncertain arbitration of the ears [and given] to the certain judgment of reason, as it already has been often said. But the sense was always the best judge of all things obeying [sensory] gifts: for how could anyone be a good cook if his taste is not exquisitely delicate? Nor can anyone be an excellent painter if he does not have cultured eyes, so to speak. Why really, nor will anyone be able to practice music optimally if his ears are not cleaned.³

Twenty years ago Edward E. Lowinsky was supporting a view of medieval music where sensory matters were discreetly but firmly allied with intellectual ones.⁴ Medieval *thinking* about conceptual entities (in this case, intervals) as can be grasped from Jacques’s verbal formulations of such thinking was not completely bereft of sensual undertones. As seen, Jacques does speak of mental processes such as analysis, classification, and ranking in analogical terms involving concrete bodies possessing taste and aroma and connoting sensuous pleasure. Concurrently a thinker and a man of flesh and blood, he no doubt knew the effects (culinary and medical) of aromatic spices, and, most probably, their relative monetary value as well. Parallels employed by him, as well as those traced by Gaffurio between ingredients and processes common to music analysis and the arts of cooking, medicine, and pharmacy were believed to be effective tools in explicating notions of music theory. The association of sensory experiences involving hearing, smelling, tasting, and seeing ensured a better understanding of music, both theoretical and practical.

¹ Ibid., 91.

² See Claude V. Palisca, *Music and Ideas in the Sixteenth and Seventeenth Centuries*, Studies in the History of Music Theory and Literature 1 (Urbana: University of Illinois Press, 2006), 32.

³ “...consonantias, et reliqua Musica interualla ab incerto aurium arbitrio ad certum rationis iudicium reuocaret, vt saepe iam dictum est. Sensus tamen ad omnia munia obeunda semper fuit optimus iudex: nam quo pacto bonus poterit esse cocus, qui gusto non sit praeditus delicato? neque eximius poterit esse pictor, qui eruditos (vt ita loquar) non habeat oculos. Quare nec etiam Musicam quisquam optime poterit exercere, cui purgatae non sint aures;” see Salinas, *De Musica libri septem, Liber quartus*, 227, and n. 3 *supra*.

⁴ See Edward E. Lowinsky, *Music in the Culture of the Renaissance and Other Essays*, 2 vols., ed. Bonnie J. Blackburn (Chicago: University of Chicago Press, 1989), 1: 90.