The Musical Hand in Leonardo da Vinci's Anatomical Drawings

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The hand emerges as an empathetic, thinking and generative organ in numerous contexts in Leonardo's manuscripts. This essay explores a single site in this continuum: the linkage of hands and music in two pages from Leonardo's anatomical studies. In both, the hand turns out to epitomize the body as a microcosmic entity in accordance with the musical-cosmological language of traditional ‹sacred anatomy›. However, the discourse of the musical hand in Leonardo transcends this persuasion. It insinuates that this organ is an enigma, for it is unaccountable for in observational terms alone. As such, Leonardo's discourse of the hand in the context of the anatomical investigations also reflects, so I propose, the anatomist-musician's idiosyncratic music-philosophy.

I would like to begin this study of hands and music in Leonardo's anatomical folios with a preliminary, brief excursus into the compelling presence of hands in his paintings. As was often affirmed, his hands are carriers of theological, philosophical, scientific, and art-theoretical thinking. They can be reflexive, expressive, or apprehensive: in the history of Western art, none equals their aura.

Think of the foreshortened, almost anamorphic palm that Mary outstretches towards the mortal spectator from within the womb-like cave that encompasses her (*Madonna of the Rocks*, Louvre).

Think of the contradictory hands of Christ in *The Last Supper*, the left one (in palmar position) demonstrating the absent stigmata of the Crucifixion, while the right (in dorsal foreshortened position) is recoiling away from the ominous bowl, proof of the imminent betrayal.

Think of the knowing calm of Mona Lisa's hands, in her role as the Great Mother, emblem of the eternal return of birth and death.

Think of the erotic-ironical hand of Cecilia Gallerani (*Lady with Ermine*, Krakow), caressing the animal that was both symbol of purity and an insignia of her lover, as if she were playing a lute: an iconic allusion to the reversal of gendered power and submission in Renaissance poetry of love.

Think of the looming tumult of gestures that closes on the Virgin and the Child (*The Adoration of the Magi*, Florence).

Think of the upward-pointing hand of the hermaphrodite Angel of the Annunciation, horridly clowning, echoing his erection [fig. 1].

Abb: 1 >

These hands are performative. They solicit the viewers to acknowledge their own being-there as participants in the present time of all and any spectatorship, of all and any representation. As such, they constitute discourses, enclosures of authorial enunciations, in the sense of the linguistic differentiation that Émile Benveniste has established between *discours* and *récit*, and which Louis Marin has seminally adapted and elaborated for art history and the visual studies. [1] «In order for there to be a narrative (*récit*) or story», writes Benveniste, «it is necessary and sufficient that the author remain faithful to his enterprise as historian and banish all that is foreign to the narrative of events (discourse, personal reflection, comparison) [...] the events are set down as they occurred, as they gradually appear on the horizon of the story. Nobody is speaking here. The events seem to tell themselves». [2] Discourse disrupts the author-less sovereignty of narrative, and situates it in the orbit of conditional subjectivities, temporalities, spaces, points of view.

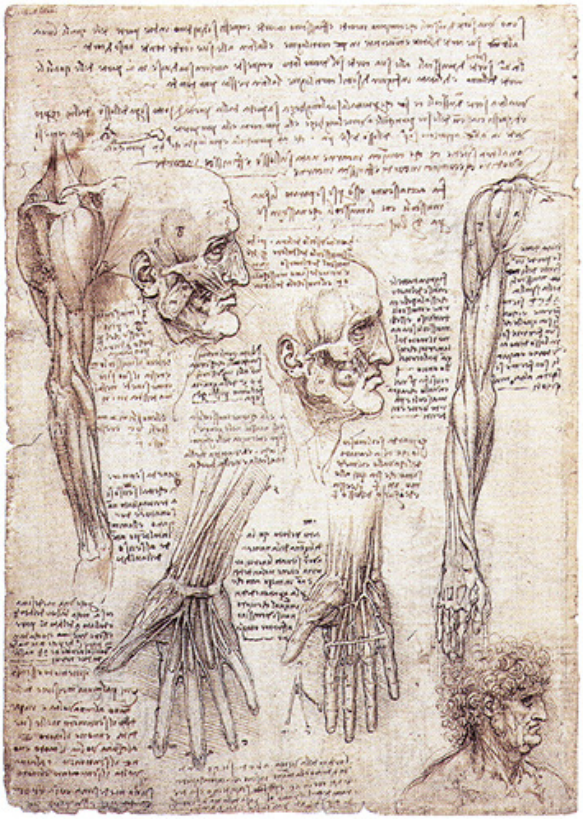
In this capacity, hands in Leonardo's paintings also enact Renaissance contemplations and pictorial wisdoms that put into play likeness vis-à-vis image, or perspectivalism vis-à-vis facture, mediation, and autonomy. Christopher Pye has recently shown with great perspicacity how the upturned pointing gesture of St. John (Paris), St. Anne (London), and the lost Angel of the Annunciation (in contemporary copies) evoke the self-limiting awareness which is inscribed in the act of painting itself. [3] These works embody «the new awareness of representation as a field of contingent and differentially defined meaning», writes Pye. The hands are their key: they indicate the invisible origin of figurability, of the prime generator. In view of the theological dogmas of the divine creation *ex nihilo* and the Immaculate Conception, they thematize the idea of the created work, while refuting its *hubris*. At the same time, these devotional-skeptical gestures celebrate the self-sustaining order of painting and the authoritative position of its maker. Leonardo's hands beckon the entrance of the sign into the world and attest to its mimetic insufficiency. They perform the dialectical sublation of the artist's hand.

Certain references to the hand in Leonardo's anatomical reports, so I hope to demonstrate in this essay, should also be understood as a discourse within narrative: for they also introduce a dimension of modal utterance into the indifference of the scientific narrative. Like their numerous textual and visual analogues in Leonardo's scientific studies, they breach the detached, seemingly authorless protocol, and infringe on the code of dissective expertise. [4]

Guarda, se tu credi... Look here, can you believe it?

Folio K/P 142v [fig. 2] comprises three distinct topical and visual areas. It contains studies of the nerves of the hand and the muscles of the arm; studies of facial muscles; and a small drawing of a man's profile that seems foreign to the overall anatomical agenda of the page. All but the last are accompanied by explicative notes and constitute an efficient series of image-text segments. This concatenation was routinely considered arbitrary, but I shall contend here that the folio as a whole has a coherent rationale.

Following the downward rhythm of these enclaves we encounter an interpolation that seems to harbor a parallel stream of thought, wedged inside a textual section that deals with phantom, displaced and erroneous sensations in the fingers: «See if you believe that this sense is affected in an organ player whilst at the same time his soul is giving attention to the sense of hearing» (*Guarda se tu credi che tal senso sia travagliato 'n un sonatore d'organo e l'anima in tal tempo attende al senso dell'audito.*) [5]



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This laconic, aporetic insertion appears to be but a marginal rumination, and was largely ignored or understudied in Leonardo research. [6] The disregard for it, however, is both weighty and symptomatic, since it draws its validity, and validates in return, conservative assumptions on what is and what is not relevant to the history and historiography of science. Grounded in these certitudes, it also reflects limiting and anachronistic norms of interpretation in this particular site of proficiency. But in the history of Leonardo studies, this approach has also yielded a paradoxical malaise.

On the one hand, it had to consider as a failing his diffused way of handling topics and arguments. Such a stance amounts to distrusting the salient character of his page-configurations, namely, his fragmented parataxis. [7] On this base, prevalent readings have indeed tended to dodge the idea that Leonardo's *gran salti*, as he himself acknowledged it, can harbor a texture of coherent, submerged meaning.

On the other hand, eminent scholars of Leonardo, among others Robert Zwijnenberg and Carlo Vecce, have argued that the very singularities of his graphic and textual patterns reveal the intricate, open-ended dynamic of his thinking, and are not merely evocative from an aesthetic and poetic point of view. [8]

I endorse their approach, which is grounded in intellectual history and implies no deconstructive convictions, no Death-of-the-Author theory, no psychological etiology. The incongruous and the personal, so I claim – *mutatis mutandis*, that which I have termed «discourse » within «narrative» in Leonardo's pages – disclose strata that highlight, nuance, or challenge (sometimes, simultaneously) his explicit agendas. It is as such that the idiosyncrasies of Leonardo's parataxis emerge as keys to the place of the anatomical project within the interlocking circles of his entire lifework . Moreover, it is as such that they throw light on the polisemic nature of his anatomical pursuits, on their discontents and uneasy self-reflexivity – much in accordance with early modern science of the body. [9]

Guarda se tu credi... This beautifully-transparent complex of nerves and ligaments, this écorché flesh, is in fact the sine-qua-non condition of music, the site of the music-producing touch which somehow involves the sense of hearing and the listening soul. Carlo Pedretti, as far as I can ascertain, was the only scholar who has realized the import of the remark in question, on which he has commented: «the hand is the theme that Leonardo sometimes deals with on the level of sensory impulses, thus opening an enquiry that eludes whatever faculty of analysis.» [10] However, Pedretti has overlooked the musical resonances of this interpolation, together with their significance for his own insight.

The organ (*organo, organum, ὀργανον*) was the musical instrument most charged with arcane allegorizations since early Christianity. [11] Due to its pneumatic components and polyphonic sound it came to represent the idea of music as cogent architectonics, and the cosmos as a harmony of unified variance. Despite constant oppositions to the introduction of musical instruments into the sacramental service, including the organ, it was instituted as the paradigmatic medium of Church music, and was considered throughout the Middle Ages and the Renaissance as the allegory of the created cosmos and of God's glory; of the Earthly Church and the Christian congregation; of the Holly Mass, and so on: «*Ecclesia tonans*» was how Rabanus Maurus defined the pneumatic organ. [12] Along this line, the organ was regarded as a general metaphor for the unity of the body and the soul (by Tertullian and Origen).

But it is the particular nuances of St. Jerome in this regard that are the most directly relevant, to my mind, to the tacit meaning of Leonardo's marveling remark. «But the organ is the body of man», says St. Jerome (in his Commentary on Psalm 136/137, *Super flumina Babylonis*). «As the organ is composed of many pipes, but brings forth melos through modulation, *so we have our organ in touch* [emphasis mine]: [13] through it, that is, through the works, music and song, we venerate God. Similarly, through hearing and smell and taste and sight, and with every faculty like one organ, in hymns and song we venerate God.» (*Organum autem hominis corpus est. Sicut enim organum ex multis fistulis compositum est, unum autem modulation melos mittit, ita et organum nostrum habemus tacum: per ipsum, hoc est per opera, melos et canticum et hymnum referimus Deo. Similiter et per auditum, et per odoratum, et per gustum et per visum, et per has omnes virtutes quasi di uno organo hymnum et canticum referimus Domino*). [14]

It is not unlikely that vague sedimentations of such allegories, and especially St. Jerome's rendition, found their way into Leonardo's hand-dissection page in question; for they are grounded in age-old percepts of the anatomical body as a reflection of the musical order of the universe. In his Neo-Platonist youth, Leonardo himself had already assimilated the non-material and incorruptible soul that dwells in the perishable, living body, to the air that blows in the pipes of the organ (Ms. Trivulzianus, 40v, c.1480). [15] Bar the claim for the eternity of the soul, which he was to abandon later, the anatomical note in question reflects a similar climate of ideas. It implies that the organ, and the human organ that mirrors it, are fraught with religious and metaphysical symbolism. Through the opera of «song and hymn», the anatomical intelligence of the hand that generates musical sound asserts the wisdom of the micro-macrocosmic body, its quintessential nature as music.

To a large extent, this orientation has privileged the pulmonary, cardiac, and blood systems that are responsible for breathing, transforming and diffusing the pneumatic (‹spiritual›) particles in the body. They were thus assumed to have a special affinity with the musical world-order. [16] Leonardo's cardiology demonstrates that he was indeed prejudiced by this notional background, and let it interfere with his investigations of the rhythm of the pulse. [17] But, that the anatomist-musician has integrated the hand into this convention was a pivotal, innovative move. In fact, in doing so he superimposed the reality of music-making onto the abstract allegory of the musical body.

This is far-reaching. At stake, I think, is an implicit attempt to redress the denigration of the human experience of music as it was instituted by Boethius, which has become the foundations of music-theory and compositional practice for generations to come. Most venerable in his tripartite hierarchy of music is the *musica mundana* (cosmic concord); second comes the *musica humana* (the systematicity of the body and the soul); and last, negligibly, is the *musica instrumentalis* (auditory, fabricated sound units, both vocal and instrumental.) This axiological positing of contemplation versus musical actuality – and foremost, versus musical handedness – coalesces with the medieval classification of knowledge and the social stratification of its agents and practices. [18]

As Bruce Holsinger has argued in a path-breaking study on the erotics of music in Medieval mysticism, the said opposition was always ambivalent and apprehensive vis-à-vis incarnational theology. [19] The ambivalence became much more explicit in the time of Leonardo, when Renaissance music theorists (Franchino Gaffurius, Johannes Tinctoris) and philosophers (foremost Marsilio Ficino) were aspiring to ratify *musica instrumentalis* within the traditional sanctification of *musica mundana* and *musica humana*. [20] In a way, Leonardo's pondering about the hand of the organ-player participates in this cultural propensity, for it also endeavors to reconcile music as a metaphor with music as a lived, somatic experience. Its skeptical tone, however, suggests that contrary to his contemporaries, his half-hearted venture failed. Leonardo's intellectual set-up was totally foreign to the concerns of Gaffurius or Ficino respectively. So, while the note in question lets transpire the anatomist's natural philosophy, which was structured by cosmological (and hence, musical) correspondence doctrines, it also reveals the musician's reluctance to embrace this ideational substratum with regard to his understanding of what music was all about: the mystery of its production, its impact. This is why this note is so different in spirit from his earlier one, cited above from *Codex Trivulzianus*. The difference holds no less than the whole story of the hand and of handedness in Leonardo.

Indeed, the note about the organ player's hand betrays a self-distancing on Leonardo's part. He himself was known as virtuoso of the *lira da braccio* and a composer-*improvvisatore*, and his musicianship was not that of the organ. This is significant, because the cultural connotations of these two instruments were diametrically opposed at the time. The organ was predominantly connected with the rituals of the public space and with the dense, learned and scripted constructions of Franco-Flemish church music. The lira, on the other hand, belonged with the indigenously Italian type of song that was melody-based, instrument-accompanied, initially and idiomatically a product of the unwritten tradition, and associated with the Orphic mythology. [21]

The lira player, whether as accompanist or self-accompanied *tenorista*, was no scholar of music. He depended primarily on swift chord-intuition and extempore manning; playing the lira was seen as intimate and sensual, directly affirming the ephemeral here-and-now of the musician's bodily existence. If the hand of the organ-player could be considered a manifestation of universal order, the hand of the lira-player was all but transcendental.

Body, Music and Hand: the cosmography of the *minor mondo* revisited

The gap between the irreducible life of the hand and sacred, musical-cosmological anatomy reappears in another page of Leonardo's anatomical studies. This is the famous text-only folio K/P 156r (1513), titled *l'ordine del' libro*. In the context of this page, this gap is so consequential that it threatens to jeopardize the very program of structured research and reductive presentation that the page advocates.

As the text vividly describes it, the practice of dissection is messy and frustrating. The torn flesh is soaked in blood, and the dissector cannot reach the tightly packed inner organs without destroying the upper layers. This impenetrable, undifferentiated matter stands in utter opposition to the *figura humana* – the imaged idea of the corporeal personhood that is envisioned by the anatomist. In order to «retain a true and full knowledge of all that you want to know about the configuration of man», and accomplish a lucid «cosmography of the lesser world» (*la cosmografia del minor mondo*), Leonardo prescribes a cogent work-plan. He requires three views for each of the four anatomical systems (vaguely defined), which will result in twelve demonstrations, or *figures*, of the universal man. A fifth system, that of the female reproductive organs, is to be added to the major four. In accordance with the scholastic gender-regimes that were based on Aristotle (and, notably, at variance with Leonardo's own convictions in this matter), this scheme does not consider male sexuality as a *differentia*, a defining specificity in a two-sex paradigm. It is part and parcel of the one-sex idea of humanity itself as maleness. [22]

But given the asymmetry of the body, and against the anatomist's avowed passion for «true and full knowledge» (*vera e piena notitia*), we might ask why does Leonardo require three views of four systems of the body of Man before the Fall? Conceivably, the reason is that the numbers three, four, and twelve are laden with inter-dependent metaphysical, theological and musical significances. They perpetuate the principle of the Pythagorean *tetraktys*, representing the ideational unity of the pure primary intervals and the essential spatial and temporal parameters of the sub-lunar universe, including all living bodies. Their presence, import and ramifications in Christian theology are of course fundamental and most emphatic.

(In this double capacity, these auratic numbers also institute the formal composition of the *Last Supper*. [23]) With the addition of the female genitalia, supplemented by three views, the initial 12 becomes 15 – an opaque number devoid of a semiotic field. The female organs, Leonardo notes here, have «great mystery because of the uterus and its fetus» (*gran misterio, mediante la matrice et suo feto*). The number 15 seems to me to retain the excess of the «great mystery» that lies beyond the transparent order of the male body. This addition would therefore tacitly hint at the over-rigidity and inappropriateness of the purportedly «full knowledge» implied in the number 12, without, however, disrupting it yet. Disruption will happen when Leonardo will turn to the hand on this page.

Having done with the central column that designates the rationale and practice of the ‹cosmographic›-anatomical project, Leonardo turns to the vacant space on the right margin and opens a digression entitled «On the hand from within» (*Della mano di dentro*). This textual addendum describes in detail the demonstrations required for the investigation of the hand. It is obvious that Leonardo tries here to keep track with his initial vision, but he gets more and more confused and confusing along the way. He starts with a description of the necessary presentations of the bones of the hand: first the general view «from within», then views of the bones «sawn through the middle» and cut longitudinally. He then numbers ten demonstrations in the reverse order of the dissection. The first is to be the osteological core, and the last being «The whole hand complete and finished with its skin, and its measurements (*la mano intera e finita colla sua pelle con le sua misure*), and the same for the measurements of the bones».

It is evident that the said list does not correspond to the scholastic quadruple system that Leonardo earlier posited for the «cosmography of the lesser world». When it comes to the hand, the plan accumulates specific studies of the tendons and muscles that enable specific movements of specific fingers, and tellingly, also the intact, pre-dissected hand with its «measurements». (This last phase, the first in the actual order of the work, retains the life of the dead organ and absolves the malaise of dissection by the ritual of art. Leonardo's extant anatomical studies of the hand do not include it however). Following that, Leonardo instructs the investigator thus: «what you do from this side of the hand do also from the other three aspects, that is from the inner side (*parte dimestica*), from the dorsal side (*parte dorsale*), from the back-external side (*parte silvestra*), and from the aforesaid side. [24] And thus in the chapter on the hand you will make 40 demonstrations.» These, apparently, do not include the several horizontal and longitudinal cuts of bones, nor the final studies of the proportions of each finger. But is this the end? It is unclear.

In folio K/P 143v, which opens the series of hand-dissection reports, Leonardo proposes seven phases from the osteological study to the «hand clothed with skin», and specifies that the whole should be repeated for «an old man, a young man, a child, and for each shall be given the measurement of the length, thickness and breadth of each of its parts». The full plan would then comprise hundreds of drawings. In the last passage of the note on the hand in the *ordine del libro* page, Leonardo decrees that this mode of presenting the data acquired by dissections be employed for every other member, and concludes the aspired-for program with the most intriguing single word in his vocabulary: *ecc*.

The two sections of the page constitute two poles of scientific pursuit. I would say that for Leonardo, the insistence on the concrete, endlessly explored particularity of the hand is discursive: it presupposes a first-person mode of involvement, whereas the numerological plan belongs with the language of authorless narration (a relation that in today's science would be inversed). But why at all does the hand occupy such a privileged place on this page, when the work-plan is concerned with systems rather than with organs? And how to explain this minute attention to actual hands, so different in spirit from the schematic, culturally-correct, quasi-numerological agenda that the main column of the same page unfolds? Finally, why does the incessant research of the hand, including its external morphology and life-cycle, serve as a model for every other member?

My suggestion is straightforward: because the hand represents the body, and at the same time defies closure. Aristotle has written that «the hand is not one organ/instrument, but many», since it is «the instrument of further instruments». [25] Leonardo's approach to the hand entails a considerable amplification of this pragmatic notion. For him, the classic definition means that the essence of the biological hand is handedness, namely, its living operations, which cannot be reduced to its mechanisms – despite the scientist's passion for a reductive, ritualistic transparency. *Guarda se tu credi*...

The Music-Making Hand in Light of the Rivalry of the Arts

The professed objective of the *Parte prima of the Book of Painting* (Codice Urbinate 1270) is, famously, the exaltation of painting (and more ambivalently, of music) and the disparagement of poetry and sculpture within one and the same system of value parameters. [26] At issue are disparate modes of capturing otherness through facture, thus quasi-possessing it and triumphing over it — doomed as this otherness is to contingence and decay. At issue are gaps, transferals, displacements, and the frustration of an ever-deferred appropriation: indeed, the evanescent opacity of otherness as such.

I will succinctly recapitulate these parameters under four categories: truth (indexicality), beauty, affectivity (arousal of emotional, erotic, or devotional response), and what Leonardo calls artifice (*artifitio*). [27] What he means, I think, is *bravura*, namely, the clever optimization of a difficult medium for the sake of the three former goals. Pictorial rendering, Leonardo asserts, excels in all. Poetry, or rather language products as such, fail the first three criteria of merit. Because of the very incommensurability of signs and things, it can be neither true nor truly affective. Because it is sequential, it cannot produce or reproduce beauty. On linguistic bravura Leonardo says nothing at all, and betrays no insight regarding the generative advantage inherent in the very gaps that institute sign-systems (an advantage he will recognize only many years later, in his anatomical investigations of the mechanisms of voice and speech). [28] As to sculpture, it fulfills only partially the first two parameters, but blatantly lacks artifice. Leonardo remains silent about its erotic and devotional affectivity; again, a conspicuous lacuna.

The assessments of music in this posthumous compilation are apparently clear, but actually oblique. The two pronounced merits of this medium are beauty and affectivity. By means of rich polyphonic sonorities that are heard «at the same time», music creates «proportional harmony» that pleases the sense of hearing to such a degree, that «the listeners remain stupefied with admiration and only half alive» ([*proporzione armonica*], *la quale contenta tanto il senso de lo audito che li auditori restano con stupente admirazione quasi semivivi*). [29] Here and in other places in this text the experience of music reverberates orgasmic overtones; but Leonardo is quick to qualify them, albeit implicitly, through the concatenated poetics of the chanted text.

The drive of his arguments constantly posits the abstract affectivity of music against the erotic promise of faces and bodies in painting. The passage cited above immediately continues thus: «Yet much greater is the effect of the proportionate beauties of an angelic face in a painting [...] If such harmony of beauties is shown to the lover of the woman whose beauty it imitates, without a doubt he will remain stupefied with admiration and incomparable joy and overcome in all his senses» (*Ma molto più fara le proporzionali bellezze d'un angelico viso posto in pirttura [...] e tal bellezze saranno mostre allo amante di quella di chi tale bellezze sono imitate senza dubbio esso restera con istupenda admirazione e gaudio incomparabile [...]*). [30]

Poor music (*sventurata musica*) is excluded from the economy of desire, lack and transference that institutes Leonardo's aesthetic. Because of its transience in time, the intense musical experience enhances the ephemerality of subjecthood in the body: its core and rationale is loss, not the redemptive retrieval of absence through representation.

Listening becomes an alert grasp of ‹vertical›, independent fragments of a compounded sonority. It is its immediacy that captivates Leonardo's musical subject, the tenuous physicality of the beautiful *concento*. The cognizance of structure, being too cerebral and detached from the body, seems foreign to it; nor does this experience involve a response to the expressive content of the work. Indeed, Leonardo's idea of music does not agree with the modern – or even Renaissance – sense of ‹work› as a unified whole comprised of functional sub-units. I would go even further and claim that his entire art-theory has little place for, and in fact has no need for such a notion of work, whether in painting, poetry, or sculpture. [31]

If so, can music deliver truth? In opposition to the repeated discussions of truthfulness in painting and poetry, only on a single occurrence in the extant text of the *Libro di pittura* – and nowhere else in his entire notebooks – does Leonardo touch upon this topic. In passing, he cryptically remarks that whereas the essence of painting is the «figuration of corporeal things», both the linguistic and the visual modes of indexicality «remain behind music» in «the figuration of invisible things» (*figurazione delle cose invisibile*). [32]

By non-corporeal and invisible things Leonardo could intend the verbal content of vocal music, in line with the newer language-dependent guidelines for musical meaning and merit. But given his stance on poetry, this is unlikely. Or, he could mean the interconnection of numerical proportions and world-order, but again this would go against the grain of his infatuation with concrete sound. The *Last Supper* notwithstanding, the whole tonality of the discourse on music in the *Libro di Pittura* counterbalances the redemption of musical transition by means of turning it into a quasi-spatial, abstract architecture of magnitudes. I therefore allege that the invisible things to which Leonardo refers, those that music enacts through its agonizing temporality, would have to be – in affinity with his overall concerns – the non-being of transformational individuation; the incessant shift towards Nothingness that makes all phenomena seeable, but not stable enough to be truly visible.

Despite the marked idiosyncrasy of Leonardo's concept of musical truth, these percepts do indicate that he was sensitive to the earliest shifts in composition, reception and theory that decades later were to define early modernity in music. At issue is «the naturalization of music,» as Daniel K. Chua has termed this broad-spectrum move. [33] Chua has located this move at the center of a pregnant «narrative of progress and loss,» on the verge of the scientific revolution, when scientific nature and human nature were alleged to be disjointed, the sky untuned, and music declared to be affective sound, subject-oriented, with its expressivity claiming to be freed of all formal constraints.

For Chua, as well as for the majority of music-historians, this was an «attempt to transfer music from the medieval *quadrivium* of music, geometry, astronomy and arithmetic to the rhetorical arts of the *trivium*». He situated it in the late 16th century milieu of the Florentine Camerata; most other Renaissance scholars, however, have diagnosed the beginnings of this change in an earlier phase of that century, whether as an autonomous musical development, or in some version of an all-encompassing intellectual, social, political and religious perspective. [34] To the best of my knowledge, no one has discerned this avant-garde spirit in Leonardo's passages on music. [35] Moreover, as I propose here, it is not even the shift from *quadrivium* to *trivium* that underlies his musical thought, but a more untimely conception that gropes for an as-yet impossible articulation: a whole new idea of music as an abstract auditory event, rather than a referential, mimetic *res facta*.

Handedness and Faciality

For Leonardo, the hand resembles the face as a mode of an active, shifting selfhood turned outward. In the *Libro di pittura* he has claimed: «The hands and the arms with all their operations are to demonstrate the intentions of their mover when possible because with them, sensitive judgment can grasp the mental intentions».

Failing this condition, «the figure shall be judged as doubly dead, that is, dead because it is not alive, and dead in its actions» (*Le mani e braccia in tutte le sue operazioni hanno da dimostrare la intenzione del loro motore quanto sia possibile, perché con quelle, chi ha <a>ffezzionato giudizio, s'acompagna l'intenti mentali [...] se non [...] essa figura sarà giudicata due volte morta, cioè morta perché essa non è viva, e morta nella sua azzione*). [36]

The passage then returns to its initial topic, namely the ways in which the face divulges the «*accidenti*» of personality and circumstances. A parallel connection comes to light in the anatomical page that contains the note about the hand of the organ-player, together with the face-dissection reports and an exploration of the nerves of the hand.

But here, in the context of an anatomical exploration, the obvious and manifest signs of the life of the *motore* (notably, it is unclear whether this means the depicted figure or the painter) are themselves problematized. At issue is the linkage of the seen and unseen, the biological observables and their surmised, imponderable origin.

Leonardo describes here (with admirable exactitude), the myological apparatus of facial expressions. The verbal explications and letter-marks on the drawings locate the «muscle of rage» (*h*), the «muscle of pain» (*p*), and again, the whole system of «rage» (*g-n-m*). Our page, however, insinuates a doubt as to whether the precise findings of the anatomical dissection can, after having explained the physiognomy of emotions, also pin-point their ultimate origin: «Represent all the causes of motion that do the skin, flesh and muscles of a face, and see if its muscles receive their motion from the nerves which come from the brain *or not* [my emphasis]» (*Figura tutte le cause del moto che ha la pelle, carne e muscoli d'un viso, e se li muscoli sua hanno il moto dali nervi che vengan dal cervello o no*).

Leonardo may be questioning here Aristotle's conviction that the heart is the site of all sentiments and the nucleus of bodily movement (‹change› in the Aristotelian terminology), both voluntary and involuntary (*De Anima* A 402b, *et passim*). He may therefore be alluding to the Galenic position, namely, that even if the heart is the seat of emotions it is the brain that moves the body in response to them. But even so, locating this seat and explaining empirically how the observable corporal effect springs from the invisible origin are two different things. So he takes no side and halts at this treacherous threshold.

The small drawing in the right corner, of the leonine warrior stamped with the marks of *vita activa*, may be the only answer he deigned to give to this question at this moment, and in this context. This is not a case of absentmindedness, for in fact this warrior joins the ways in which Leonardo's constantly bypasses the problem of soul-body connection wherever it surfaces, inevitably of course, in his mature anatomical studies.

In 1509–10 Leonardo's intellectual temperament and disposition, as Domenico Laurenza has shown, drove him away from his early approach to the body as a composite, quantitative construction, towards its vision as complex processes of life. [37] The skull-studies of 1489 have located the soul in the purported intersection of sense-channels, along which the *similitudini* of the objects travel. This was a physical locus in the brain, a privileged, ideologically charged point. But the mature anatomies convey a different stance regarding the soul and the mind. They shift towards non-speculative observation, and tend in a greater degree to infer physiological function from anatomical and morphological form. Accordingly, the notion of the soul now emerges more as a hiatus and a liminal idea.

The enigma of the music-producing hand, of the hand as discourse, thus shares with, and corroborates, the conclusion that Martin Kemp has derived from Leonardo's cardiological and gynecological pages: «After 1509 [Leonardo] becomes increasingly concerned to define what is and what is not knowable with certainty to the mind of man [...] spiritual qualities lay outside the range of his late science; while his powers of artistic suggestion endow his paintings with an ability to imply the mysterious existence of something beyond effects and even beyond causes». [38]

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Fussnoten

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Émile Benveniste, Problèmes de linguistique générale, Vol. 1, Paris, 1966, pp. 237–250. Louis Marin has termed performativity in painting as ‹iconic deixis›, and conferred it on the structure of linear perspective in Annunciation scenes, and on the emissive interrelatedness of gestures and writing in Poussin's Et in Arcadia Ego. See: Louis Marin, Annonciations toscanes, in: idem, Opacité de la peinture, Edition de l'école des hautes études en sciences sociales, Paris 2006, pp. 159–206; idem, Towards a Theory of Reading in the Visual Arts: Poussin's The Arcadian Shepherds, in: Norman Bryson, ed., Calligram, Cambridge 1988, pp. 63–90.

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Benveniste (as in note 1), p. 241.

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Christopher Pye, Leonardo's Hand: Mimesis, Sexuality, and Early Modern Political Aesthetics, in: Representations, Vol. 111/ 1, 2010, pp. 1–32. See also, notably, Robert Zwijnenberg, Presence and Absence: On Leonardo da Vinci's Saint John the Baptiste, in: Claire Farago and idem., ed., Compelling Visuality, Minneapolis 2003, pp. 112–131.

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Lea Dovev, On the Hand from Within: Palms, Selfhood and Generation in Leonardo's Anatomical Project, in: Leonardo, Vol. 43/1, 2010, pp. 63–69. The present essay is a condensed version of a chapter in my book, Personhood in the Flesh: a Hermeneutic Reading of Leonardo da Vinci's Anatomical Pages (in Hebrew, forthcoming, 2012).

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All the Italian transcriptions follow the digital edition of Leonardo's manuscripts: http://www.leonardodigitale.com/

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The most eminent example would include: Charles D. O'Malley and John B. de C. M. Saunders, Leonardo da Vinci on the Human Body (1952), New York, 1983; Kenneth D. Keele and Carlo Pedretti, Leonardo da Vinci. Corpus of the Anatomical Studies in the Collection of Her Majesty The Queen at Windsor Castle, London/New York 1979–1980; Dominique le Nen, L'anatomie au creux des mains. Au confluent des sciences et de l'art, Paris 2007.

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The cut-and-paste arrangement of Leonardo's notebooks by Jean-Paul Richter (1883) became a standard source and model for the topical screening on which so much of Leonardo scholarship rests to date

(Jean-Paul Richter, The Notebooks of Leonardo da Vinci, New York 1970). This inclination is so dominant, that it would be absurd even to attempt a partial list of its avatars. For early debates and concerns regarding this approach, see Carlo Pedretti, Commentary on Jean-Paul Richter, The Literary Works of Leonardo da Vinci. Berkeley and Los Angeles 1977, Vol I, pp. 3–8.

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Robert Zwijnenberg, The Writings and Drawings of Leonardo da Vinci, Cambridge 1999; Carlo Vecce, Word and Image in Leonardo's Writings, in: C. Bambach, ed., Leonardo da Vinci, Master Draftsman, New York 2003.

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See, e.g.: Jonathan Sawday, The Body Emblazoned. Dissection and the Human Body in Renaissance Culture, London/New York, 1995; Andrea Carlino, Books of the Body. Anatomical Ritual and Renaissance Learning, Chicago, London 1999.

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Carlo Pedretti, L'anatomia di Leonardo da Vinci fra Mondino e Berengario, Firenze 2005, p. 80 (my translation).

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The name ‹organ› was used for various pneumatic instruments. Concomitantly, it was sometimes considered a generic instrument, and on philosophical, moralistic and religious grounds considered inferior to the vocal production of music. See: Peter Williams, The Organ in Western Culture: 750–1250, Cambridge 1993, pp. 235–360.

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For the early-Medieval sources in detail, see: Michael Markovits, Die Orgel in Altertum, Leyden 2003. For later Medieval sources, see Williams (ibid.).

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This phrase is ambiguous. Williams translates: «we have our organ to hand» (ibid. as in note 11), p. 298. Markovits translates: «so haben wir auch unseren Tastsinn» (ibid. as in note 12).

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Whereas the Hebrew text speaks of Kinorot (כינורות), which the Vulgata translates as Citharas, St. Jerome replaces both with organo. The meanings of musical instruments in the Bible are of course uncertain, but since St. Jerome reserves almost everywhere else the name organo for the Hebrew Ugav (עוגב), his choice here is certainly significant.

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«L'anima mai si può corrompere nella curruzione del corpo; ma fan del corpo a similitudine del vento ch'è causa de l'organo, che guastandosi una canna, non resultava per quella del vento buon effetto».

Seite 25 / [16]

Daniel P. Walker, Medical Spirits in Philosophy and Theology from Ficino to Newton, in; idem, Music, Spirit and Language in the Renaissance, Ashgate 1995, XI, pp. 287–300; Nancy Siraisi, The Music of the Pulse in the Writings of Italian Academic Physicians (Fourteenth and Fifteenth Centuries), Speculum, Vol. 50/4, 1975, pp. 689–710.

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«Therefore, in every harmonic tempo, or, if you will, musical, the heart has three motions [...]» (Adunques, in ogni tempo armonico, o, voi dir musicale, il core ha tre moti [...]), K/P 164r, 1513).

Seite 26 / [18]

Boethius, De Institutione Musica, in: Ruth Katz and Carl Dahlhaus, ed., Contemplating Music. Source Readings in the Aesthetics of Music, New York, Vol. 1, pp.71–72.

Seite 26 / [19]

Bruce Holsinger, Music, Body, and Desire in Medieval Culture, Stanford, 2001.

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See, e.g., James Haar, The Frontispiece of Gafori's Practica Musicae (1496), Renaissance Quarterly, Vol. 27/1, 1974; Walker (as in note 16); Angela Voss, Orpheus redivivus. The Musical Magic of Marsilio Ficino, Brills Studies in Intellectual History, Leiden 2002.

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Emanuel Winternitz, Musical Instruments and their Symbolism in Western Art, London 1967, pp.86–96.

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For the Aristotelian background of the one-sex paradigm, see: G. E. R. Lloyd, Science, Folklore, and Ideology. Studies in the Life sciences in Ancient Greece, Cambridge 1983.

Seite 28 / [23]

Thomas Brachert, A Musical Canon of Proportion in Leonardo da Vinci's Last Supper, The Art Bulletin, Vol. 53/4, 1971, pp. 461–466.

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The «aforesaid» view was also palmar, so Leonardo's point is unclear here.

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Aristotle, De Partibus animalium IV, 687a-b, in: idem., The Works of Aristotle, translated into English by William Ogle, Oxford 1972. For the Medieval and Renaissance repercussions of Aristotle's statement, see: Dominique le Nen, L'anatomie au creux des mains (as in note 6).

Seite 29 / [26]

Leonardo da Vinci, Libro di Pittura, transcribed and edited by Carlo Pedretti and Carlo Vecce, Firenze 1995; idem, Treatise on Painting, translated by Philip McMahon, New Jersey 1956.

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For example, Libro di Pittura (idem.as in note 26), 38, p. 162.

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Fabio Frosini, Vita, tempo e linguaggio, Lettura Vinciana, 30, 2010.

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Libro di Pittura (as in note 26), 21, p. 145.

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See comparable passages in the Libro di Pittura (as in note 26) 23, 25, 29, 30, 31b.

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The Libro di Pittura contains a single opaque expression which may point to Leonardo's acknowledgments of music being a ‹horizontal›, durational sequence: «[music] composes harmony from the conjunction of its harmonious parts operating at the same time. Constrained to be born and die in one or more harmonic tempi these tempi surround the proportionality of members» (Constrette a nascere e morire in uno o più tempi armonici li quali tempi circondano la proportionalità de membri [...]), Libro di Pittura (as in note 25), 29 (my translation). For Winternitz, this passage intends «temporally extended portions of a musical piece» (Emanuel Winternitz, Leonardo da Vinci as a Musician, New Haven, New York 1982, p. 211). Omitting the idea of ‹work› (which to my mind is indeed problematical and foreign to Leonardo's aesthetic), Frank Fehrenbach reads the said tempi armonici as «Extremely brief though temporally extended harmonic instants [...] which correspond to minimally-dilated acts of perception» (Frank Fehrenbach, Blick der Engel und lebendige Kraft. Bildzeit, Sprachzeit und Naturzeit bei Leonardo, in: idem (ed.), Leonardo da Vinci, Natur im Übergang, Munich 2002, p. 173.).

Seite 31 / [32]

Carlo Pedretti and Carlo Vecce, ed., Leonardo da Vinci, Libro di Pittura, Parte prima 32 (8 v-19), Firenze 1995, p. 156.

Seite 31 / [33]

Daniel K. I. Chua, Vincenzo Galilei, Modernity, and the Division of Nature, in: Suzannah Clark and Alexander Rehding, ed., Music Theory and Natural Order from the Renaissance to the Early Twentieth Century, Cambridge 2001, p. 18.

Seite 32 / [34]

For a thorough and critical assessments of the topic, see: Timothy J. Reiss, Knowledge, Discovery and Imagination in Early Modern Europe, Cambridge 1997.

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While Winternitz gives a place of honor in his pioneer monograph (idem., as in note 31) to Leonardo's surmised activity as virtuoso-improvvisatore of the lira, he tends to read Leonardo's texts on music in a conventionalist light. He stresses the very few passages on the proportional measurability of music therein, and reads incredulously Leonardo's insistence on the death of sound as the core of musical experience. In other words, Winternitz assimilates Leonardo's passages on music to music-theories of his time, and especially to those of Franchino Gaffurius and Luca Pacioli. On the other hand, musicological histories of Renaissance music never mention Leonardo, and it is worth noting that the modern conviction regarding his renown as a musician has reached us only through persons that were not part of the professional music life of the period. Indeed, there is no reference to him in any contemporary musical literature, archive documents connected with musical events, encomiums to celebrated instrumentalists, etc. Still, I see no reason to doubt that Leonardo was a gifted dilettante-performer, even if his aptitudes and status were amplified to coincide with both Renaissance and 20th Century aesthetic penchants.

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Libro di pittura (as in note 26), p. 368 (my translation).

Seite 33 / [37]

Domenico Laurenza, De figura humana: Fisiognomica, anatomia e arte in Leonardo, Firenze 2000.

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Martin Kemp, Dissection and Divinity in Leonardo da Vinci's Late Anatomies, in: The Journal of the Warburg and Courtauld Institute, 35, 1972, p. 211–212.

Abbildungen

Seite 21 / Abb. 1

Leonardo da Vinci, Angel in the Flesh, 26.8 x 19.7 cm, black carbon and chalk on paper, 1513–1515. Pedretti Foundation Trust. Image taken from: Carlo Pedretti, Leonardo da Vinci: L'«angelo incarnato» e Salai, Foligno (Perugia) 2009, p. 362.

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Leonardo da Vinci, Study of Hands, Arms, Faces (K/P 142v), 18.8 x 20.0 cm, pen and brown ink, aquatint, black chalk on paper, 1509–1510. The Royal Library, Windsor Castle. Image taken from: Frank Zöllner and Johannes Nathan, Leonardo da Vinci, 1452-1519: Sämtliche Gemälde und Zeichnungen, Cologne: Taschen, 2003, p. 432.