

THE CYCLE OF IMAGES

Questa [deità della scienza della pittura] ha trovato i caratteri, con i quali si esprimono i diversi linguaggi; questa ha dato le caratte agli aritmetici; questa ha insegnato la figurazione alla geometria; questa insegna ai prospettivi ed astrologhi ed ai macchinatori ed ingegneri¹.

Il corpo dell'aria è pieno d'infinite piramide composte da radiose e rette linee, le quali si causano dai superficiali stremi de'corpi ombrosi posti in essa. [...] E per esse la similitudine del corpo è portata tutto per tutto, e tutto nella parte².

[...] perché [la poesia] non ha potestà in un medesimo tempo di dire diverse cose, come la proporzionalità armonica della pittura composta di diverse membra in un medesimo tempo, la dolcezza delle quali sono giudicate in un medesimo tempo così in comune, come in particolare³.

With the claim that every form of science and communication relies on images, or visual signs, according to the concept that objects in nature continually emanate portraits of themselves, and that only through painting is it possible to represent the permeation of simultaneity and succession in nature⁴, Leonardo da Vinci developed powerful arguments that reached well beyond the confines of the *Paragone*. As he was a fervent apologist of

¹ Leonardo da Vinci, *Libro di pittura*, chapter 23.

² Id., *Manuscript A*, fol. 86v.

³ Id., *Libro di pittura*, chapter 32.

⁴ See the discussion of this aspect in my «Blick der Engel und lebendige Kraft. Bildzeit, Sprachzeit und Naturzeit bei Leonardo», in: *Leonardo da Vinci: Natur im Übergang. Beiträge zu Wissenschaft, Kunst und Technik*, ed. by F. Fehrenbach, München 2002, pp. 169-206.

images in nature and in culture, we might therefore expect Leonardo to be among the supporters of the continuous production of *inner* images in the *phantasia* as described by two authors who were deeply influential for him, Aristotle and Augustine⁵. In fact, he was far from one!

In the 15th paragraph (after 1500) of the *Libro di pittura*, Leonardo strikes a devastating blow against literature, *pittura's* main rival in a humanist culture dominated by language.

The imagination (*immaginazione*) does not see as excellently as the eye sees, because the eye receives the species or similitudes of objects and gives them to the *impressiva*, and the *impressiva* gives it to the *senso comune*, and there it is judged; but the imagination (*immaginazione*) does not move out of the common sense, except to go to the memory where it stops and dies if the thing imagined is not of great excellence («li si ferma et li muore se la cosa imaginata non è de molta eccellentia»). And indeed, the work of the poet is in the mind or the *immaginativa* of the poet who feigns the same things as the painter. [The poet] wishes to be considered the equal of the painter for these fictions, but in truth he is far removed, as has been demonstrated above. Therefore, with regard to these [poetic] fictions, it would be true to claim that there is the same proportion between the science of painting and poetry as there is between the body and its derivative shadow. And yet the difference is even greater than regards the proportion with the shadow of the body, which at least enters the *senso comune* through the eye. But the imagination of such a body does not enter into that sense, but is born in the dark eye («nasce in l'occhio tenebroso»). O, what difference there is between imagining (*immaginarsi*) such a light in the dark eye and seeing it in action outside the darkness («vederla in atto fuori delle tenebre»)!⁶

⁵ Aristotle, *De anima*, III, 7. For the influence of Aristotle's psychology on medieval and Renaissance philosophy, see K. Park, «Picos 'De imaginatione' in der Geschichte der Philosophie», in: Giovanni Francesco Pico della Mirandola, *Über die Vorstellung / De imaginatione*, ed. by E. Kessler, München 1997, pp. 21-62. On Augustine's *genera visionum* and the importance of images for the *visio spiritualis*, see M. Miles, «Vision: The Eye of the Body and the Eye of the Mind in Saint Augustine's 'De trinitate' and 'Confessions'», in: *Journal of Religion*, LXIII, 2, 1983, pp. 125-142. Leonardo mentions the «Filosofia d'Aristotile» among the books he orders from Venice in 1508 (*Manuscript F*, cop. verso; probably Giorgio Vallà's edition, see E. Solmi, *Scritti vinciani*, Firenze 1976, p. 73) and lists Augustine's *De civitate Dei* and a collection of his sermons among the books «ch'io lascio serati nel cassone» on *Codex Madrid II*, fol. 2v.

⁶ «Non vede la immaginazione cotal eccellenza qual vede l'occhio, perché l'occhio riceve le specie, ovvero similitudini degli obietti, e li dà all'impressiva, e da essa impressiva al senso comune, e li è giudicata. Ma la immaginazione non esce fuori da esso senso comune, se

This text, with its unfamiliar terminology, requires further explanation. Leonardo sets his argument within the context of the traditional psychology of human faculties and its insistence on the material basis of knowledge⁷. The human eye perceives objects with more clarity or intensity (*eccellencia*) than the imagination (*imaginatione*) alone because it receives the optical emanations of things directly before forwarding them to the first ventricle of the brain. In contrast to traditional psychology, Leonardo calls this first *spiritus*-filled vessel of the human brain *impressiva*. From there, the *similitudini* of objects proceed to the second ventricle, the «common sense» (*senso comune*), where they are spontaneously «judged» according to such criteria as number, size, and movement etc. Significantly, Leonardo does not distinguish between the image-emanation of natural and artificial objects. In other words, it is *nature* that produces images of *any* surface.

In striking contrast to this natural process, the poet produces fictitious representations, «fancies», in the reader's mind, or more precisely – and here Leonardo seems to identify the more generic *imagination* – in the *imaginativa*, a faculty that shares the second ventricle of the brain with

non in quanto essa va alla memoria, e lí ferma e lí muore, se la cosa immaginata non è di molta eccellenza. Ed in questo caso si ritrova la poesia nella mente, ovvero immaginativa del poeta, il quale finge le medesime cose del pittore, per le quali finzioni egli vuole equipararsi ad esso pittore, ma invero ei n'è molto remoto, come di sopra è dimostrato. Adunque in tal caso di finzione diremo con verità essere tal proporzione dalla scienza della pittura alla poesia, qual è dal corpo alla sua ombra derivativa, ed ancora maggiore proporzione, conciossiaché l'ombra di tal corpo almeno entra per l'occhio al senso comune, ma la immaginazione di tale corpo non entra in esso senso, ma lí nasce nell'occhio tenebroso; oh che differenza è dall'immaginare tal luce nell'occhio tenebroso, al vederla in atto fuori delle tenebre!». Translation after C. Farago, *Leonardo da Vinci's 'Paragone'. A Critical Interpretation with a New Edition of the Text of the 'Codex Urbinas'*, Leiden 1992. pp. 200-201 (with significant corrections by me).

⁷ See M. Kemp, «Il concetto dell'anima' in Leonardo's Early Skull Studies», in: *Journal of the Warburg and Courtauld Institutes*, xxxiv, 1971, pp. 115-134.; T. Klemm, «Übergängigkeiten. Anatomische Bilder vom Gehirn im frühen 16. Jahrhundert», in: *Visualisierung und kultureller Transfer*, ed. by K. Kramer & J. Baumgarten, Würzburg 2009, pp. 301-318; B. Fricke, «Conceptio, perception: Das 'Weimarer Blatt' von Leonardo da Vinci», in: *Modernisierung des Sehens. Sehweisen zwischen Künsten und Medien*, ed. by M. Bruhn & K.U. Hemken, Bielefeld 2008, pp. 82-99. For faculty psychology, cf. E.R. Harvey, *The Inward Wits. Psychological Theory in the Middle Ages and Renaissance*, London 1975; D. Summers, *The Judgment of Sense. Renaissance Naturalism and the Rise of Aesthetics*, Cambridge 1987.

the «common sense». From this point of origin, the poet's representation moves into the third vessel of the brain, the *memoria*, where it fades and eventually «dies» («si ferma e muore»). Leonardo compares the maker of inner images, the *imaginativa*, to a «dark eye» («occhio tenebroso»), whose products lack the intensity of sensory images that are perceived «outside the darknesses» («fuori delle tenebre»). The words written by the poet, therefore, evoke within the reader merely bloodless, pale, and shady surrogates of the visible.

In a forthcoming article⁸, I discuss Leonardo's astute appropriation of a widely diffused topos of theological thought, the darkening eye of the sinner and of death (*oculi caligant*), as well as the fascination with utter darkness in his most ambitious, poetic, and imaginative efforts. In the present paper, I would like to address three specific features of the passage quoted above before concluding with a few remarks about Leonardo's concept of painting as an overcoming of nature's main fallacy, transience: firstly, the epistemological cycle of perception and action viz. expression, and its mutilation by poetry; second, Leonardo's creation of a new psychological agent, the so-called *impressiva*; and third, his model of an assimilative rather than an autonomous, free, and «inventive» imagination.

I. THE TRAJECTORY OF INNER IMAGES

Leonardo's epistemological model is inspired by a classic text, the third book of Aristotle's treatise on the human soul⁹. Aristotle differentiates between the faculties of the soul as self-preservation (nourishment, or metabolism, and reproduction), perception, self-motion, and knowledge. The five senses link the animated organism to the world while a sixth sense, the «common» sense, spontaneously perceives the shared categories of all

⁸ «Leonardo's Dark Eye», in: *Senses of Sight. Towards a Multisensorial Approach of the Image*, ed. by J.F. Corpataux et al., Roma 2014. This essay is in part identical to the present paper.

⁹ Cf. H.W. Cassirer, *Aristoteles' Schrift 'Von der Seele' und ihre Stellung innerhalb der aristotelischen Philosophie*, Tübingen 1932; K. Gloy, «Aristoteles' Konzeption der Seele in 'De anima'», in: *Zeitschrift für philosophische Forschung*, xxxviii, 3, 1984, pp. 382-411. For Leonardo's context, see F.E. Cranz, «The Renaissance Reading of the 'De anima'», in: *Platon et Aristote à la Renaissance. xvie colloque international de Tours*, Paris 1976, pp. 259-276.

sensory data (size, movement, number, and time). If the object is outside the field of actual perception¹⁰, another faculty of the soul comes into play, *phantasia*. With its malleable, wax-like structure, *phantasia* preserves images of past presences, thus providing a mental substitute for the absent; further, aided by the «innate heat» of the body, it separates and re-combines elements of the sensory perceptions. Lastly, the inner representations of objects are stored in the *memoria*. From there, they can be recalled by *phantasia*, capable of processing both actual representations and remembrances.

Further developing Aristotle's model, the physician Galen, in his medical writings (the most important being *De symptomatum differentiis*), located the faculties of the soul in the brain. At the end of the 4th century, in his influential book on the nature of man, the Syrian bishop Nemesius of Emesa specified the position of these faculties in the three ventricles of the brain¹¹. These became the site where image-saturated substances bridged the material and the immaterial; the brain's *pneuma*-filled vessels were the place where the immortal human soul communicated with the material world.

For Christian authors, *phantasia* (or, as Augustine called it, *imaginatio*) was a suspicious place. A locus of both human freedom and spontaneous image-generation, the imagination became, through its combinatory powers, a battlefield of angels and demons conjuring both celestial visions and infernal monsters¹². The direction of *phantasmata* usually proceeds from front to back, from the *sensus communis* to the *memoria*. Since the reception of Avicenna in the 13th century, the locations of the *facultates animae* became more precise, with the *sensus communis* and receptive imagination (*imaginatio*) often working in the first ventricle, the «deliberative» (Martin Kemp), more autonomous imagination (*imaginativa*) together with higher sensory-mental operations (*extimativa*, *cogitativa* etc.) in the second, and

¹⁰ Aristotle, *De anima*, III, 4. For the concept of «innate heat», see E. Mendelsohn, *Heat and Life. The Development of the Theory of Animal Heat*, Cambridge 1964; G. Freudenthal, *Aristotle's Theory of Material Substance. Heat and Pneuma, Form and Soul*, Oxford 1995. On the persistence of the concept until the 18th century (Fénelon), see J.D. Lyons, *Before Imagination: Embodied Thought from Montaigne to Rousseau*, Stanford 2005, p. 187.

¹¹ See Park, 1984 (as in n. 5), p. 28.

¹² See M. Cole, «The Demonic Arts and the Origin of the Medium», in: *The Art Bulletin*, LXXXIV, 2002, pp. 621-640.

memoria in the third, located in the back of the brain¹³. Albertus Magnus, referring back to the Syrian physician Costa ben Luca (d. 923), explained the epistemological trajectory in his *Summa de Homine*¹⁴. According to this theory, the process starts outside the body and continues within. The material vehicle driving this process is the *spiritus* flowing from the front of the brain to the back, and subsequently through the hollow channels of the nerves in the spinal cord to the limbs, where it triggers physical movements – a cyclical structure, from the passive to the active, as it were, from the perception of the world to its transformation by human action, from knowledge to ethics.

Leonardo's reference to both the *imaginazione* and the *imaginativa* reveals that he was well aware of this tradition. He is critical of poetry, remarking that its products reflect only a fraction of the epistemological cycle. The inner images of poetic fantasy are not *received*, judged or metabolized, and eventually stored; instead, they are *produced* in the second ventricle of the brain, the *imaginativa*, where their lack of dynamism leads to their quick death inside the *memoria* («essa va alla memoria, e lí ferma e lí muore»). According to Leonardo, these inner, autonomously forged images hardly obtain the same degree of «excellence» (*eccellentia*), i.e. brilliance, evidence, and, by implication, mobility and liveliness as their natural siblings. They are stillborn children of the mind.

This is, of course, a slap in the face for every advocate of literary *enargeia* viz. *evidentia*¹⁵. For Leonardo, poetic imaginations only have the power to cover a very short distance, that is, from one ventricle of the brain to the next, just a fraction of the full cycle of outer and inner images. Indeed, elsewhere he refers to the imaginative «libera finzione» as the «weakest part» of *pittura*¹⁶. Yet in other written passages he demonstrates an awareness

¹³ See M. Kemp, «From 'Mimesis' to 'Fantasia': The Quattrocento Vocabulary of Creation, Inspiration and Genius in the Visual Arts», in: *Viator*, VIII, 1977, pp. 347-398, for a nuanced analysis of Leonardo's increasingly critical view of *fantasia*, esp. pp. 376-384.

¹⁴ See Park, 1984 (as in n. 5), p. 38.

¹⁵ See C. van Eck, *Classical Rhetoric and the Visual Arts in Early Modern Europe*, New York/Cambridge 2007, passim; the collection of essays in *Evidentia. Reichweiten visueller Wahrnehmung in der Frühen Neuzeit*, ed. by G. Wimböck, K. Leonhard & M. Friedrich, Berlin 2007, esp. the article by J.D. Müller, «Evidentia und Medialität. Zur Ausdifferenzierung von Evidenz in der Frühen Neuzeit», in: *ibid.*, pp. 52-84.

¹⁶ Leonardo, *Libro di pittura*, chapter 33.

of the power of imagination. At one point he asks himself why dreams, paradigms of *fantasia's* spontaneous operations, are much more vivacious than phantasies created in an awake mental state¹⁷. Leonardo's claim that paintings can provoke laughter in the audience but never weeping¹⁸ sounds as a note of caution, especially in light of a recurring event of his time, namely immense crowds convulsing in tears while listening to the *words* of a preacher who successfully manipulates their imagination. Leonardo acknowledges this fact in the same chapter of the *Libro di pittura*, but here he relates the power of words to the living speech of oration as opposed to the «mute», i.e. written, language of poetry.

2. IMPRENSIVA

While Leonardo's specific terminology in chapter 15 of the *Libro di pittura* demonstrates his familiarity with the psychological discourses of his time, his realignment of the faculties in the ventricles and his invention of a new agent create a fresh enigma. He relocated the *sensus communis* – the analytical sense and the most prominent inhabitant of the first ventricle – to the second chamber of the brain, a place heavily contaminated by the image-saturated siblings *imaginatione* and *imaginativa*. And instead of the *senso comune*, he put a new faculty, the *imprensiva* (or *impressiva*), in the first ventricle.

Leonardo's cohabitation of *sensus communis* and imagination (in its two aspects) mirrors the general tendency of Renaissance psychology to reduce the sophisticated scholastic differentiations of the faculties of the soul (for instance, Niccolo Tignosi da Foligno's listing of *memoria*, *sensus communis*, *aestimativa*, and *cogitativa* under one label, *phantasia*)¹⁹. This development implies the conception of a closer relationship between imaginative and rational faculties. In Leonardo's theory, the noble *facultas* of the common sense – the agent of judgment – is forced to share its space in the second ventricle with a new roommate, the twin aspects of imagination with their fireworks of images. The first ventricle directly behind the forehead receives a new occupant, the *impressiva*, or *imprensiva*.

¹⁷ Id., *Codex Arundel*, fol. 278v.

¹⁸ Id., *Libro di pittura*, chapter 25.

¹⁹ Park, 1984 (as in n. 5), p. 42. Cf. Pico, *De imaginatione*, iv, v.

What is the task of this newcomer? Leonardo does not clarify, but the terminology and the mechanistic background of his theory of perception²⁰ imply that this faculty perceives the *intensity* of sensory representations. In the *imprensiva*, the similitudes of objects press, or imprint, themselves onto the subtle matter of the mind, the *spiritus*, before they are processed further. Poetic images are different: in the *Libro di pittura*, chapter 2, Leonardo explicitly states that the representations of poetry (the products of imagination) do not pass through the *imprensiva*.

What were the precursors of Leonardo's new psychological faculty? I would suggest three points of reference. Firstly, Aristotle's metaphor of the senses perceiving the form of things but not their matter, like soft wax receiving the *imprint* of the signet ring, not its metal²¹. Secondly, the stoic idea that *phantasmata* act as active stimuli, dynamic impulses causing the recipient's assent through *typosis*²². For instance, in Epictetus's *Enchiridion*, a text that was widely diffused after its translation by Poliziano, the impetus of the *phantasma* appears in an antagonistic context: the athlete of imaginations (*phantasias gymanesteos*) masters the impetus of *phantasmata*, a force attacking the inner fortress of the soul, as Marcus Aurelius put it²³. The third point of reference appears to be classical rhetoric with its concept of the impetus of lofty speech (*pathos*) sweeping away its impassioned audience²⁴.

Against this background, Leonardo forges a coherent epistemological theory based on his most fundamental concept in physics: *impetus*²⁵. In

²⁰ See F. Fehrenbach, *Licht und Wasser. Zur Dynamik naturphilosophischer Leitbilder im Werk Leonardo da Vincis*, Tübingen 1997, pp. 132-137 («Impressione») and 181-192 («Moti mentali»).

²¹ Cf. Aristotle, *De anima*, II, 424a. For a later echo of the metaphor, see Roger Bacon, *Opus Maius*, v.1 Dist.1, ii.

²² Cf. G. Verbeke, *L'évolution de la doctrine du pneuma du stoïcisme à S. Augustin*, Paris 1945, pp. 352-360.

²³ Lyons, 2007 (as in n. 10), pp. 5-12.

²⁴ Cf. Klaus Dockhorn, *Macht und Wirkung der Rhetorik*, Bad Homburg 1968, pp. 51-52.

²⁵ On the history of the concept, see the classic texts by P. Duhem, *Études sur Léonard de Vinci*, Paris 1906-1913, 3 Vols., Vol. III, pp. 3-112, esp. 54-112; A. Maier, *Metaphysische Hintergründe der spätscholastischen Naturphilosophie*, Roma 1955; M. Wolff, *Geschichte der Impetustheorie. Untersuchungen zum Ursprung der klassischen Mechanik*, Frankfurt a.M. 1978; Id., «Mehrwert und Impetus bei Petrus Johannis Olivi. Wissenschaftlicher Paradigmenwechsel im Kontext gesellschaftlicher Veränderungen im späten Mittelalter», in: *So-*

key passages of both his earliest and his latest manuscripts, he compares the sensual impression to the kinetic impact transmitted by a mechanic agent on a passive object. So he writes, for instance, in *Manuscript A*, fol. 33r: «La mano che dentro a sé tiene la pietra battuta col martello, sente in parte del dolore che sentirebbe la pietra, quando fussi corpo sensibile», and in the late *Manuscript G*, fol. 73r:

Impeto è impressione di moto trasmutato dal motore al mobile. / Impeto è una potenza impressa dal motore al mobile. Ogni impressione attende alla permanenza, ovvero desidera permanenza. Provasi dalla impressione fatta dal sole nell'occhio d'uno risguardatore e nella impressione del sono fatto dal martello di tal campana percussore. / Ogni impressione desidera permanenza, come ci mostra il simulacro del motore impresso nel mobile²⁶.

For Leonardo, the introduction of the *imprensiva* reifies the notion that perceptions (the similitudes of things) «impress» the mind. Therefore, the *imprensiva* operates as a perceptual agent receiving the intensity, clarity, and power (*eccellentia*) of sensory impressions. The products of the writer – words – have no comparable impact, for they are mere signifiers of the perceived object and need to be decoded²⁷. Leonardo's *imprensiva* is never concerned with codes. It is an inner sense perceiving spontaneously the impact of the world on us, especially through the sense of sight, Leonardo's paradigm for perception.

In contrast to writing, only paintings complete, from this perspective, the epistemological cycle of emissions and impressions, or better, they trans-

zialer Wandel im Mittelalter. Wahrnehmungsformen, Erklärungsmuster, Regelungsmechanismen, ed. by J. Miethke & K. Schreiner, Sigmaringen 1994, pp. 413-423. Cf. Fehrenbach, 1997 (as in n. 20), pp. 239-245 («Impetus»).

²⁶ Cf. Leonardo, *Manuscript C*, fol. 16r: «L'occhio uso nelle tenebre che subito veda la luce, riceve detrimento, onde subito si richiude non potendo essa luce sopportare. E questo accade perché, volenda la popilla alcuna cosa conoscere nelle usate tenebre, s'accresce di grandezza operando ogni sua forza di mandara alla imprensiva la similitudine delle ombrose cose. E giugnendovi dentro, la subita lacue fa che troppa quantità della popilla già tenebrata si malifica per lo sopravvenente splendore, retto contrario alle tenebre già suefatte e abitate nell'occhio, che cercan mantenersi in loro essere e non senza detrimento dell'occhio si partano del lor sito».

²⁷ On Leonardo's concept of language, see F. Frosini, *Vita, tempo e linguaggio (1508-1510)* (L. Lettura Vinciana – 2010), Firenze 2011.

pose and reinforce this cycle on a higher level. The emanations of the visible world (*similitudini*), and most importantly, those of nature, have an impact on men, striking both the eye and the *imprensiva* of the beholder. Already for Lucretius and the Epicurean tradition, nature herself was an image-creator, a motor of visual self-representation, the place where *ars* emerges. Inside the human brain, these natural representations are processed further and result in mental images (through *imaginatione*) and the transformative, combinatory power of *imaginativa*; their impact on the mind increases rather than weakening. A paradigm for this process of intensification is provided by Leonardo's concept of *macchia*: amorphous spots on walls, clouds etc. that spur the imagination of the painter to «discover» overwhelming images of violence and terror (see below). Would it be too far-fetched to assume that the power of perceived images activates further image-movements in the human nerves filled with *spiritus* – that nature's more or less confused, fleeting images are longing for action, for expression and intensification?

Through the hands of the painter, these transformed emanations of nature become again a physical object, a painting, in other words, another surface emanating visual *simulacra* that strike the *imprensiva* of its beholders as effectively as those of its natural prototype. Or even more: the simulacra produced by the painter are nature's transient emanations made durable, and enhanced in beauty and expressive qualities²⁸. This is one reason why Leonardo insists that the practice of painting is more noble («più degna») than merely theoretical knowledge («contemplazione o scienza»)²⁹. As «partorita da essa natura»³⁰ and «figliola di natura»³¹, painting is *literally* a product of nature's continuous generation of images. *Pittura* clarifies, intensifies, and eternalizes the world of appearances³².

²⁸ Cf., as *pars pro toto*, Leonardo, *Libro di pittura*, chapter 23: «Ma la bellezza di tal armonia il tempo in pochi anni la destrugie, il che non accade in tal bellezza imitata dal pittore, perché il tempo longamente la conserva».

²⁹ *Ibid.*, chapter 33; cf. chapter 34.

³⁰ *Ibid.*, chapter 12.

³¹ *Ibid.*

³² In this perspective, Leonardo's image theory appears to be a precursor of the teleological esthetics of Konrad Fiedler with his idea of the «clarification» and «purification» of the visual field through art; see G. Boehm, «Die Logik des Auges: K. Fiedler nach einhundert Jahren», in: *Auge und Hand. Konrad Fiedlers Kunsttheorie im Kontext*, ed. by S. Majetschak, München 1997, pp. 27-40. More important, Leonardo's concept of an image-creating nature can be related to contemporary studies on the *semiosis* of nature; see A.

3. ASSIMILATION

Leonardo's rejection of poetic imagination should not be confounded with a denial of imagination more generally. Indeed, he repeatedly refers to *fantasia* as a part of the science of painting, as, for instance, in his argument against the less imaginative genre of sculpture («come la pittura è più bella e di più fantasia»)³³ or in his demand that painters reproduce the effects of nature by using their fantasy («fare di fantasia a presso alli effetti di natura»)³⁴. Leonardo's main criterion for successful painting – accuracy – is indeed embedded in his celebration of variety, which entails the novel and unseen, that is, the imaginary. The painter is «Signore e Dio» of all the real (present) or imaginative (past and future) objects of the universe: «cio ch'è nel universo per essenza, presenza o *imaginazione*»³⁵. Leonardo's critique aims at the *imaginativa* rather than at *imaginazione*; his main antagonists are the «libere finzioni»³⁶, the spontaneous fancies, subconscious projections, and hybrid re-combinations detached from the paradigm of nature. These free creations of fantasy, caused by the powerful influence of the specific [[?]] physical body on the mind³⁷, are merely «weak» in poetry, but dangerous in science. In a later passage, Leonardo warns against the *cose mentali* that are not grounded in sensory experience they are harmful in medicine and responsible for the errors of alchemy and the quest for *perpetuum mobile*, an obsessive delusion of his earlier years³⁸.

Weber, *Natur als Bedeutung: Versuch einer semiotischen Theorie des Lebendigen*, Würzburg 2003 (following mainly H. Jonas and H.R. Maturana); and, in an Epicurean perspective, H. Bredekamp, *Theorie des Bildakts*, Berlin 2010, pp. 317-323. For the relationship between Leonardo's theory of imagination and his concept of painting, see also M. Pardo, «Leonardo da Vinci on the Painter's Task. Memory, Imagination, Figuration», in: *Leonardo da Vinci and the Ethics of Style*, ed. by C. Farago, Manchester 2008, pp. 58-95.

³³ Leonardo, *Libro di pittura*, chapter 38.

³⁴ *Ibid.*, chapter 39. On the role of the *imaginativa* for sketching, see *ibid.*, chapter 76; on the training of an accurate *imaginativa*, chapters 67, 72.

³⁵ *Ibid.*, chapter 13 (my emphasis).

³⁶ *Ibid.*, chapter 33.

³⁷ See E. H. Gombrich, «Leonardo's Methods of Working out Compositions», in: *id.*, *Norm and Form*, London 1966, pp. 58-63; M. Kemp, «'Ogni dipintore dipinge se': A Neoplatonic Echo in Leonardo's Art Theory», in: *Cultural Aspects of the Italian Renaissance: Essays in Honour of Paul Oskar Kristeller*, ed. by C.H. Clough, Manchester 1976, pp. 311-323.

³⁸ «Le cose mentali che non son passate per il senso son vane e nulla verità partoriscono se non dannosa» (Windsor, 19070v).

Leonardo's increasing focus on dynamic relations and antagonistic processes in nature³⁹ reveals his ideal of *imaginatio* as an assimilative faculty of the soul, a pure mirror of nature. Traditionally, *phantasia* referred to two rather static aspects of mental representations, the image of an absent object and the re-composition of imaginative hybrids. In a famous passage of his *Libro di pittura*, Leonardo recommends exercising the painter's mind («modo d'augmentare e destare lo 'ngegnio a varie invention») by carefully observing stains on humid walls or in ashes, clouds, and mud, a vague echo of passages in Aristotle (*De somnis*), Philostratos, and even Lorenzo de' Medici⁴⁰. These indeterminate forms gain shape only through an active imagination, and in this light Leonardo's sequence of «inventions» provided by *macchia* is particularly significant: «combats, both of animals and men, or landscapes and monstrosities, like devils or similar things». Monsters are indeed the classical topos of the combinatory *imaginativa*, but with battles, Leonardo's fantasy projects dynamics and violence onto amorphous perceptions. After ca. 1500, major fields of his science such as hydrology, botany, geography, and anatomy start to foreground change, process, and antagonism with competing actors on a stage ruled by the laws of mechanics⁴¹. This emphasis on process is mirrored in impressive, sometimes exceedingly long descriptions⁴² that force the imagination of the reader to participate in the flow of events. This is, to be sure, neither the static stockpile of film stills traditionally provided by *imaginatio* nor the free re-combination of visual elements by *imaginativa*.

Instead, Leonardo postulates that the painter-scientist should transform himself into a dynamic *seconda natura*, a mirror of nature continuously changing «colors»⁴³. Following the model of the sense (lover) moving with

³⁹ Cf. F. Borgo's contribution to this volume and S. Toussaint, «Leonardo filosofo dei contrari», in: *Leonardo e Pico. Analogie, contatti, confronti*, ed. by F. Frosini, Firenze 2005, pp. 13-35.

⁴⁰ Leonardo, *Libro di pittura*, chapter 60; cf. Kemp 1977 (cf. note 10), p. 377 n. 152.

⁴¹ See Fehrenbach, 1997 (as in n. 20), pp. 193-256 («Die Welt als Fluss»).

⁴² On Leonardo's poetic hydrology, see C. Vecce, «Leonardo e il 'canticò delle acque'», in: *Acqua. Storia di un simbolo tra vita e letteratura*, ed. by Guido Garufi & Antonio Santori, Ancona 1997, pp. 124-131. See also C. Scarpati, *Leonardo scrittore*, Milano 2001, pp. 113-161 («Le acque e i fossili. Un percorso tra scienza e letteratura»).

⁴³ Leonardo, *Libro di pittura*, chapter 58a; cf. Chapter 56.

the sensible (beloved)⁴⁴, he challenges the mind of the painter to *move* with the proper similitudes of objects⁴⁵. Again, his concept of the mind refers back to the beginning of the third book of *De anima*, where Aristotle defines *phantasia* as «a movement caused by actual perception»⁴⁶. But Leonardo transforms a psychological statement into a distinctive quality of the painter.

As a painter and as a scientist, Leonardo became increasingly aware that perception needed to be permeated by active imagination for a full comprehension of the temporal dimensions of nature. At the same time, the dignity of painting originated in its very opposition to the result of nature's temporality – transience, and the power of death. Elsewhere, I discussed Leonardo's complex reflections on the paradox of time in painting: the dichotomy between a simultaneous «insieme» of details and an enduring continuation of time, and the reconciliation of simultaneity and succession that appropriates a powerful theological topos, the gaze of angels⁴⁷. In nature's products, single parts are united in whole bodies that remain intact as composites until the disconnecting desire of their constituents – the four elements – prevails, causing their disintegration⁴⁸. As is well known, one of Leonardo's sharpest *Paragone* arguments defines literature, or language, as a succession of fragments, a procession of disconnected limbs, as it were, a parade of freaks. For Leonardo, the medium of literature is an agent of death – a victim of fugacity, a flow of scattered signs, smoke in the wind: «e non nasce la succedente se l'antecedente non more»⁴⁹.

⁴⁴ Id., *Codex Trivulziano*, p. 11.

⁴⁵ Id., *Manuscript A*, 99r.

⁴⁶ Aristotle, *De anima*, III, 3. Cf. Pico, *De imaginatione*, IV.

⁴⁷ See Fehrenbach, 2002 (as in n. 4), pp. 193-198 (with reference esp. on Augustine, *De civitate Dei* and *Confessiones*).

⁴⁸ So for instance in *Codex Arundel*, fol. 156 v (ca. 1480), with an emphasis on the disintegrating desire of the *quinta essenza*: «Or vedi la speranza e'l desiderio del ripatriarsi e ritornare nel primo caso fa a similitudine della farfalla al lume, e l'uomo che con continui desideri *sempre con festa* aspetta la nuova primavera, sempre la nuova state, sempre e nuovi mesi, e nuovi anni, parendogli che le desiderate cose, venendo, sieno troppe tarde. E' non s'avede che desidera la sua disfazione; ma questo desiderio è nei quella quinte essenza, spirito degli elementi, che trovandosi rinchiusa per l'anima dello umano corpo desidera sempre ritornare al suo mandatario. E vo' che sappi che questo medesimo desiderio è quella quinta essenza, compagnia della natura, e l'uomo è modello dello mondo».

⁴⁹ Leonardo, *Libro di pittura*, chapter 27; cf. chapter 21 (about the description of a face):

Rather than painting, though, it is music that would represent the temporal structure of nature in the most accurate way. The polyphonic units created «in un medesimo tempo» mirror the transitoriness of natural objects perfectly – they are virtual «bodies» whose limbs are united in harmony but inevitably doomed to pass and perish («costrette a nascere e morire in uno o più tempi armonici»)⁵⁰. Painting is different from both nature and music because it virtually eternalizes the *temporal* existence of things and bodies «in un medesimo tempo». Therefore, it is «piu degna l'opera del pittore che della natura»⁵¹, a remarkable statement for a writer who never ceases to celebrate nature as the undisputed «maestra» of painting, the paradigm of human art⁵². Painting, triggered by the power of nature to impress or imprint its own images in the mind of man, emerges as a «second nature», an expression of the first nature's longing to maintain the existence of every product, suspending the fugacity of time. While the first nature struggles to overcome death through procreation, *pittura* «doesn't have children» («non partorisce figliuoli eguali a sé»)⁵³; she is the promise of a life in time without death.

«[...] come se volessimo mostrare un volto a parte a parte, sempre ricoprendo quelle che prima mostrarono, delle quali dimostrazioni l'oblivione non lascia comporre alcuna proporzionalità di armonia [...]».

⁵⁰ Ibid., chapter 29.

⁵¹ Ibid., chapter 30.

⁵² Ibid., chapter 30; cf. chapter 417. Compare this to chapter 109, on the human soul («maestra del tuo corpo») and Windsor 126571, on the bird: «la natura maestra di tale animale»; similarly on the human heart: «instrumento mirabile inventione dal sommo maestro» (Windsor 190291).

⁵³ Id., *Libro di Pittura*, chapter 8.