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Deceptive Boundaries

The Hexachordal System as a Distorting Map of Diatonic Space^{*}

Conceptual similarities between the hexachordal system and globe gores, introduced around 1500 to project a three-dimensional globe onto a two-dimensional surface, reveal salient aspects of the medieval and Renaissance *Tonsystem*. The two devices strategically distorted musical and geographic space by delivering segmental images of seamless objects for practical purposes: the method of the *ut-la* syllables leveraged the affinities between the seven diatonic pitches to facilitate sight-singing, while the printability of gored maps enabled the large-scale production of globes. In both cases, the shape and format of the representation is not to be conflated with the nature of the object represented. The analogy with Waldseemüller's map highlights the primacy of the circular model of diatonic space in Renaissance polyphony, projected by the A-G letters, over the segmental model suggested by the *ut-la* syllables.

Konzeptionelle Ähnlichkeiten zwischen dem hexachordalen System und den Globusstreifen, die um 1500 eingeführt wurden, um einen dreidimensionalen Globus auf eine zweidimensionale Oberfläche zu projizieren, bringen Aspekte des Tonsystems des Mittelalters und der Renaissance zum Vorschein. Beide verzerrten den musikalischen und geografischen Raum strategisch, indem sie für praktische Zwecke segmentierte Bilder nahtloser Objekte lieferten: Die Methode der *ut-la*-Silben nutzte die diatonischen Affinitäten zwischen den sieben diatonischen Tonhöhen, um das Blattsingen zu erleichtern, während die Druckbarkeit von keilförmigen Karten die Herstellung von Globen in großem Maßstab ermöglichte. In beiden Fällen sind Form und Format der Darstellung nicht mit der Art des dargestellten Gegenstands zu verwechseln. Die Analogie zu Waldseemüllers Karte unterstreicht den Vorrang des zyklischen Modells des diatonischen Raums in der Polyphonie der Renaissance, das durch die Buchstaben A–G projiziert wird, gegenüber dem segmentalen Modell, das durch die *ut-la*-Silben suggeriert wird.

SCHLAGWORTE/KEYWORDS: diatonic regions; gamut; globe gores; Guido of Arezzo, Hermann Finck; hexachordal system; Johannes de Muris; Johannes Valendrinus; Josquin; litterae vs. syllabae; Martin Waldseemüller; Missa La sol fa re mi

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Introduction

In 1507, German cartographer Martin Waldseemüller published a gored map of the world designed to represent the Earth as a three-dimensional object (Fig. 1). Users would cut out the printed image around the edges of its twelve sections held together at the equator and glue it on a wooden or metal ball.¹ In their two-dimensional form, however, oceans and continents are shown as if broken up into non-contiguous regions, so that South Africa, for instance, is shown split open by a wide cleft.

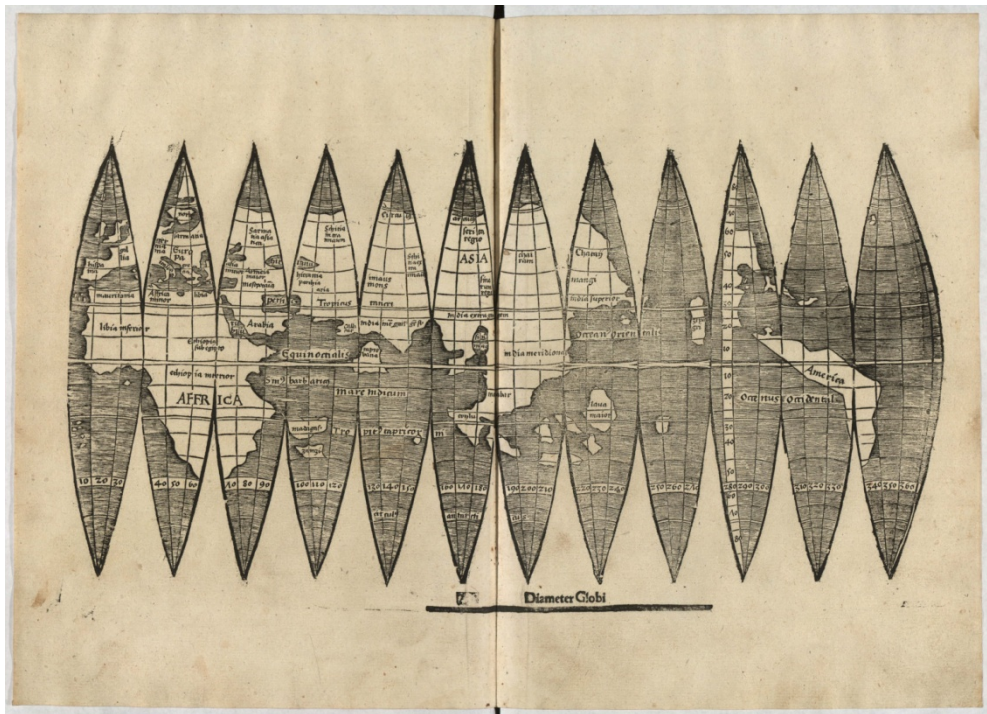
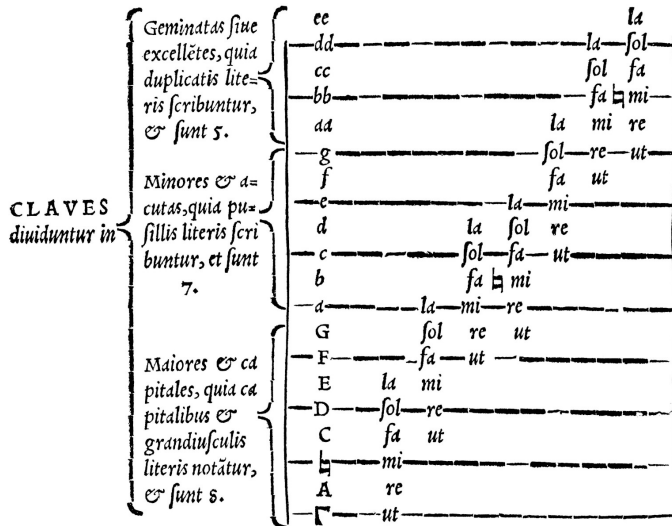


Fig. 1: Martin Waldseemüller, Map gores (1507)

Consider now the diagram of the gamut from the opening pages of Hermann Finck's *Practica musica* of 1556, an illustration that would have been amply familiar to musically educated readers of the time (Fig. 2). In it, the vertical series of *claves* on the right side of the table, from *Gamma* to *ee*, accounts for the cyclicity of diatonic space around the octave (*diapason*), highlighted by the recurrent series of the seven *litterae* A-G. The anonymous author of the *Dialogus de musica* appears to have been the first to label notes an octave apart from each other with the same letters in upper and lower cases around the year 1000—slightly before Guido of Arezzo's invention of the *ut-la* syllables.

¹ Dekker 2007, 141 f.

Systema clauēs ac uoces Musicales monstrans

Fig. 2: Hermann Finck's diagram of the gamut (*Practica musica*, 1556), fol. Aiiiijr

But by far the largest portion of Finck's diagram is taken up by the interlocking strings of *ut-la* syllables (usually called *syllabae* or *voces* in medieval theory). Three of these begin on G, two on C, and two on F with Bb. Following a long-standing German tradition, Finck calls each such string a *cantus* (pl. *cantus*); medieval and Renaissance theorists usually labeled it a *deductio*, i.e., a transposable set of pitch names that in the system of *musica recta* could be positioned on the three *proprietates* C-a, G-e, and F-d (with Bb).

Mapping musical sounds is vastly different from mapping the Earth's surface. For instance, whereas the relative position of the pitches within each syllabic string reflects their interval context, the position of an Earth location on its globe is not meaningful per se. Nevertheless, the two maps—*mutatis mutandis*—are directly comparable to each other in one key respect—namely, their shared reliance on a segmental mode of representation to visualize a spherical or cyclical entity. There is no actual barrier above *la* or below *ut* forcing a singer to “mutate” to a different diatonic region every time a melody exceeds those boundaries. Such a reading has it backwards: rather, the unbroken cycle of letters near the left margin of Finck's gamut determines the arrangement of the syllabic sets in the center. By the same token, no one would read Waldseemüller's map as implying that a traveler will fall off a cliff in their journey from Paris to Berlin. These seg-

mental representations make sense only when referred back to the seamless structures of the objects represented.²

The Hexachord as a Region

Envisioning the globe underneath the gores has proved to be a far more intuitive process than mapping the *ut-la* segments onto the seamless diatonic scale that gives rise to them—judging from the extent to which the “hexachord” continues to be portrayed as the normative scalar segment of early music. Since at least the 1970s, numerous scholars have interpreted the overlapping strings of *ut-la* syllables in medieval and Renaissance gamuts as evidence of an all-pervasive hexachordal conception of musical space. One key argument supporting this position points to the hexachord as an “acquired nature”: because musicians were trained to yoke the notated pitches to the syllables from the early days of musical training, they soon came to regard those syllables as indispensable for defining the distances between the notes. Thus, the hexachord was a *de facto* diatonic yardstick against the implication of octave-based diatonicism conveyed by the seven *litterae*. Indeed, Christian Berger has portrayed the *litterae* as the domain of *musica speculativa* arguing that they were meaningless until yoked to the syllables, like the letters of grammar.³

Yet, the emergence of the major sixth as a key diatonic segment has also been invoked as the main rationale behind the adoption of the six syllables, effectively raising a chicken-and-egg dilemma. In a widely influential 1972 article, Richard Crocker highlighted the introduction of the “hexachord” by Guido of Arezzo and Hermannus Contractus respectively as the by-product of the theory of the diatonic affinities, and of the expansion of the tetrachord of the modal finals (*D-E-F-G*) at both ends. Crocker characterized such developments as a sea change in West-

2 As Christian Berger observes, “Die sechs Töne eines Hexachords [...] lassen sich somit *unabhängig von der realen Lage im Tonsystem* allein aufgrund der strukturellen Lage im Verhältnis zum Halbtonschritt des Hexachords benennen” (Berger 1996, §.1, emphasis mine).

3 “Die Oktaveinteilung bleibt [...] während des ganzen Mittelalters eine bloß theoretische Gliederung, die in der Praxis keine große Bedeutung hat [...]. Die *litterae* sind eben wie in der Grammatik bloß ‘partes vocum significativarum et ipse nichil significant’” (Berger 1992, 97). See also Crocker 1972, 29.

ern music theory, by which the “hexachord” emerged as “the central concept of both chant and polyphony up through the 16th century.”⁴

Nevertheless, even a committed “hexachordist” such as Crocker admits *en passant* that Hermann’s major sixth was “a complex, second-order concept”⁵ and that Guido’s diatonic scale was based on the principle of octave duplication:

Guido, starting from the monochord scale of the *Dialogus*, laid increasing stress on a seven-tone, octave-oriented, strictly diatonic scale with octave duplication. At the same time he persistently explored affinities, that is, the relationships among the finals at their various alternate locations, and eventually expressed these affinities in terms of the sixth that encloses the tetrachord of the finals.⁶

The phrase “at the same time” should be read as “within such an octave-oriented *Tonsystem*,” the precondition for Guido’s theory of affinity.⁷ Indeed, the author acknowledges, quite correctly, that the major sixth was a “second-order concept” for Guido as well, in the sense that it did not operate as the normative diatonic yardstick. Rather, it reflected an important property (*affinitas*) of that yardstick: within the octave, pitches a fourth or fifth apart share the same interval context through the range of a major sixth. Yet, the conceptual difference between the two diatonic segments is easily blurred in *musica practica*, for the “second-order concept” easily takes on the appearance of a first-order scale, so that it has become customary to claim that, for instance, the Superius line in the first four measures of Ex. 1 (see below) is “in the natural hexachord.” Such an observation amounts to saying that Spain is in the first gore of Waldseemüller’s map—true, in a sense, provided one does not lose sight of the logic behind those representations.

Six vs. Seven

To be sure, at times medieval theorists appear committed to a hexachordal conception of musical space. Such statements, however, must be read contextually, weighing carefully the meaning of often thorny technical terms. As I have argued

4 Crocker 1972, 37.

5 Idem, 22.

6 Idem, 34.

7 For instance, the title of *Micrologus*, Ch. 9, reads “De similitudine vocum, quarum diapason sola perfecta est” (“Of the affinity among the notes, which is perfect only at the octave,” Guido of Arezzo 1955, 130). Here and hereafter all translations from Latin are mine.

in a monograph on this subject, the systematic adoption of the *ut-la* syllables for training purposes arguably did not lead to a wholesale hexachordal reconceptualization of diatonic space, despite the occasional wording by medieval and Renaissance theorists suggesting the opposite.⁸

For instance, the author of the *Summa Magistri Johannis de Muris* raises the question of the central position of the semitone among the six notes, to which he replies first by extolling the “dignity” of the *numerus senarius*, then by observing that, in a similar manner, nature often enshrines soft matter (*membra mollia*) within hard matter, e.g., brains in skulls and marrow in bones.⁹ The parallel confuses the structure of reality with the mode of representation. Even a cursory glance to the rest of the treatise suggests that the term *locatur* in that sentence cannot be interpreted to mean that the semitone “is located” in the middle of the six notes by natural principle (*pace* the author’s biological similes), but rather in the sense that it “is conveniently allocated” to that position only within the *ut-la* segment used in solmization. To extend the centrality of the semitone beyond that purpose would render meaningless the theories of mode and of the diatonic species.

More explicitly than the *Summa*, the *Opusculum monacordale* by Johannes Valendrinus—a key 14th-century text of the *Traditio Hollandrini*—portrays the six syllables as active markers of musical space that impose their “six-ness” on the corresponding pitch letters:

[...] musical sound comes in a six-fold arrangement through the six syllables, *ut re mi fa sol la*, according to the will of the early musicians and by common consent of their followers. The first tone, played on either wind or keyed instruments, is called *ut*, which then ascends by one tone or interval called *re*.... And these *voces* or syllables were purposefully designated by the six capital letters *Γ A B C D E*. Indeed, the first syllable, named *ut*, is designated by Gamma, or Greek G; [...] likewise, A represents *re*, B *mi* [etc.].¹⁰

8 Mengozzi 2010.

9 “Sed forte quaeret aliquis, quare semitonium sic locatur in medio sex notarum praedictarum, quod nec in primo nec in fine? Ad hoc dicendum est cum philosopho, quod ars imitatur naturam; in naturalibus autem sic est, quod membra mollia in medio sunt locata et intra reclusa, ut cerebrum in granio, intestina et sputalia in cavitate costarum, medulla in osse: et cum semitonium mollem habeat sonum reliquarum aliarum notarum, in medio illarum potius, quam in extremitate locatur” (Gerbert 1784, 203).

10 “[...] sonus sextupliciter variatur ad voluntatem primorum instituencium, et communem assensum omnium subsequencium hiis sex silabis: *ut, re, mi, fa, sol, la*. Primum namque sonans vox, flatus, aut pulsus, *ut* sic dicto vocabulo nominatur, qui ulterius per unum tonum sine intervallo ascendens *re* dicitur... Et hee voces seu sillabe sex litteris capitalibus propter sui dignitatem prioratis hoc modo designantur: G A B C D E. Nam prima, quae *ut* nominatur, per gamma - sive per G graecum - designatur. [...] A *re* B *mi* C *fa* D *sol* E vero *la* representat” (Valendrinus 2010, 59f.).

The excerpt offers strong support for the now common notion that the *litterae* provided only a nominal or abstract series of “places” on the Hand (*loci*) whose intervallic distances from one another remained undefined until yoked with the *syllabae*. By explaining that the *syllabae* “are designated” or “represented” by the *litterae* the author characterizes the latter as a mere function of the former, without signifying agency of their own. The commentator to Valendrinus’s text, however, is alarmed by this teaching, objecting that the explanation puts the cart before the horses:

Concerning the preceding paragraph, it should be observed that the six letters mentioned in the text represent the six syllables, by which the songs of the entire world are sung. [...] But one should not conclude from it that there are only six musical letters or keys. For there are indeed seven of them, as it soon will become clear, and after the seventh the first one is repeated, then all others in turn. Indeed, whoever reaches the octave and goes beyond it obtains a repetition of sounds, as magister Johannes de Muris says [...].¹¹

Yet, even Valendrinus falls short of labeling the segment *F-E* as a “hexachord”—in this respect aligning himself with medieval theory, which consistently refrains from assigning structural significance to the major sixth, except when the topic at hand is solmization. Thus, there is ground to question the now familiar practice of translating terms such as *deductio* or *proprietas* as “hexachord”—a correct choice only after the Latin term *hexachordum* began indicating the syllabic set in the 1480s, most notably in Franchino Gaffurio’s *Musica practica* (1496). Before that time, *hexachordum* designated a portion of the octave available in two sizes, *major* and *minus*, in their various species.¹²

The primacy of the *litterae* over the *voces* may occasionally have been a matter of debate by the mid-14th century, but it had come to be accepted as a matter of course already in the two centuries after Guido (ca. 1050-1250), judging from the fact that the *voces* make only passing appearances in the musical sources of that period.¹³ On the other hand, the 12th century witnessed the rapid adoption of the method of the *A-G* letters to label the continuous series of diatonic pitches, an

11 “Circa litteram notandum, quod illae sex littere in textu posite sex voces musicales, per quas omnis cantus mundi cantari habet, representant [...] Unde per hoc non est putandum, quod solum sex essent littere seu claves musicales. Quia huiusmodi septem sunt, ut clarius infra patebit, et post septimam litteram reiteratur prima et consequenter alie sequentes. Quicquam enim dyapason tangit et ultra diapason vadit, reiteracio potest dici, ut ait magister Iohannes de Muris in musica sua theoremate 2^o” (idem, 60).

12 Mengozzi 2010, 181 ff.

13 Idem, 44 ff.

innovation that had a direct and lasting impact on musical notation. Alma Colk Santosuosso has shown that various forms of letter nomenclatures (including by the A-G letters) were widely used to complement neumatic notation in its late stage.¹⁴ The two colored lines of Guido of Arezzo's staff notation, yellow for C and red for F, unequivocally implied a two-semitone, heptachordal *Tonsystem*. Both *claves* (i.e., "keys," because they "unlock" the relative distance of the other pitches) are located above a semitone, though only F has a tritone above; in this sense they are similar, but not identical.¹⁵

The system of *musica recta* acknowledges this relationship of partial identity by labeling the two pitches (*loci*) as both *ut* and *fa*, but only C as *sol*. In sight-singing practice, however, solmization considers the pitches in relation to only one semitone, giving only a partial picture of their diatonic position (similarly, in Waldseemüller's map the full geographic context of *loci* positioned on the edge of a gore is split between two adjacent gores). In this sense, solmization cleverly simplifies and distorts diatonic space in order to aid the untrained singers' task of navigating it.

The opening phrase of the Kyrie from Josquin Desprez's *Missa La sol fa re mi* aptly illustrates this last point (Ex. 1). The title of the work signals that each voice (though mostly the Tenor) will sing the *soggetto cavato* in distinct "hexachordal gores" throughout the Mass. Thus, the Superius in m. 1 intones the opening *la* on A. But the hexachordal parsing of the gamut does not fully account for the scalar position and diatonic context of the pitches: the Superius sings *fa* at the beginning of m. 2 (as part of the main motive) against the *sol* in the Altus (*D* in *durus*), as if the two parts were separate geographic regions assigned to two different gores on a map. In reality, however, the Altus' *D sol* is the same as the following *D re* in the Superius, as indicated by the notation. Contrariwise, the *A* in m. 2 of the Altus lies a fourth lower than *D re*, despite being also solmized as *re*.

This said, in at least two respects the syllables complement the information provided by the letters. First, they convey a sense of melodic trajectory: to yoke *D* with *re* is to pin it to the upper *mi-fa* semitone *E-F*, thus as part of a generally ascending line, whereas to sing it as *sol* is to pin it to the lower *mi-fa* semitone *B-C* within a generally descending line. In this way, the syllables reflect the ranges

14 See Colk Santotuosso 1989.

15 For an example of early staff notation, see Vatican City, Biblioteca Apostolica Vaticana, MS B.79 (12th century); digital reproduction available at https://digi.vatlib.it/view/MSS_Arch.Cap.S.Pietro.B.79/0001 (10.8.2023).

of the polyphonic voices, so that the same *D* will usually call for *sol* in the Altus and for *re* in the Cantus.

Superius
Ky - ri - e - e - le - i - son, e - le - i - son, Ky - ri e e - son, Ky - ri - e e - le - i - son, Ky - ri - e e - le - i - son

Altus
Ky - ri - e - e - le - i - son, e - le - i - son, Ky - ri - e e - le - i - son, Ky - ri - e e - le - i - son, Ky - ri - e e - le - i - son

Tenor
Ky - ri - e - e - le - i - son, e - le - i - son, Ky - ri - e e - le - i - son, Ky - ri - e e - le - i - son, Ky - ri - e e - le - i - son

Bassus
Ky - ri - e - e - le - i - son, e - le - i - son, Ky - ri - e e - le - i - son, Ky - ri - e e - le - i - son, Ky - ri - e e - le - i - son

Ex. 1: Josquin Desprez, *Missa La sol fa re mi*, Kyrie (mm. 1-7)

Secondly, solmization provides confirmation of exact polyphonic imitation by showing that the same syllabic pattern applies to different statements of the motive (typically a fourth or fifth apart)—a method still recommended in the early 18th century by authors such as John Pepusch and Johann Joseph Fux.¹⁶ In the case of works based on a *soggetto cavato*, such as Josquin's *Hercules* and *La sol fa re mi* masses, the solmization of the motive at the upper fourth (or lower fifth) is of cour-

¹⁶ "In order to make the several parts of a fugue to proceed by the same species of intervals, 'tis necessary that they be taken in the corresponding parts of similar scale of notes. This cannot with certainty be attain'd, but by the means of the hexachords; from whence it becomes a necessary rule, that the parts in fugue must have the same syllables in their solmization" (Pepusch 1731, 79; see also Fux 1725, 145 f.).

se identical by design. Yet, imitation is often not meant to be exact, as at the beginning of Josquin’s *Pange lingua* mass, where the Bass’s *re-mi-re* answers the Tenor’s *mi-fa-mi*, or at the beginning of Kyrie II, where Superius and Tenor sing *sol-mi-fa-sol-la* against *fa-re-mi-fa-sol* in Bass and Alto.¹⁷ Such cases confirm that the notated pitches and the intervals between them must be correctly identified *qua* letters before solmization can be attached to them—if solmization must be used.¹⁸

Furthermore, the transfer of the syllabic set on different *claves*, when occurring, does not tell the whole story about the diatonic placement and tonal orientation of the subject. At the beginning of the Kyrie of Josquin’s *La sol fa re mi* mass, shown in Ex. 1, the Alto places one whole tone above *A la* in the Superius by singing *B mi* in mm. 1 and 2. When the Tenor enters in m. 5 one hears *la sol fa re mi* again, but in a different diatonic context, as the opening *E la* now has a semitone above (*F fa*, already heard in the opening duo; see Table 1). We are reuniting the syllabic sets in circular space in the same way as we would assemble Waldseemüller’s gores on a metal ball.

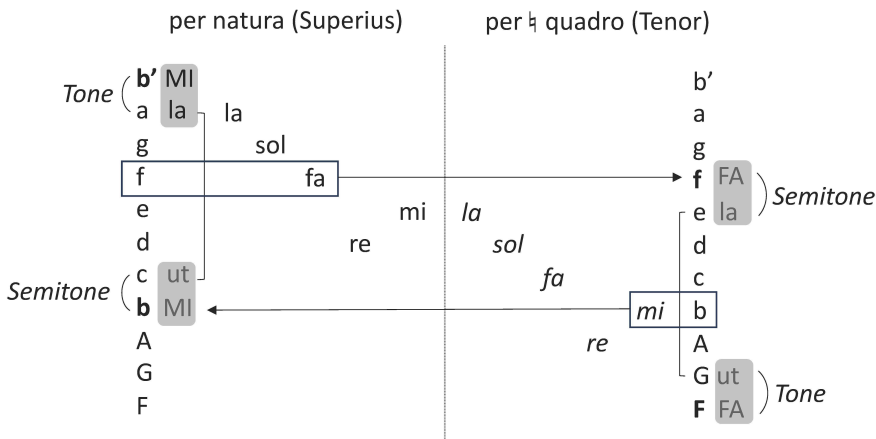


Table 1: Alternative placements of the *La sol fa re mi* motive in heptachordal space

17 A modern edition of the mass is available at the site of the Josquin Research Project, <https://josquin.stanford.edu/work/?id=Jos0403> (6.3.2024). The Bassus could of course theoretically sing *mi-fa-mi* at the beginning by singing *Bb* (as suggested in Godt 1980, p. 116f.), in line with the beginning of the Credo. However, *bb* would be out of place in the subsequent Alto entrance, which replicates the Bass line.

18 This position is in line with Christian Berger’s observation that the choice of hexachord is ultimately a function of modal and contrapuntal considerations: “[D]ie Hexachordlehre [gibt] als eine Elementarlehre keinerlei Entscheidungshilfen. Diese sind vielmehr in den übergeordneten Lehrbereichen wie der Modus- oder Contrapunctuslehre zu suchen” (Berger 1996, §.3).

Predictably, the different positions of the subject in heptachordal space determine its alternative tonal slants.¹⁹ The identity of the syllables highlights the diatonic affinity between the pitches, but it is only by mapping the *proprieties* against the octave that one realizes where the affinity breaks down, thus why *A la* and *E la* in Josquin's mass have different "tonal" characters: only *A* may be reached via "closed" cadences, with a semitonal ascent from below.

To conclude, while the representation of the pitches via Guido's syllables is and can only be "hexachordal," those same pitches and their intervallic distances are enmeshed in the cyclical order enforced by the seven letters and projected by octave-based conceptualization of diatonic space, reinforced by *contrapunctus* and mode. By the same token, we may choose our travel destinations based on their positions on the globe gores of a map, knowing full well that we will not have to travel across gores in order to reach them.

References

- Berger, Christian. 1992. *Hexachord, Mensur, und Textstruktur*. Stuttgart: Franz Steiner.
- Berger, Christian. 2016. "Hexachord." In: *MGG Online*, edited by Laurenz Lütteken, Kassel: Bärenreiter.
- Colk Santosuosso, Anna. 1989. *Letter notations in the middle ages*. Ottawa: Institute of Mediaeval Music.
- Crocker, Richard. 1972. "Hermann's Major Sixth." *JAMS* 25/1: 19–37.
- Dahlhaus, Carl. 1989. *Studies on the Origin of Harmonic Tonality*. Translated by Robert Gjerdingen. Princeton, NJ: Princeton University Press.
- Dekker, Elly. 2007. "Globes in Renaissance Europe." In: *History of Cartography*, vol. 3, *Cartography in the European Renaissance*, edited by David Woodward. Chicago: University of Chicago Press, 135–173.
- Finck, Hermann. 1556. *Practica musica*. Reprint Bologna: Forni 1969.
- Fux, Johann Joseph. 1725. *Gradus ad Parnassum*. Reprint New York: Broude 1966.

19 The lone entrance of the motive on *D la* at the end of the "Christe" (with *B fa*) reproduces the *A la* pattern, with a tone above. It is sometimes argued (as, for instance, in Dahlhaus 1989, 249f.) that the occasional deployment of both *Bb* (*B fa*) and *Bn*[for *n* we need in print something like #] (*B mi*) in the same context (e.g., in this "Christe," mm. 39–40) is at odds with an heptachordal conception of the *Tonsystem*. Significantly, however, the two pitches were indicated by the same letter and placed on the same position on the staff; furthermore, a string of consecutive semitones was regarded as outside the boundaries of the diatonic genus.

- Gerbert, Martin, ed. 1784. *Summa magistri Johannis de Muris*. In: *Scriptores ecclesiastici de musica sacra potissimum*, vol. 3, 190–248. Reprint Hildesheim: Olms 1963.
- Godt, Irving. 1980. “Renaissance Paraphrase Technique: A Descriptive Tool.” In: *Music Theory Spectrum* 2 (1980): 110–118.
- Guido of Arezzo. 1955. *Micrologus*, edited by Joseph Smits van Waesberghe. Nijmegen: American Institute of Musicology.
- Mengozzi, Stefano. 2010. *The Renaissance Reform of Medieval Music Theory: Guido of Arezzo Between Myth and History*. Cambridge: Cambridge University Press.
- Pepusch, John Christopher. 1731. *A Treatise on Harmony*. Reprint New York: Broude 1966.
- Valendrinus, Johannes. 2010. “Opusculum monacordale.” In: *Traditio Johannis Hollandrini*, edited by Michael Bernhard and Elżbieta Witkowska-Zaremba, vol. 2. Munich: Bayerische Akademie der Wissenschaften, 1–178.
- Waldseemüller, Martin. 1507. [Map gores]. https://commons.wikimedia.org/wiki/File:Waldseemuller_1507_globe_gore_map-That-Named-America.jpg (12.8.2023).

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