

Image, Imagination, and Cognition

Medieval and Early Modern Theory and Practice

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Bernardino Telesio on Spirit, Sense, and Imagination

Leen Spruit

Bernardino Telesio (Cosenza, 1509–Cosenza, 1588) is routinely described by early modern historiographers as the first *novator*, the first philosopher to break from Aristotle and propose his own doctrine. The proem of Telesio's *De rerum natura iuxta propria principia* (the final edition of which appeared in nine books in 1586) explicitly presents the work as a manifesto against Peripatetic rationalism: 'the structure of the world and the nature and magnitude of bodies contained in it are not to be sought from reason, as the ancients did; they must be perceived from sensation and treated as being things themselves'.¹ True to this principle, Telesio laid down the foundation of his naturalism in the first two books before attacking Aristotle in the third; the other books are devoted to physical, biological, psychological, and moral considerations. His attack on Aristotle did not spare the latter's psychology. Indeed, Telesio attempted to replace Aristotle's hylemorphism as well as his faculty psychology with his own, new theory.

This essay examines Telesio's new model and assesses the role of the imagination in it. In opposition to Aristotelian natural philosophy, Telesio held that all natural beings are comprised of matter and two active principles. The active principles are heat, which expands, and cold, which contracts.² Expansion

1 Of the *De rerum natura iuxta propria principia* I have used the edition by De Franco L., vol. I (books I–III) and vol. II (books IV–VI) (Cosenza: 1965–1974), and vol. III (books VII–IX), (Florence: 1976). For the quoted text, see vol. I, 26.

2 Telesio was educated in Milan by his uncle Antonio, and afterwards in Rome and Padua. His studies included classics, science and philosophy. In 1553 he married and settled in Cosenza, becoming the founder of the Cosentian Academy. For a time he lived in the household of Alfonso III Carafa, Duke of Nocera. 1565 saw the publication of the first edition of his major work *De rerum natura iuxta propria principia*; this was followed by a number of scientific and philosophical works, published after his death in *Varii de naturalibus rebus libelli* (1590). His heterodox views drew the attention of the ecclesiastical bodies of doctrinal control, and in the 1590s his books were placed on the Index. For further biographical information, see Fiorentino F., *Bernardino Telesio, ossia Studi storici su l'idea della natura nel Risorgimento Italiano*, vol. I (Florence: 1872).

and contraction account for generation and corruption, and thus for all the diverse forms and types of existence, while the bodily mass on which such forces operate remains the same. Nature is endowed with an internal principle of motion, by the heat that pervades the entire cosmos as *spiritus*. The *spiritus* (a fiery substance) is also the principle of sensitivity, so that all beings feel: the difference between organic and inorganic beings is not essential, but merely one of degree.

In a series of sharp polemics with Aristotle, and even more incisive disagreements with followers of Aristotle, Telesio developed a system of ideas that was clearly influenced by the naturalistic aspects of Peripatetic philosophy, albeit marked by a stronger materialistic tendency and derived at least in part from Stoicism and Galenic medicine.³ Telesio's psychological and epistemological speculations were fuelled by the conviction that the traditional schemes of Aristotelian philosophy could not accommodate recent findings of anatomy and physiology. For this reason, he sought to construct a more suitable alternative to Peripatetic philosophy and science. Such an alternative project could only succeed, he claimed, if nature were investigated on the basis of principles demonstrably present in the things themselves. For this reason, natural reality had to be approached by means of those cognitive faculties most appropriate to it—namely, the senses. The premise of Telesio's psychology of cognition was therefore the absolute primacy of sensation, while all other types of cognition were ultimately seen to depend on direct perception.

Telesio ascribed psychological functions to a hot, bodily entity, which he identified with the *spiritus*. *Spiritus* (spirit) is common to man and animals. An imperceptibly thin and fiery body, it constitutes our sensible soul.⁴ However,

3 In particular, the doctrine of *pneuma*. However, see also Marsilio Ficino, Cornelius Agrippa, Girolamo Cardano, and Giordano Bruno, for the Neoplatonic and Hermetic doctrine of *spiritus* as vehicle of the human soul. For discussion, see Klein R., "L'imagination come vêtement de l'âme chez Marsile Ficin et Giordano Bruno", *Revue de métaphysique et de morale*, 51 (1956) 18–38.

4 See Telesio, *De rerum natura* vol. 111/7, chapter 4, 12f. See also Telesio, *De rerum natura* vol. 11/5, chapter 3, 216: the spirit as bearer of sensibility and movement; *De rerum natura* vol. 11/5, chapter 10, 260: spirit as 'anima sentiens'; Telesio, *De rerum natura* vol. 11/5, chapter 5, 226: the spirit is present principally in the nervous system, and in particular in the brain, in order to guarantee the unity of the perception. Cf. Telesio, *De rerum natura* vol. 11/5, chapter 12, 274–276, and also below. Telesio's view of spirit was clearly inspired by Epicurean and Stoic ideas. See, among others, Epicurus, *Letter to Herodotus*, 63–67: "The next thing to see—referring to the sensations and feelings, since that will provide the strongest confirmation—is that the soul is a fine-structured body diffused through the whole aggregate, most strongly resembling wind with a certain blending of heat [...] All this is shown by the soul's powers,

while all natural beings are endowed with spirit, man also has a rational soul directly created by God. The existence of man's rational soul obviously raises the issue of the limits to Telesio's materialism; and his notion that a corporeal spirit is the basis of all cognitive activities necessarily involved a reassessment of the status and role of the inner senses. Telesio regarded sense perception as superior to all subsequent cognitive functions, including imagination and intellectual knowledge, and therefore rejected the traditional distinctions between the psychological faculties, which were said to succeed each other beginning in the external senses and continuing through the inner senses up to reason and intellect. Moreover, he dispensed with mediating mental representations.

Sense and Reason

At the basis of Telesio's philosophy and psychology lies the absolute primacy of sensation and observation; all other forms of cognition ultimately depend on direct perception. To be sure, Telesio did not belittle the role of reason as such, but he declined to appeal to reason wherever more direct evidence could be had from the senses. He argued that rational knowledge always depends on a previous sensation. In his eyes, intellectual knowledge of the material world

feelings, mobilities and thought processes, and by those features of it whose loss marks our death. [...] Consequently those who say that the soul is incorporeal are talking nonsense. For if it were like that it would be unable to act or be acted upon in any way, whereas as a matter of fact both these accidental properties are self-evidently discriminable in the soul'; cf. Lucretius, *De rerum natura* vol. III, 136–176. Epicurus' word for 'wind' (*pneuma*) is also the term used by the Stoics for the warm 'breath' which they believed was the stuff of the soul. Heat or fire was a fundamental concept in Presocratic thought, and its influence persisted in later times. Aristotle regarded heat as the cause of growth which is present in every seed, and inclined to the view that either breath or heat is the immediate bodily vehicle of the soul. The early Stoics extended this biological notion to explain movement and change in the whole universe. Nature is an artistic or creative fire; and its essence is expressed in the sentence: 'God is the seminal *logos* of the universe' (Diogenes Laertius, *Lives of Eminent Philosophers* VII.136). Heat and fire never lose this pre-eminence in Stoicism. From Chrysippus onwards the Stoics identified *logos* not with pure fire, but with a compound of fire and air, *pneuma*. This modification was almost certainly prompted by contemporary physiology: *pneuma* was regarded by medical writers as the 'vital' spirit in the arteries. Chrysippus made the *pneuma* the vehicle of *logos*. *Pneuma* is a dynamic entity, something more like 'force' or 'energy'. It interacts with matter; it remains obscure how. Chrysippus speaks about *pneuma* permeating matter. But two bodies cannot occupy the same space at the same time. Lucretius regarded the soul as a mixture of fire, breath, air, and an unnamed element; see *De rerum natura* 262–322.

was a mere substitute for actual sensation and was therefore inferior to direct sense perception.⁵

What are the consequences of Telesio's conception of the senses, taken together, as the principal criterion for our knowledge of reality? Clearly, this criterion imposes strict limits on our (philosophical) knowledge of the world: we can know only what we perceive, and we can perceive only what we can experience.⁶ Thus, or so it would seem, the bounds of knowledge coincide with the bounds of the body. Indeed, Telesio rejected the arbitrary imposition of abstract, rational schemata on concrete physical processes, claiming that the latter should be investigated 'iuxta propria principia'.⁷ In particular, Telesio scolded Aristotle and his followers for approaching nature with an inappropriate instrument—namely, reason. According to him, their absolute faith in reason leads to 'arbitrarily creating a fictitious world'.⁸

Telesio's emphasis on the bodily bounds of knowledge did not imply skepticism with regard to the external world.⁹ He assigned to the senses the

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- 5 Telesio, *De rerum natura* vol. 111/8, chapter 14, 228: the knowledge of partly unknown things is based on the senses, and therefore also the improvement and perfection of this knowledge. See also *Solutiones obiectionum Francisci Patritii*, in Telesio Bernardino, *Varii de naturalibus rebus libelli*, ed. De Franco L. (Florence: 1980) 453: 'Rationem, id est rerum cognitionem, quam non sensus, sed rerum sensu perceptarum similitudo nobis praebet, haudquaquam despicio, nec despiciendum dixerim unquam, quin et aequè propemodum ac sensui ipsi fidem habendam suo loco decerno'.
- 6 Telesio, *De rerum natura* vol. 11/5, chapter 7, 246: 'Quoniam enim quae rerum vires nihil in nos agunt nihilque nos immutant, qualesvis eae sint, nullum sui sensum nobis faciunt, sed eae modo nobis percipiuntur, a quibus patimur et a quibus immutamur, itaque antiquioribus omnibus, et ipsi in primis Aristoteli, sensus quivis per alterationem et passionem quandam fieri videtur'.
- 7 See also Ingegno A., "The New Philosophy of Nature", in Schmitt Ch. B. et al. (eds.), *The Cambridge History of Renaissance Philosophy* (Cambridge: 1988) 236–263, here 251–252.
- 8 Telesio, *De rerum natura* vol. I, proemium, 26; Telesio, *De rerum natura* vol. 111/7, chapter 13, 48–50, where Telesio accused Aristotle of competing with God; cf. also Telesio, *De rerum natura* vol. 111/8, chapter 26, 290, regarding the traditional philosophy that is merely built on 'decreta hominis'. For discussion, see also Vasoli C., "Riflessioni su Bernardino Telesio", in *Atti del Convegno Internazionale di Studi su Bernardino Telesio, Cosenza 12–13 maggio 1989* (Cosenza: 1990) 15–30, here 24.
- 9 As for example in the Cyrenaics and Sceptics. According to the Cyrenaic school, founded in the fourth century BC by Aristippus, only one's own affections can be apprehended; cf. Sextus Empiricus, *Adv. Math.* vol. VII, 191f. Subsequently, the Sceptics casted doubt on the senses' capacity to inform us about external objects.

extraordinarily powerful cognitive function of detecting the very *nature* of things.¹⁰ By the same token, as regards psychology, Telesio believed that a detailed empirical study of animals and men could help ascertain the precise nature of the soul.¹¹ He admitted that perception of a physical object involves a causal relation. The objects of perception may owe some of their properties to the conditions of perception, such as the disposition of the body and that of the spirit at a given moment.¹² Still, however complicated the causal path from object to percept may be, what we experience are veritable items in our physical environment and not surrogate images or intermediaries.

In this sense, then, Telesio was plainly a realist. Sensory affections form the basis of cognition, although they are not the outermost limit of cognitive processing, as our cognitive power can reach all the way to the objects themselves.¹³ Telesio warned, however, that things do not causally act as undifferentiated wholes. Moreover, many things are perceived only partially. Any incomplete cognition may be completed by comparing a partial perception with previous perceptions. In fact, intellectual thought and discursive reasoning can inform the sensible soul about things that are distant, absent, or partly unknown.

10 Cf., for example, Telesio, *De rerum natura* vol. III/7, chapter 10, 36; see also section 3, below.

11 Telesio, *De rerum natura* vol. II/5, chapter 7, 244.

12 The seed-soul, although different from the body, is affected according to the nature and disposition of the body; see Telesio, *De rerum natura* vol. II/5, chapter 35, 416. Cf. the position later developed by Spinoza in *Ethica* II, prop. 16: the idea of any mode in which the human body is affected by external bodies must involve the nature of the human body and at the same time the nature of the external body.

13 This is an important difference with later materialist psychologists. According to Hobbes, the senses do not give us access to the essences of the things; cf. Hobbes Thomas *The English Works*, 11 vols., and *Opera philosophica quae latine scripsit omnia*, 5 vols., ed. Molesworth W. (London: Gassendi believed that cognition consists of the mental reconstruction of sensible reality on the basis of species, which are the material effects of bodies. Species are not metaphysically connected with the substantial essence of these bodies, however. Therefore, the human soul has only indirect access to the world, and it can never achieve true and justified beliefs about the substantial nature of reality. See *Objectiones quintae ad Cartesii Meditationes*, in Descartes René, *Oeuvres*, eds. Adam Ch. and Tannery P., 12 vols. (Paris: 1982–1987) vol. VII, 271 and 285; Gassendi Petrus, *Opera*, 6 vols. (Lyon: 1658) vol. I, 443A: there is no privileged metaphysical link between material reality and the percipient, nor a substantive connection between things and ideas; see also Gassendi, *Opera*, vol. III, 182–185, 203A; vol. V, 148, and vol. VI, 34.

Throughout his *De rerum natura*, Telesio fiercely attacked the philosophy of Aristotle. He agreed with the Stagirite on at least one essential point of methodology, however: differences and similarities in nature must be established on the basis of the actual behaviour of natural organisms.¹⁴ All knowledge is based on observation and on inferences from observation.¹⁵ According to Telesio, only a restricted set of sensible features can be perceived directly—namely, the immediate effects of heat and cold, which are the ‘forces of acting natures’ (*agentium naturarum vires*).¹⁶ Therefore, rational inferences, although cognitively inferior and not always reliable, must necessarily play an essential role in the overall structure of Telesio’s philosophy. For example, matter cannot be perceived; its existence is inferred.¹⁷ Also the existence of the spirit, the very foundation of Telesian psychology, is impossible to prove directly by the senses, but must be inferred from observed behaviour. We are not able to detect the spirit in the nervous system. Yet, it is necessary to postulate the existence of an ethereal and fiery substance in order to explain the phenomena of perception.¹⁸

Spirit, Divine Soul, Materialism

Telesio ascribed psychological functions to a bodily entity, the spirit, which is the substance of the organic soul and not its instrument, as Ficino and other Neoplatonists have thought.¹⁹ The spirit, which Telesio also described

14 See Telesio, *De rerum natura* vol. I/2, chapter 4, 250.

15 Telesio, *De rerum natura* vol. I/1/7, chapter 32, 134.

16 Telesio, *De rerum natura* vol. I/1/7, chapter 9, 36. Recall that heat and cold are active and incorporeal natures; they do not subsist in themselves, but always need some matter in which to reside.

17 Cf. Telesio, *De rerum natura* vol. I/1, chapter 4, 60, and I/3, chapter 10, 442. This view apparently derives from Aristotle; cf. *Metaphysics* 1036a8, and *On generation and corruption* 332a5; see Schuhmann K., “Telesio’s Concept of Matter”, in *Atti del Convegno Internazionale di Studi su Bernardino Telesio, Cosenza 12–13 maggio 1989* (Cosenza: 1990) 115–134, here 121.

18 Telesio, *De rerum natura* vol. I/1/5, chapter 10, 264–266. This is in substantial conformity with many modern accounts of philosophy of mind: mind is an entity that is not perceptible, but the existence of which is accepted in order to explain certain phenomena. The paucity of his ontological entities, and the seemingly circular way in which he attributes functions to the spirit will be further analyzed in section 3.

19 Like the later Neoplatonics, Ficino regarded the *spiritus* as a subtle material substance between soul and body, which precludes *de facto* all immediate contact between body and soul. It may therefore serve, in principle, to filter out the ‘negative influence’ of the

as 'seed-soul', is distinguished from the immaterial, rational soul, which is a divine creature added to spirit as its form.²⁰ This divine soul cannot operate without the sensible soul, however, and its contribution to knowledge of natural reality, though valuable, is essentially inferior to that of sense perception.²¹ The introduction of the divine soul is an integral part of Telesio's methodology, because according to his account certain psychological functions and acts of man cannot be explained without postulating an immaterial mind. Man aspires not only to sensible and thus perishable things, but also to divine and immortal things, which belong to his eternal afterlife.²² I shall, however, not pursue this line of Telesio's thought any further here, but focus instead on his specific brand of psychological materialism.

At the outset of Book v, Telesio addresses the question of whether the soul is the form of the body, or whether it is a 'separate substance' ('*substantia separata*').²³ In his ongoing polemic with Aristotelian psychology, he argues that the seed-soul is not the form of the body, but an entity of its own. It is the divine soul, which is superadded to the seed-soul, which should be seen as the form of the body.²⁴ Telesio established the relation between spirit and body by inference from observed phenomena (the sensorimotor behaviour of animate beings). Since we have no direct knowledge of the presence of the spirit in the body, we must base our knowledge of their mutual relation on inference from observable passions and actions. If the spirit were the form of the body, body and spirit would form one substance. No animal, however, can be seen as 'one and the same being' ('*unum idemque ens*'). Each animal has parts that differ by nature and in their '*facultas agendi, patiendique et operandi*'.²⁵ From the 'affections of the soul' ('*affectiones animae*') we may conclude that the seed-soul

body on the soul; cf. *Theologia platonica* IX.5, in Ficino Marsilio, *Opera omnia*, 2 vols. (Basel: 1576; reprint, Turin: 1983), 212; see also *ibid.* VII.6, 178; *idem*, *De vita*, in *Opera* 531; *In Convivium* VI.6, in *Opera* 1343–1344.

20 See, for example Telesio, *De rerum natura* vol. II/5, 34–37, 404f. See Telesio, *De rerum natura* vol. II/5, chapter 3, 214–220, for the unity of the seed-soul and the divine soul.

21 Telesio, *De rerum natura* vol. III/8, chapter 3, 172, and chapter 11–12, 208–220.

22 See Telesio, *De rerum natura* vol. II/5, chapter 2, 210; vol. III/8, chapter 15, 232–236.

23 Telesio, *De rerum natura* vol. II/5, chapter 1, 208.

24 Telesio, *De rerum natura* vol. III/8, chapter 15, 232f. The divine soul is seen as '*forma spiritus*' in vol. II/5, chapter 50, 446–48, vol. III/8, chapter 9, 190 and vol. III/8, chapter 15, 232. If Aristotle had defined the divine soul as the form of the body, Telesio would have agreed with him; cf. vol. II/5, chapter 40, 446–48. For discussion, see Spruit L., "Elementi aristotelici e polemica anti-peripatetica nella dottrina dell'anima divina di Telesio", *Verifiche*, 21 (1992) 351–370.

25 Telesio, *De rerum natura* vol. II/5, chapter 4, 222.

is different from the body, yet corporeal.²⁶ Telesio's methodology leads him to a distinction between soul and body that is both functional and ontological in character.²⁷ The subtle spirit dwells in the body, but it is neither the form nor a part of the body.²⁸ The presence of empty cavities and conducts in the body—the cerebral cavities and the spine—is another indication for the existence of a material, yet distinct and imperceptible spirit. All animals, including human beings, are composite entities. However, they are not composed of soul and body in the Aristotelian sense of form and matter, but of spirit and body.²⁹ All activities of the spirit are governed by self-preservation, which is already at work in sensation. For its own benefit, the spirit must be aware of pleasant or unpleasant things in its environment. Sensation occurs when external things affect the spirit (alternately by dilation and contraction). Pushed to its own operation (motion) in sensation, the spirit enjoys wellbeing.³⁰

Rejecting traditional dualist psychologies, Telesio replaced them with a more subtle distinction between soul and body. The spirit is a material entity with specifically corporeal characteristics: it is the most powerful combination of heat and matter. These characteristics allow it to perform the traditional 'mental' activities. Sensation, emotion, and intelligence are functions of bodily capacities.³¹ Telesio's theory is actually a sort of inverted Platonism, in which the soul is a separate entity that uses the body as its organ.³² Yet, the soul is as material as the body itself, and therefore is not separate from the latter, unlike the Peripatetic or Platonic intellect.³³

26 Telesio, *De rerum natura* vol. II/5, chapter 31.

27 Telesio's approach was evidently inspired by Aristotle's *De anima* 403a12–13: 'If then any function or affection of the soul is peculiar to it, it can be separated from the body; but if there is nothing peculiar to the soul, it cannot be separated.'

28 See also Telesio, *De rerum natura* vol. II/5, chapter 34, 404f.

29 Telesio, *De rerum natura* vol. II/5, chapter 5, 226–236. A physiological argument for the thesis that spirit makes up the substance of the soul is developed in vol. II/5, chapter 28, 366f, where Telesio discussed the sudden death caused by the presence of air in the brains.

30 Telesio, *De rerum natura* vol. II/5, chapter 9, 254–258. See also vol. III/7, chapter 4–5, 14–18; vol. III/7, chapter 3, 8f; and vol. III/8, chapter 21, 268.

31 See Telesio, *De rerum natura* vol. II/5, chapter 31–32, 384–392: emotions show that the soul is bodily.

32 See Telesio, *De rerum natura* vol. II/5, chapter 41, 452.

33 Telesio, *De rerum natura* vol. II/5, chapter 29, 376. See Copenhaver B., "Astrology and Magic", in Schmitt C.B. et al. (eds.), *Cambridge History of Renaissance Philosophy* (Cambridge – New York – New Rochelle et al.: 1988) cit. 264–300, here 292.

How should we characterise Telesio's version of materialism? He reduces soul to matter and analyses psychological phenomena as functions of a bodily entity, the spirit. This view may be described as essentially 'anti-chauvinist' in the following sense. For Telesio, human beings, like all other animals, are biological systems with a specific organisation: they are governed by a substance whose expansion and contraction lies at the basis of their vegetative, sensitive, and intellectual lives. In fact, Telesio believed that all animals endowed with spirit possess the capacity for perception, thought, and discursive reasoning, by virtue of their specific bodily characteristics—that is, by being constituted of hot and extremely mobile matter.³⁴ This means that in all mental activities that do not specifically involve the divine soul, there is no essential difference between man and animal. The difference between them is one of degree: the human spirit is more 'pure' and is located in a place that is well protected and better suited to absorbing and selecting the stimuli from the environment, and to recalling them.³⁵

The Telesian spirit plays approximately the role that is now commonly ascribed to the brain and to the nervous system. Substituting brain for spirit, Telesio's psychology may be seen as an early anticipation of the materialism that underlies much of modern neuroscience and cognitive science. For Telesio, every living being has a specific and particular physiological organ, the structure of which predisposes it to certain mental (perceptual, emotional, cognitive) activities. Psychological processes emerge from the activity of this organ (spirit or brain). They must be understood in terms of the distinctive features of the various portions (central and peripheral) of the nervous system, and of the latter's nature and precise structural properties (plasticity, temperature, tenuousness, perspicuity, etc.).³⁶ We may therefore say that Telesio's psychology postulates a complex organism, the operation of which can be explained in terms of an interaction between peripheral processors and a central

34 See Telesio, *De rerum natura* vol. 111/8, in particular, chapter 10 and following. Knowledge does not emerge with the evolution of verbally competent animals. For a similar position in ancient philosophy, cf. Sorabji R., "Perceptual content in the Stoics", *Phronesis*, 35 (1990) 307–314.

35 See Telesio, *De rerum natura* vol. 111/8, chapter 15, 232. Also the differences in intelligence between different men have a purely physiological basis; cf. vol. 111/8, chapter 29, 298, and chaps. 30–33.

36 See also Telesio, *De rerum natura* vol. 111/8, 298–328, for the influences of the climate on the functioning of the spirit.

processor; the latter's operation, in its turn, is to be explained in terms of physiology (warm, cold, contraction, dilation).³⁷

Telesio believed that psychological states are strictly related to properties of the spirit (with the exception of states linked to specific objects such as God and the 'divine entities' [*entia divina*], the perception of which requires the cooperation of the divine soul).³⁸ We may, in a sense, view him as a forerunner of modern reductionist strategies that treat mental states as conditions of the central nervous system. Still, Telesio's materialism is certainly not eliminative in the contemporary sense of the word; unlike so-called eliminative materialists, he did not regard the traditional psychological terminology as meaningless or devoid of reference, nor did he challenge the existence of psychological functions and mental phenomena.³⁹ Furthermore, he did not think of perception and thought as mere epiphenomena supervening upon more fundamental structural features of the spirit. Rather, his psychology aimed at individuating the precise physiological basis of mental events, without eliminating them or relegating them to some second-order existence.

Telesio's naturalism is both weaker and methodologically less restrictive than modern versions of physicalism.⁴⁰ Although his view implies *prima facie* an identity theory of mind, it does not treat mental states as being susceptible to a straightforward analysis in physical terms. Although mental states are properties of the corporeal mind, they are not merely among its physical states. Rather, Telesio's *De rerum natura* suggests that matter in certain complex states generates acts that cannot be analysed in purely physiological terms. It describes the complex interaction between central spirit and peripheral parts in *psychological* terms: the portions of the spirit move '*iuxta universitatis decreta*' (according to the laws of the totality).⁴¹ At the same time, however, Telesio found himself unable to explain how exactly mental

37 As we shall see below, however, Telesio did not remain faithful to this methodology of analysis.

38 See Telesio, *De rerum natura* vol. II/5, chapter 2, 210–214; cf. vol. III/8, chapter 15, 232–236, vol. III/8, chapter 6, 184 and vol. III/8, chapter 8, 190.

39 Unlike, for example, Churchland P., "Eliminative Materialism and the Propositional Attitudes", in Lycan W.G. (ed.), *Mind and Cognition. A Reader*, (Cambridge, MA – Oxford: 1990) 206–223.

40 In this sense, his position is similar to that of the ancient physicalists. To deny physicalism, for Epicurus and for the Stoics, was tantamount to denying that the soul can be studied scientifically. Ancient versions of physicalism are distinct from reductionism, however, since natural science is not assumed to lead us to deny or reinterpret familiar facts about ourselves, nor to try to reduce them to other kinds of facts.

41 Cf. Telesio, *De rerum natura* vol. II/5, chapter 14, 292–298.

causation worked.⁴² Finally, as we shall see below in more detail, Telesio did not couch the specific laws that govern complex mental acts, such as imagination, memory and intellection, in physiological terms.⁴³

Perception, Imagination, and Cognition as Enactment

We have now seen that for Telesio, all mental events are natural acts attributed to hot matter and grounded in the spirit's primitive capacity to react to external stimuli. All mental phenomena thus arise from the 'sensibility' of the spirit. This sensibility concerns all types of internal and external stimuli. In Telesio's psychology of perception, the distinction between central and peripheral spirit plays a crucial role. Furthermore, his explanation of how the spirit 'feels' hinges on two central claims: (1) The spirit feels because it is moved by the affections of the body.⁴⁴ (2) Nonetheless, in perception and other mental acts, the spirit is *active*.⁴⁵

Although present in the whole body, the spirit has its principal seat in the brain.⁴⁶ The 'central portion' of the spirit coordinates those parts of the spirit that find themselves in the peripheral areas of the body, which communicate directly with the surrounding world. The existence of a central portion of spirit allows for the perception of differences and for memory, imagination, and intellection.⁴⁷ Although Telesio held that there is one soul in each animal and in each man, which accounts for perception, motion, and thought, he

42 Telesio, *De rerum natura* vol. II/5, chapter 14, 298–300: 'At qui illud fiat, qui scilicet universitas, in cerebri ventriculis residens, portionibus, manibus laringique et reliquis inconsistentibus corporis partibus modum rationemque, qua motus immutandi assidue sunt, indat, longe obscurissimum est'.

43 Telesio, *De rerum natura* vol. II/5, chapter 14, 296–298: in all its activities the central part is prompted by the desire of self-preservation.

44 Telesio, *De rerum natura* vol. III/7, chapter 2, 4: 'Utique manifestum est propterea rerum vires actionesque et aëri impulsiones spiritum sentire, quod ipse ab iis patiat immuteturque et commoveatur spiritus'.

45 Telesio, *De rerum natura* vol. III/7, chapter 2, 4 and vol. III/7, chapter 6, 28. See Giglioni G., "The First of the Moderns or the Last of the Ancients? Bernardino Telesio on Nature and Sentience", *Bruniana & Campanelliana*, 16 (2010) 69–87, who extensively discusses the ability of the spirit to feel and react to all phenomena occurring in the universe.

46 See Telesio, *De rerum natura* vol. II/5, chapter 11, 270; cf. chapter 27, 364, I, 21–23.

47 Telesio, *De rerum natura* vol. II/5, chapter 12, 274–278. See also vol. II/5, chapter 27, 360–364: animals are governed like cities. Cf. vol. II/5, chapter 34, 406: animals are like ships, with different parts, a number of sailors, a captain, etc.

drew a physiologically grounded distinction between various psychological competences.⁴⁸ Notice, however, that Telesio did not introduce different kinds of psychological *mechanisms* for the operations of sense, imagination, and reason. To the contrary, as we shall see below, he rejected any principled distinction between perception, imagination, and cognition.⁴⁹

How does the cooperation between central and peripheral parts of the spirit work? The spirit present in the peripheral regions depends on the commands of the central part and participates in its capacities.⁵⁰ The peripheral spirit is responsible for capturing external stimuli. The central part, which remains well protected inside the brain, is not moved by external affections; unlike the peripheral spirit, it is not vexed by its own passions.⁵¹ It is therefore able to experience the operations and passions of the peripheral parts, which it elaborates, organises, and preserves. Put differently, the lower-level neuro-anatomy monitors the external stimuli that impinge on the sense organs. The 'central' spirit stores these affections, thus laying the basis for imagination, memory, and intellection.⁵² This view of the soul as a centralised system, which is causally responsible for how a human being acts and functions, is typically Stoic.⁵³

At first sight, Telesio's account of sensation may seem purely circular. His explanation of the relation between external stimuli and mental responses and subsequent states has a distinctly psychologistic flavour. Perception involves objects that move the spirit, yet the resulting movement of the spirit is not delineated as a *passio* caused by these objects. Rather, sense perception is described as 'the perception of the affection, changes and motions' ('perceptio passionum, immutationum, motionum').⁵⁴ In sum, then, it would seem that

48 Telesio, *De rerum natura* vol. 11/5, chapter 13, 286–290; see also *Quod animal universum ab unica animae substantia gubernatur. Contra Galenum*, in Telesio Bernardino, *Varii de naturalibus rebus libelli*.

49 Translating his position in modern terms, Telesio did not subscribe to the modularity of mind, in the sense now argued for by Fodor J.A., *A Theory of Content and Other Essays* (Cambridge – Massachusetts: 1990) ch. 9.

50 Telesio, *De rerum natura* vol. 11/5, chapter 14, 292–302; cf. vol. 11/5, chapter 12, 274.

51 Cf. also Telesio, *De rerum natura* vol. 11/5, chapter 12, 278–280.

52 Cf. Telesio, *De rerum natura* vol. 111/8, chapter 28, 294–296; see also below.

53 The Stoics claimed that bodily affections occur in the affected regions, but sensations in the commanding faculty. This is the soul's highest part, which produces impressions, assents, perceptions and impulses. See Aetius, *De placitis philosophorum* 4.21.1–4, and 4.23.1; Calcidius, *Commentarius* cap. 220; Plotinus, *Enneads* IV.7.7. However, the Stoics located this commanding-faculty in the region of the heart.

54 Telesio, *De rerum natura* vol. 111/7, chapter 2, 6.

perception consists in the perception of perceptions: ‘ubi spiritus patitur, pati se sentit’ (‘Where the spirit is affected, there it senses that it is affected’).⁵⁵

Two caveats are in order here. In the first place, according to Telesio, the exact way in which sensation works is experientially inaccessible to us. Brain and nervous system are both defined as the ‘medium in which feeling takes place’ (‘medium in quo sentitur’). We know that the soul feels in the brain, but the brain does not give to the soul a direct sensation of its own passions, which means that the processes that determine thought and perception are not accessible to introspection.⁵⁶ In the second place, in his account of sensation, Telesio draws a crucial distinction between an alteration of the spirit, which is an affection caused by an external cause, and the spirit’s motion, which depends on the spirit’s own substance and which is functional in preserving the spirit’s own nature.⁵⁷

Perception consists in the interplay between spirit and external stimuli: it is the result of the impact of external objects touching the spirit in those extreme parts of the body that have traditionally been identified with the sense organs. Given that they are based on a real tactile *passio*, all senses (with the exception of hearing) can be reduced to touch, which therefore has primacy over the other senses.⁵⁸ This view excludes the Aristotelian notion that the soul is actualised by external forms.⁵⁹ It also means that sensation is essentially an operation of the spirit.⁶⁰

At this point in Telesio’s explanation, however, it is impossible to distinguish the process from the product. Perception is neither a direct acquisition nor a gradual assumption of forms, but rather a sensory-motor enactment. In other words, in perception the spirit is primarily and essentially open to its environment, and its integration and involvement in its environment is meaningful,

55 Telesio, *De rerum natura* vol. 111/7, chapter 20, 34.

56 See *De rerum natura*, vol. 11/5, chapter 10, 266: ‘[...] sed cerebrum ipsum [...] nullum propriae passionis sentienti animae sensum praebet’. John Locke was later to endorse a similar position. According to Locke, we are not aware of the sensory impulses that hit us, but only of what is generated within our minds. There is certainly a transition from nerve impulse to mental content, but Locke had very little to say about the mechanism that accomplishes this, since that mechanism as such is experientially inaccessible to us. See Locke John, *An Essay Concerning Human Understanding*, ed. Nidditch P.H. (Oxford: 1975) 11.xxiii.28; 1v.iii.12–14 and 28.

57 Telesio, *De rerum natura* vol. 11/5, chapter 17, 310–312.

58 Telesio, *De rerum natura* vol. 111/7, chapter 8, 30. See, in general, vol. 111/7, chapter 8–33. For discussion, see Fiorentino, *Bernardino Telesio*, 1, 290–291.

59 Telesio, *De rerum natura* vol. 111/8, chapter 15, 268–270; cf. vol. 111/7, chapter 6–7, 22–26.

60 Telesio, *De rerum natura* vol. 111/7, chapter 7, 28.

and sense-creating, as well as regulated to its inner needs. Sensation, then, consists in the reaction of the spirit to its own alterations. Since the spirit is made of hot and mobile matter, this reaction itself is a motion.⁶¹ In its central seat, the spirit stores the motions that have caused its alterations. For Telesio, it is the various types of physiological traces (including warmth and cold) that are stored in memory, rather than the perceptions themselves or their images, as Aristotle had erroneously held.⁶² This coded information, incorporated in the physiological structure of the spirit, forms the basis for all other types of cognition. All other cognitive functions, including imagination, memory, and discursive reasoning or intellectual thought, are derivative and spring from a 'recalling motion' ('motus recolens').⁶³ They all depend on sensation, to which they are essentially subordinated.⁶⁴ Repeated perception brings about a certain habit in addition to cognition of the motion with which the spirit has been moved and of the passions that it undergoes. As a consequence, we are able to imagine what we have perceived. This habit is most similar to capacities such as singing, dancing, and playing the lute.⁶⁵ Intellection thus consists in the recollection of past motions or passions in and by the spirit ('recolitio passionum motuumque').⁶⁶ Thus, Telesio assimilated intellection to imagination and described it as 'commemoratio' or 'existimatio'.⁶⁷

Whether the sensitive and the rational souls are really distinct from one another had already been a subject of vigorous discussion in the Middle Ages. In Telesio, this question assumes a physiological dimension, as it is always the

61 Telesio, *De rerum natura* vol. III/7, chapter 4, 14–16.

62 Telesio, *De rerum natura* vol. III/8, chapter 29, 298. As a matter of fact, Aristotle's position was slightly different. According to Aristotle, sense perception occurs when sense organs are affected by external stimuli; it consists in the production of sensory representations called *phantasmata*. The latter are not identifiable with iconic (or pictorial) images, however, because they comprise elements of all five senses. For a critique of Aristotle's conception of phantasy; cf. Telesio, *De rerum natura* vol. II/5, chapter 39, 444.

63 Telesio, *De rerum natura* vol. II/5, chapter 31, 386–388.

64 Telesio, *De rerum natura* vol. III/8, chapter 2–3, 164–172; vol. III/8, chapter 9, 200f. The context of this valuation is the refutation of the Peripatetic doctrine of the hierarchy of cognitive faculties, from 190ff. This refutation is built on the methodological rule, expressed in vol. I/3, 240: 'Non modus, sed res'. For discussion, see my "Elementi aristotelici e polemica anti-peripatetica nella dottrina dell'anima divina di Telesio".

65 Telesio, *De rerum natura* vol. III/8, chapter 2, 162–164.

66 Telesio, *De rerum natura* vol. III/8, chapter 28, 294 and chapter 29, 298. Memory requires the continuous attention of the spirit (vol. III/8, chapter 10, 204).

67 Telesio, *De rerum natura* vol. III/8, chapter 3, 170.

same substance that perceives, imagines, remembers, and thinks.⁶⁸ As for the role of imagination and intellectual thought, he points to their ability to inform the spirit of things that are distant, absent, or partly unknown. When something is perceived incompletely, this incomplete cognition will be completed through a comparison with previous perceptions.⁶⁹ At the same time, imagination and intellection may lead us astray, because the spirit easily confounds notions linked to distinct perceptions.⁷⁰

Telesio regarded cognition as a ‘work of nature’ (*opus naturae*) which depends either on actual sensation or on similitude.⁷¹ Insofar as it is a reconstruction of those parts of the cognitive objects that are unknown or obscurely perceived, intellective cognition is based on a ‘similitude perceived by the sense’ (*similitudo sensu percepta*).⁷² In the case of man, it is the divine soul that is called upon to perform these operations, but the divine soul itself must rely on the spirit’s capacity to recall past motions.⁷³ In primary perception, the spirit is able to detect similarities as well as diversity in the affections it undergoes.⁷⁴ These very similarities, once detected by the spirit, provide the basis for imagination and all rational thought.⁷⁵ According to Telesio, the spirit somehow conceptualises and articulates the informational content of perception: repeated experiences affect the physiological structure by weaving patterns into it, which amount to habits, images and concepts. Thus, a cognitive

68 See, for example, Telesio, *De rerum natura* vol. 111/8, chapter 10 and chapter 17, 200–208, 244–250.

69 Telesio, *De rerum natura* vol. 111/8, chapter 3, 164–172.

70 Telesio, *De rerum natura* vol. 111/8, chapter 17, 246: ‘Et imaginans seorsum, quod praeteritos motus recolenti juncti ii interdum obvii fiunt, quibus seorsum mota est; intelligens vero, quod bene diversis et contrariis interdum entibus, si non vere eadem, at persimiles et quae e longinquo praesertim perceptae eadem videri possunt, insunt conditiones; itaque enti indi possunt, cujus non sunt’.

71 Telesio, *De rerum natura* vol. 111/9, chapter 30, 446: ‘Praeterea ut experientiae etiam sit opus rerum cognitio, at quin magis naturae sit, ambigi ceret non potest’. Characterizing cognition as the work of nature, Telesio reverses the medieval and Renaissance dictum ‘opus naturae est opus intelligentiae’.

72 Telesio, *De rerum natura* vol. 111/8, chapter 3, 170: ‘Itaque intellectionis cujusvis principium similitudo est sensu percepta’; see also chapter 7, 186–188; chapter 8, 192; chapter 17, 246.

73 Recall that all mental states, also those of the divine soul, are strictly sense-dependent; cf. Telesio, *De rerum natura* vol. 111/8, chapter 6 and 15.

74 Telesio, *De rerum natura* vol. 111/8, chapter 7, 186.

75 See Telesio, *De rerum natura* vol. 111/8, chapter 4 and vol. 111/8, chapter 28, 174 and 294–296.

structure emerges from patterns of recurrent sensorimotor activity, duly recognised by the spirit.

Mental Acts and Representations

Telesio's perceptual and cognitive theory goes beyond a mere stimulus-response correlation. The spirit interacts with the world, but also with its own internal states: it imagines, stores, and remembers the things perceived.⁷⁶ Those operations, in which the spirit functionally reflects its internal projection onto itself, are traditionally called 'imagination' and 'thought'. Telesio however preferred the term 'memory' ('commemoratio'), because of the fact that all mental operations following upon direct sensation depend, as we have heard, on a 'motus recolens'.

Imagination and cognition derive from experience, but not exclusively so. The incoming stimuli are elaborated according to the pre-existing structure and architecture of the 'spiritual system'. Symbolic and conceptual structures arise from two sources: the structured nature of bodily experience (the perceived 'similitudines'), and a hard-wired capacity to convert certain well-structured aspects of bodily and interactional experiences into abstract concepts. Evidently, no stimuli are independent of the perceptual apparatus that receives them and elaborates upon them.

Conversely, the responses of living organisms are not well-defined physical events. In this respect, Telesio did not abandon traditional psychological terminology altogether. Indeed, it is remarkable, from a historical point of view, that Telesio implicitly abandoned the formal identity between physical stimuli and sensory response, and yet believed that the soul is able to perceive the nature of present and absent things, and to infer essential features of its own nature.⁷⁷

Telesio devised a psychology of cognition which dispensed with representations as bearers of content. Indeed, an analogue of such traditional notions indicating perceptual or mental representations as the Aristotelian *phantasma*, the Epicurean *prolepsis*, the Stoic *phantasia*, or the Scholastic *species* are

76 Telesio, *De rerum natura* vol. III/8, chapter 2, 162–164.

77 Telesio, *De rerum natura* vol. III/8, chapter 15, 248–250. His is in contrast, for example, with the position of the ancient Cyrenaics, and later materialists, such as Hobbes and Gassendi. In this sense, we cannot say that Telesio eliminated Aristotle's ontology of forms and essences. In this context, see also the thesis that the immortal soul is the *form* of the body.

altogether absent from his system. To be sure, the spirit does produce actual internal representations in response to external stimuli (which are received as passions) and to internal stimuli (which are the preserved affections and motions of the spirit). However, it nowhere manipulates images or traffics with pictures.⁷⁸ Mental representations exist as actual construals, or more precisely as reconstructions of the world.

Telesio believed that the soul grasps natural reality by means of physical interaction; even the divine, immaterial soul cannot access natural reality without the aid of the spirit.⁷⁹ Accordingly, universal knowledge is not the result or final act of a structurally hierarchical process. That is to say, it does not consist in the gradual abstraction of similitudes or species. Indeed, an important part of Book VIII of *De rerum natura* is devoted to a detailed refutation of the Peripatetic doctrine of hierarchically conceived cognitive faculties.⁸⁰ This means that no ambivalent 'dissimilar similitude' ('similitudo dissimilis') is required between sensible reality, senses, and intellect.⁸¹ Nor does the

78 Cf. the polemics with Aristotle's overly narrow conception of fantasy. Telesio argued that Aristotelian fantasy depends on stored images. For a similar position in modern psychological research, see Gregory R., *Concepts and Mechanisms of Perception* (London: 1975) 628. There is an extensive contemporary discussion as to whether mental images are pictorial, descriptive, or iconic. Cf., inter alia, Pylyshyn Z.W., "Imagery and Artificial Intelligence", in J.M. Nicholas (ed.), *Images, Perception and Knowledge* (Dordrecht: 1977) 170–194; Kosslyn S., *Image and Brain. The Revolution of the Imagery Debate* (Cambridge – Massachusetts: 1994).

79 Telesio, *De rerum natura* vol. II/5, chapter 6, 184; vol. III/8, chapter 15, 232–234, 236; chapter 28, 294–296: 'Nam etsi, ut dictum est, non spiritus ipse in hominibus, sed substantia a Deo immissa intelligit, quoniam, dum in corpore ea inhabitat, agentibus naturis et corruptioni omnino obnoxio, spiritus ministerio atque opera intelligit; itaque ea modo intelligit, quae e rerum sensu perceptarum similitudine intelligi possunt, et quae spiritus ei intelligenda veluti offert aut ministrat'. Cf. also vol. II/5, chapter 2–3.

80 Telesio, *De rerum natura* vol. III/8, chapter 16–20. According to Telesio, a possible distinction between the cognitive faculties should be grounded in an essential distinction between their objects, not in different ways of perceiving them; cf. vol. III/8, chapter 16, 240: 'Non modus scilicet, quo res cognoscuntur, sed ipsae intuendae sunt res'; chapter 20, 262: 'Non scilicet a passionis perceptionisve diversitate [...], sed a rerum, quae percipiuntur, diversitate animae dissimilitudo declaranda Aristoteli erat'. Thus, as regards the knowledge of natural reality, there can be no essential difference between sense and intellect. See also Telesio, *De rerum natura* vol. III/9, chapter 34, 470.

81 Only as 'similitudo dissimilis' are the sensible and intelligible species of scholastic psychology capable of connecting the ontologically different levels of material reality, the senses, and the immaterial intellect.

notion of 'similitude' any longer need to connect hierarchically distinct levels. In Telesio's cognitive psychology, 'similitudo' is not the mental representation of an individual essence, but rather a common feature of a plurality of perceived sensible objects.

Concluding Remarks

Telesio effectively dispensed with the view of the imagination as the faculty that mediates between the senses and the intellect, instead defining it as a capability of the spirit that makes up the human soul. Telesio suggested a physiological model of the mind that dispenses with an 'intelligent being' as bearer of psychological functions. His psychology was thus, we may conclude, a first step towards a non-circular explanation of intelligent behaviour. Mental events supervene upon activities of the spirit and upon the spirit's transactions with the environment. Telesio envisaged no simple reduction of psychology to physics, but firmly grounded the realm of the mental in that of physiology.

In Telesio's view, the spirit's operations do not rely on internal representations, nor are sensory and intellectual experiences stored as images or concepts. Perception, imagination, and cognition do not consist of the detection or assimilation of formal features of the environment. Rather, they are the result of the spirit's active response to alterations caused in its physiological structure by external stimuli. Perception involves the gathering of information about the environment on the basis of physical stimuli impinging on the sensory structure. The stimuli impinging on the sense organs push the soul to a reaction, namely sensation.⁸² Relatively primitive stimuli cause remarkably rich, fine-grained, and complex responses. This result must be ascribed to the capacities of the spirit, a powerful and extremely mobile mix of heat and matter. The peripheral spirit transforms the physical energy of the affections into a coded, information-bearing structure, which provides data for the (mental) processes of the central portion of the spirit in the brain. The subsequent higher-level elaboration is progressively selective in its response to features of the sensory stimuli. Notice, however, that the familiar input-output scheme of modern psychology only partially applies to Telesio's psychology. Telesio did

82 The significance of the information provided in the patterns of excitation on the sense organs is not merely a matter of how it relates to the nature and programming of the nervous system, but of how it relates to what the organism as a whole has to do to deal with the environment.

not think of the spirit as receiving or extracting information from the environment. It is impossible to ignore the part played by the spirit in perception. Sensory experiences are not passive affections, but acts of a living being, which operates according to sensations of pleasure and pain. The spirit's principal activity is that of making changes in itself.

Telesio agrees with Aristotelian tradition in recognizing that a direct form of realism, according to which the world affords a direct transfer of information that would suffice for perception and action, is untenable. How, then, does he explain the ability to categorise objects and events on the basis of sensory signals received from the environment? Like some medieval and Renaissance Aristotelians, Telesio rejected the distinction between mental act and representation, and held that conceptualisation depends on precedent, primary mental acts. And yet, his precise view of the matter cannot be rephrased in the Aristotelian framework. For him, cognition and conceptualisation consist of a process of self-modification by the spirit. The spirit neither receives nor abstracts forms, but reconstructs past experiences or integrates them on the basis of past motions or traces stored in its own structure. The latter are not some sort of interface between the spirit's conceptual powers and the external world. Rather, Telesio tried to show that the facts of human knowledge, memory, and recall argue against the view that such cognitive activities involve an iconic and sensory pattern, as is implied when we speak of forms or images. Mental content is not located in particular symbols or representations, but is a sort of function of a state of the spirit. Conceptions are acts, not referents of thought. Thus, representing is based on an ability to organize perceptual data, not on (iconic) representations. Cognition and memory depend on the capacity to arrive at states similar to some previous states, rather than on calling on what has been stored there.

The Aftermath: Tommaso Campanella, Descartes, and the Northumberland Circle

As is well known, Telesio inspired several early modern philosophers. He was without doubt the primary philosophical source of inspiration for Tommaso Campanella, whose views with regard to human cognition were essentially a faithful rendering of Telesio's thought. Campanella duly emphasised the material nature of the human soul insofar as it could be identified with the spirit, arguing that an incorporeal sensitive soul could not be the subject of bodily sensations. The spirit, a subtle, ethereal, bright, and warm substance, dwells in the head as in a fortress, and roams about the nervous system like a pilot

on a ship.⁸³ Campanella also shared his master's polemical attitude toward the noetics, cognitive psychology, and doctrine of distinct cognitive faculties of the Peripatetics.⁸⁴ According to Campanella, the fact that sense perception involves a real engagement with external stimuli does not mean that external simulacra enter into the spirit.⁸⁵ A 'res sentiens' can only receive another form when it simultaneously loses its own form, as in wood being burned. In fact, Campanella regarded a 'modica immutatio' as a sufficient basis for sensation.⁸⁶ In sensation there is always a partial alteration of the spirit through assimilation. According to Campanella, the sensible object exerts a real action, not an intentional one, upon the soul: the spirit receives motions, not images or species.⁸⁷ Perception is concerned with the alterations these motions cause in the spirit, which is why sense cannot be an immaterial power.⁸⁸ Like Telesio, Campanella assigned memory, imagination, and intellection to the bodily spirit.⁸⁹ Actual perception is 'passio presentis' while intellection is 'passio absentis'.⁹⁰

However, just as in Telesio, some problems afflict Campanella's account of perception and knowledge. Sense perception is seen as perception of a 'passio', brought about by external motions in the spirit. Campanella's account fails to explain, however, how perception *in se* comes about, and thereby commits the fallacy of circular reasoning. Again, his view entails a representational theory of sense perception: it is not the objects themselves that are perceived, but only their effects on the spirit.

The view that motion triggers sense perception was later endorsed by English philosophers and by René Descartes. Like Telesio and Campanella, Descartes denied the need for mediating formal principles in sense perception and intellectual cognition. However, he did not accept Telesio's views regarding the materiality of the soul. In some texts, he seems to endorse a position according to which the mind, quite problematically, perceives the motions in the brain. Elsewhere, however, he emphasised the mind's natural capacity to

83 Campanella Tommaso, *Philosophia sensibus demonstrata* (Naples, Horatius Saluianus: 1591) 85; Campanella Tommaso, *De sensu rerum et magia* (Frankfurt, Ludovicus Boullenger: 1620; reprint, Turin: 1975) 54.

84 Campanella, *De sensu rerum et magia* 121–123.

85 Campanella, *De sensu rerum et magia* 106.

86 Campanella, *De sensu rerum et magia* 108. On the basis of a partial assimilation, the mind can obtain knowledge of the object through a process of reasoning.

87 Campanella, *De sensu rerum et magia* 113; see also 123.

88 Campanella, *De sensu rerum et magia* 113–115.

89 Campanella, *De sensu rerum et magia* 131.

90 Campanella, *De sensu rerum et magia* 133.

respond to motions and patterns in the brain. According to Descartes, this response is what primarily constitutes perception. Endorsing a Cartesian-style dualism of mind and body, many other seventeenth-century philosophers argued for a view of knowledge acquisition as only occasionally dependent on sensory representation or brain traces.

Starting in the 1960s, studies on early-modern natural philosophy in England have emphasised the role of the Northumberland circle in transmitting and elaborating ideas resumed from the naturalist strand of Italian Renaissance philosophy. Moreover, they suggested that through the Northumberland circle, Italian Renaissance philosophy also influenced the Cavendish circle, eventually inspiring even Thomas Hobbes's natural philosophy and psychology.⁹¹ In the 1980s, Karl Schuhmann and Jan Prins have called attention to the influence of Telesio's work in England.⁹² Schuhmann has argued that Telesio and Hobbes approached philosophy in a comparable way. Likewise, Prins's investigation of Walter Warner's notes on animal organisms have suggested that Telesio's psychological theories probably exerted a stronger influence in early seventeenth-century England than has been assumed, on account of the authority of Francis Bacon.⁹³

The apparent affinity between Telesio's naturalistic philosophy of mind and the psychological research by early modern English scientists and philosophers does not automatically entail that the latter depended upon the Cosentine philosopher. Rather, they shared with Telesio a common philosophical and scientific orientation, which was characterised by anti-scholasticism and materialism. The psychological theories of Telesio, Warner, and Hobbes are grounded in a central conviction: mental phenomena supervene upon physiological processes, which can essentially be analysed in terms of motion.

Telesio broke away from a merely metaphorical use of motion, favoured in medieval and Renaissance psychological works, and resumed the kinetic aspects of Hellenistic psychology. He regarded motion as the spirit's proper activity and grounded both perception and cognition in specific types of motion. Also, Warner described the activities of the spirits as motions. Hobbes reduced

91 Kargon R.H., *Atomism in England from Harriot to Newton* (Oxford: 1966) 5–42; Jacquot J., “Harriot, Hill, Warner and the New Philosophy”, in Shirley J.W. (ed.), *Thomas Harriot: Renaissance Scientist* (Oxford: 1974) 107–127.

92 See Schuhmann K., “Hobbes and Telesio”, *Hobbes Studies*, 1 (1988) 109–133; Prins J., “De invloed van Telesio in Engeland”, in Vandenakker G. (ed.), *Filosofiedag Utrecht 1989* (Delft: 1989) 154–160.

93 Prins J., *Walter Warner (ca. 1557–1643) and His Notes on Animal Organisms*, PhD dissertation (Utrecht University: 1992).

perception to a complex ensemble of causal relations in a mechanical, physical system. According to him, perceptions are motions and ideas and concepts are elaborations of the motions occurring in the perceptual apparatus. Thus, perception itself became a kind of movement or, more precisely, a causal reaction to external motion. With this theory, Hobbes averted Campanella's problematic view of perception as consisting in a perception of 'passiones'. This points to a remarkable development in psychological theorizing. While Telesio and Warner, more or less explicitly, linked motion to the nature of the spirit(s), Hobbes adopted a relational concept of motion. For him, the human soul does not move in virtue of its nature; rather, as a natural entity, it may itself be analysed in terms of matter in motion.⁹⁴

Selective Bibliography

- Campanella Tommaso, *Philosophia sensibus demonstrata* (Naples, Horatius Saluianus: 1591).
- Campanella Tommaso, *De sensu rerum et magia* (Frankfurt, Ludovicus Boulenger: 1620; reprint in *Opera Latina Francofurti impressa annis 1617–1630*, ed. Firpo L., 2 vols., Turin: 1975).
- Campanella Tommaso, *Philosophia realis*, pars I: *Physiologia*, in *Opera latina*, vol. I.
- Campanella Tommaso, *Metaphysica*, (Paris, D. Langlois: 1638; reprint, Turin: 1961).
- Churchland P., "Eliminative Materialism and the Propositional Attitudes", in Lycan W.G. (ed.), *Mind and Cognition. A Reader* (Cambridge, MA – Oxford: 1990) 206–223.
- Descartes René, *Oeuvres*, eds. Adam Ch. – Tannery P., 12 vols. (Paris: 1982–1987); first edition (Paris: 1897–1910).
- Ficino Marsilio, *Opera omnia*, 2 vols. (Basel, Henricpetri: 1576; reprint, Turin: 1983).
- Fiorentino F., *Bernardino Telesio, ossia Studi storici su l'idea della natura nel Risorgimento Italiano*, vol. I (Florence: 1872).
- Fodor J.A., *A Theory of Content and Other Essays* (Cambridge – Massachusetts: 1990).
- Gassendi Petrus, *Opera*, 6 vols. (Lyon, sumptibus Laurentij Anisson, et Ioannis Baptistae Devenet: 1658).
- Gigliani G., "The First of the Moderns or the Last of the Ancients? Bernardino Telesio on Nature and Sentience", *Bruniana & Campanelliana*, 16 (2010) 69–87.
- Gregory R., *Concepts and Mechanisms of Perception* (London: 1975).
- Hamlyn D.W., *In and Out of the Black Box. On the Philosophy of Cognition* (Oxford: 1990).

94 See my *Telesio's Psychology and the Northumberland Circle*, Durham Thomas Harriot Seminar Occasional Paper Series 25 (Durham: 1998).

- Hobbes Thomas, *The English Works*, 11 vols., and *Opera philosophica quae latine scripsit omnia*, 5 vols., ed. Molesworth W. (London: 1839–1845).
- Ingegno A., “The New Philosophy of Nature”, in Schmitt Ch. B. et al. (eds.), *The Cambridge History of Renaissance Philosophy* (Cambridge: 1988) 236–263.
- Jacquot J., “Harriot, Hill, Warner and the New Philosophy”, in Shirley J.W. (ed.), *Thomas Harriot: Renaissance Scientist* (Oxford: 1974) 107–127.
- Kargon R.H., *Atomism in England from Harriot to Newton* (Oxford: 1966) 5–42.
- Klein R., “L’imagination come vêtement de l’âme chez Marsile Ficin et Giordano Bruno”, *Revue de métaphysique et de morale*, 51 (1956) 18–38.
- Kosslyn S., *Image and Brain. The Revolution of the Imagery Debate* (Cambridge – Massachusetts: 1994).
- Locke John, *An Essay Concerning Human Understanding*, ed. Nidditch P.H. (Oxford: 1975).
- Prins J., “De invloed van Telesio in Engeland”, in Vandenakker G. (ed.), *Filosofiedag Utrecht 1989*, (Delft: 1989) 154–160.
- Prins J., *Walter Warner (ca. 1557–1643) and His Notes on Animal Organisms*, PhD dissertation (Utrecht: 1992).
- Pylyshyn Z.W., “Imagery and Artificial Intelligence”, in J.M. Nicholas (ed.), *Images, Perception and Knowledge* (Dordrecht: 1977) 170–194.
- Schuhmann K., “Telesio’s Concept of Matter”, in *Atti del Convegno Internazionale di Studi su Bernardino Telesio, Cosenza 12–13 maggio 1989* (Cosenza: 1990) 115–134.
- Schuhmann K., “Hobbes and Telesio”, *Hobbes Studies*, 1 (1988) 109–133.
- Sorabji R., “Perceptual Content in the Stoics”, *Phronesis*, 35 (1990) 307–314.
- Spruit L., “Elementi aristotelici e polemica anti-peripatetica nella dottrina dell’anima divina di Telesio”, *Verifiche*, 21 (1992) 351–370.
- Spruit L., *Telesio’s Psychology and the Northumberland Circle*, Durham Thomas Harriot Seminar Occasional Paper Series 25 (Durham: 1998).
- Telesio Bernardino, *De rerum natura iuxta propria principia*, ed. De Franco L., 3 vols. (Cosenza – Florence: 1965–1976).
- Telesio Bernardino, *Varii de naturalibus rebus libelli*, ed. De Franco L. (Florence: 1980).
- Vasoli C., “Riflessioni su Bernardino Telesio”, in *Atti del Convegno Internazionale di Studi su Bernardino Telesio, Cosenza 12–13 maggio 1989* (Cosenza: 1990) 15–30.