TELESIO'S PSYCHOLOGY AND
THE NORTHUMBERLAND
CIRCLE

BY

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Starting from the 1960s studies on early modern natural philosophy in England have emphasized the role of the Northumberland circle in transmitting and elaborating ideas resumed from the naturalist strand of Italian Renaissance philosophy. It is indeed well-known that Henry Percy surrounded himself with mathematicians, astronomers, natural philosophers, and physicians, who shared anti-Aristotelianism as well as a materialistic view of the world, inspired at least partially by 16th-century Italian philosophy. Kargon and Jaquot argued that the cosmology and the natural philosophy of Renaissance authors, such as Giordano Bruno, surely found supporters at an early date in Elizabethan England. Moreover, they hypothesized that through the Northumberland circle Italian Renaissance philosophy also influenced the Cavendish circle, eventually inspiring even Thomas Hobbes's natural philosophy and psychology. Crucial stages in this development are considered Nicholas Hill’s *Philosophia Epicurea*, Thomas Harriot’s speculations on the structure of matter, and Walter Warner’s formulation of the first principles of natural philosophy and his inquiry into the workings of living organisms. Recently, Karl Schuhmann and Jan Prins have paid attention to the influence of Bernardino Telesio (1509–1588) in England. Schuhmann argued that Telesio and Hobbes shared a common philosophical milieu, and approached philosophy in a comparable way. Prins’ investigation of Walter Warner’s notes on animal organisms suggested that Telesio’s psychological theories probably exerted a stronger influence in early 17th-century England, than until now, on the authority of Francis Bacon, has been assumed. At the turn of the 16th and 17th centuries there was a remarkable interest in psychological issues. From a recent paper by Gordon Batho, we can make out that the ninth Earl of Northumberland urged above all the study of the doctrine "de
Anima". A Treatise of the Soule is attributed to Sir Walter Ralegh. Finally, as has been shown by Prins, Walter Warner was involved for many years in psychological research.

This paper discusses the possible relation between Telesio and early modern psychology in England, focussing on Telesio's use of the concept of motion in the explanation of cognition and in his view of conceptualization. The first section briefly sketches the presence of Telesio in 16th- and 17th-century England. Section 2 describes his theories of perception and intellectual knowledge. Section 3 is devoted to his analysis of cognition in terms of motion, while in section 4 his view of conceptualization is analyzed. In section 5 Telesio's ideas are summarised on these issues and compared with views developed by Walter Warner and Thomas Hobbes. A short conclusion follows.

1. TELESIO IN ENGLAND

Early modern English naturalist philosophers were undoubtedly influenced by the anti-Aristotelian philosophies of Bruno, Patrizi, and Telesio. By the end of the 16th century, these authors became gradually known in England. From 1583 to 1585 Giordano Bruno stayed in London and published his Italian dialogues there. His writings were present in the libraries of various representatives of the gentry. Also Francesco Patrizi's works were not unknown. Telesio's presence in England is more difficult to trace. To be sure, he was well known on the continent. Descartes and Gassendi mentioned him and regarded his work as innovative. Subsequently, Mersenne and Naudé sharply criticized his views. His name is mentioned also by other French authors. And in Germany, the eclectic Aristotelian Otto Casmann.
presented large quotes from his works\textsuperscript{12}. Also in England, Telesio’s works must have been more widely known than had been assumed till recently\textsuperscript{13}. His writings do not appear in the library of Henry Percy\textsuperscript{14}. However, the libraries of John Rainolds, president of Corpus Christi College from 1598 till 1607, and of Walter Ralegh contained work by Telesio\textsuperscript{15}. Also Harriot’s legacy contains a note on Telesio\textsuperscript{16}. Apparently, Walter Warner’s theory of spirit was influenced by Telesio, and he mentioned him at least once, in a context which for present purposes is crucial\textsuperscript{17}. Also Nicholas Hill’s psychology was possibly influenced by Telesio\textsuperscript{18}. Francis Bacon praised Telesio as the first of the moderns\textsuperscript{19} and appreciated his theory of spirits\textsuperscript{20}. Yet Bacon held that in the early 1620s Telesio’s philosophy was already forgotten in England\textsuperscript{21}, and in his philosophical analyses of the myths of Cupido and Uranos (ca. 1623-24), he attacked Telesio’s doctrine of natural principles\textsuperscript{22}. John Webster repeated Bacon’s praise of Telesio\textsuperscript{23}. Hobbes mentioned Telesio in a long list of works\textsuperscript{24}, and he probably was acquainted with his work\textsuperscript{25}. Finally, through the intermediation of Gassendi, Telesio’s concept of time might have influenced Newton\textsuperscript{26}.

2. PERCEPTION AND INTELLECTION

Telesio attributed traditional psychological functions to a material spirit embodied in the nervous system\textsuperscript{27}. All mental activity ultimately depends on external stimuli, which affect the spirit and bring about sensation. Once modified, the spirit stores the affections that caused sensation in the form of physiological traces, which are the basis for memory and thought. The spirit is a relatively closed system which on the impinging of ‘rough’ stimuli develops emotion, perception and thought. The spirit is distinguished from the immaterial.
rational soul, which is a divine creature added to the spirit as its form\textsuperscript{28}. This divine soul is unable to operate without the sensible soul, however, and its contribution to knowledge of natural reality, though valuable, is essentially inferior to that of sense perception\textsuperscript{29}. All activities of the spirit are governed by self-preservation: the spirit must for its own benefit be aware of pleasing or displeasing things in its environment\textsuperscript{30}. Sensation occurs when the spirit is affected (in alternate dilation and contraction) by external things. Pushed to its own operation (motion) in the sensation of things affined, the spirit enjoys well-being\textsuperscript{31}.

The spirit, although present in the whole body, has its principal seat in the brain\textsuperscript{32}. The 'central portion' of the spirit coordinates those parts of the spirit located in the peripheral areas of the body, which communicate directly with the surrounding world. The existence of a central portion of spirit forms the basis for the perception of differences and for the existence of memory and intellection\textsuperscript{33}. Telesio's arguments for the existence of coordinating capacities of the spirit's central part have a strictly empirical character. Animal organisms are moved by a desire of self-preservation. And from this central notion all cognitive capacities are inferred\textsuperscript{34}. Also the fact that the spirit feels differences and similitudes is argued for only on empirical bases.

Although he held that there is one soul in each animal and human being that accounts for perception, motion and thought\textsuperscript{35}, Telesio drew a physiologically grounded distinction between various psychological competences. Notice, however, that Telesio did not introduce different kinds of psychological mechanisms. He rejected any principled distinction between perception and cognition. The spirit present in the peripheral
regions depends on the commands of the central part and participates in its capacities. The peripheral spirit captures the external stimuli. The central part, reposing well protected inside the brain, is not moved by external affections; unlike the peripheral spirit, it is neither vexed by its own passions nor occupied by its own operations. It is therefore able to grasp the operations and passions of the peripheral parts, elaborating, organizing and preserving the information received from the peripheral regions.

Sensation consists in the reaction of the spirit to its alterations. Since the spirit is hot and mobile matter, this reaction is a motion. The spirit’s reaction to external stimuli is like a primitive awareness of its affections. The central part of the spirit stores the motions that caused its alterations. Rather than proper perceptions or images—as Aristotle erroneously held—various types of physiological traces (including warmth and coldness) are stored. This coded information, incorporated in the physiological structure of the spirit, forms the basis for all other types of cognition. All the other, derivative cognitive functions, including imagination, memory and discursive reasoning or intellectual thought, derive from a “motus recolens”. They depend on sensation, to which they are essentially inferior. Intellection, for example, consists of the recollection of past motions or passions in and by the spirit (“recolitio passionum motuumque”). Telesio therefore assimilated it to imagination and described it as “commemoratio” or “existimatio”.

Intellectual thought is needed to inform the spirit about things that are distant, absent or partly unknown. When something is perceived incompletely, cognition may be completed by comparison with previous perceptions. In man it is the divine
soul that is called upon to perform these operations, but the
divine soul itself depends on the spirit's capacity to recall past
motions. In primary perception the spirit is able to detect
similitudes and diversity in the affections it undergoes. The
similitudes, detected by the spirit, are the basis of all rational
thought. Thus, cognitive structure emerges from patterns of
recurrent sensorimotor activity, duly recognized by the spirit.

3. MOTION AND COGNITION

The spirit is a hot mobile substance: motion is its own
operation. The spirit is attributed the possibility of
communicating motions to itself. The central part furnishes
the "modus & ratio" of moving to its peripheral parts and,
thus, the latter move "iuxta universitatis decreta".
Intellec tion, which is essentially inference on the basis of
stored information ("recolitio"), is grounded in a specific
motion of the spirit, defined by Telesio as "motus recolens". In
virtue of, or through this motion, presupposing that in the
spirit remains a "cognitio motuum", the spirit is able to recall
past affections, to pay attention to them and to compare
them. An attempt is made in this section to elucidate from an
historical perspective the Telesian notion of "motus recolens",
a crucial concept in the explanation of more properly cognitive
activities.

Telesio's appeal to motion in explaining perception and
cognition chiefly recalls the kinetic aspects of Hellenistic
psychology. Epicurus characterized perception as a change in
the atomic motions of the soul. Also the mind itself acts as a
kind of sense organ responsive to flimsy atomic structures.
Thus, Epicurus assimilated thought to sense perception, at
least insofar as its objects and causes are concerned. Indeed,
 Sextus described Epicurus' view of (conceptual) motion as a "bare movement of the mind". According to the Stoics, perception arises from tensions of various sorts in the pneuma-continuum, with which the human soul—the most rarified of all bodies—interacts. In sensitive perception, a current of pneuma flows from the leading part of the soul (hegemonikon) to the sense organ, and then leaves the body; after undergoing a modification, it eventually returns to the body and deposits a sensory image, or phantasia, in the mind. Accordingly, the Stoics acknowledged two sources of movement in perception, namely, the percipient soul and the perceived object.

The role of motion in explaining psychological phenomena was controversial in the Peripatetic tradition. Aristotle regarded psychology as a chapter of natural philosophy, and applied the scheme of the active and passive dunamis also to psychic functions. Thus, as active dunamis, the soul is a source of motion. And the active mind is defined in terms (apathes and always active) which strongly remind the First Mover of the Metaphysics. However, Aristotle criticized the position of his predecessors who attributed motion to the soul itself in order to explain its causing motion. He denies that the soul can move in virtue of itself, because (1) it does not have a distinctive location of its own, (2) it does not have a natural motion, and (3) it cannot leave the body. For the issue under scrutiny, another point should be mentioned. Aristotle stated that the possible intellect undergoes (paschein) its objects. And in later Aristotelian psychology, this "passion" was generally interpreted in the sense that forms without matter or else intelligible species move the possible intellect. There is only one intellect whose operation can be described as motion: the first mover. Subsequently, the view that the status of the
The concept of motion recurred in various contexts in medieval psychological debates. Godfrey of Fontaines (ca. 1250—1306/1309), John Duns Scotus (ca. 1265—1308), and Herveyus Natalis (ca. 1250/60—1323) viewed intellection as a “motus rei ad animam”. Conversely, Peter Crockaert (ca. 1465/70—1514) considered intellectual abstraction as “realis motio qua movetur intellectus a fantasmate, vel ad speciem intelligibilis vel ad actum intelligendi”, in order to secure effective and distinct roles for phantasms and agent intellect in the production of mental acts. By contrast, other authors insisted on excluding any ‘real moving’ from the cognitive order. The fourteenth-century Matthew of Gubbio, for example, denied that the species or phantasms can determine our intellect “impressive”, or even “cognitive”, for they move our intellect “delative”, that is to say, the intelligible species reveals the associated thing “sicut effectus defert causam”. And his contemporary Thomas of Strasbourg argued that no “motus localis” is to be ascribed to the agent intellect.

During the Renaissance, Cusanus defined intellection as “motus mentis”. It is clear, however, that only metaphorical motion was meant. Also other Renaissance authors stressed the metaphorical value of motion applied to the intellect and its acts. Antonio Montecatini, for example, argued that intellection is like a “motus spiritualis”, and that the illumination of the phantasms is not to be compared with a “motus physicus”. Simone Porzio rejected the idea that the
agent intellect is a "real", that is, a physical motor. In his analysis of the relation between the agent intellect and the phantasm, Porzio emphatically stated that terms like "motor, motum, & materia" apply to the cognitive process only "metaphorice". Indeed, in contrast to what the Latins thought, the agent intellect is not an "agens reale" like heat, for example, but rather an "agens illuminans". The agent intellect moves the phantasm "per similitudinem".

Telesio's use of the concept of motion in explaining mental acts is not metaphorical. The spirit is a material substance and therefore its motions are to be regarded as physical events. However, the notion of "motus recolens" has an undoubtedly mentalistic flavour, suggesting more questions than it seems able to resolve. How does the spirit recall stored motions through motion? Surely, motion grounds the act of recalling. Sensation, cognition and memory are also seen as motion in se, however. In this sense, a problematic point remains. Telesio did not present a detailed analysis of the aforementioned motion in biological or physiological terms. It is true that Telesio developed a physiological account of the ways in which the spirit feels, imagines and understands, but this theory merely regards the physiological prerequisites of an optimal psychological functioning. Thus, a large gap remains in the understanding of the biological bases of psychological phenomena.

4. MENTAL ACTS AND REPRESENTATIONS

Telesio devised a psychology of cognition which dispenses with representations as bearers of content. Indeed, in his system the analogue of historical notions indicating perceptual or mental representations—such as the Aristotelian
phantasma, the Epicurean prolepsis, the Stoic phantasia, or the Scholastic species—is lacking. To be sure, the spirit does produce actual internal representations in response to external stimuli (received as passions) and to internal stimuli (preserved affections and motions of the spirit). However, it does not manipulate images or in any way traffic in pictures*. Mental representations, in sum, exist as actual construals, or more precisely as reconstructions of the world, but not as stored information-bearing structures. A short retrospective may underscore the exceptionality of Telesio's position.

Aristotle regarded the mind as capable of grasping forms detached from matter. Most of his medieval and Renaissance followers interpreted this conception along the lines of a theory of abstraction, grounded in the mediating role of representational forms called sensible and intelligible species. In Peripatetic psychology, sense perception occurs when sense organs are affected by external stimuli (sensible species); it consists essentially in the production of sensory representations called "phantasmata". The latter are the product of a dynamic complex of inner forces (the so-called inner senses: common sense, imagination or phantasy, "aestimativa" and/or "cogitativa"?), capable of organizing and transforming the information received from sense organs and external senses. On the basis of phantasms the agent intellect generates intelligible species, which establish the link between sensory operations and intellectual activity, thus ensuring the objective reference of cognitive contents.

The Scholastic doctrine of species is not a straightforward elaboration of doctrinal elements typical of a specific philosophical school. Its proximate source is the Arabic speculation on intention, in which two conceptions converge:
the Aristotelian matterless form and the Hellenistic cognitive impression. In Epicurus, the prolepsis, characterized as the effect of an involuntary and unconscious mental mechanism, was viewed as the basis for conceptualization. The theory of preconception was needed to fill out Epicurus’ broad account of perception, for the perceiver is not only appeared to but also classifies what is perceived. The Stoics focussed on the criterial role of unerring cognitive impressions (phantasiai kataleptikai), assigning them the function of providing reliable data for discursive reasoning. When the soul is affected by a cognitive impression, it becomes capable of perceiving determinate objects and forming true judgments. The Arabic intention echoes these Hellenistic conceptions. It is both a representational item and the result of the soul’s operations on the effects of sensation. Deeply influenced by Neoplatonic metaphysics, Arab philosophers did not accept Epicurean or Stoic materialism, and develop a theory of conceptual abstraction which introduces a clear-cut hierarchy of sense perception and intellectual knowledge.

The theory of conceptual abstraction was highly controversial among Peripatetic authors. Two positions developed during the controversies may throw light on Telesio’s view of conceptualization. First, a considerable number of the medieval and Renaissance Peripatetics challenged the mediating function of the intelligible species as representation, and regarded it as a mental act grasping content. The driving force behind their position was the idea that knowledge cannot depend on any prior actualization of the mind by the species, as this would entail the contradictory claim that the mind knows before it effectively grasps its objects. According to Zabarella (1533–1589), a younger contemporary of Telesio, the species may be identified with the intellective act, insofar
as this act depends on the phantasm’s causing a primary specification of the mind. This brings us to the other issue, which regarded the final outcome of abstraction, namely, whether this is an individual form or species, or else a universal. Some medieval and Renaissance authors distinguished between two moments in the generation of intellectual knowledge. In ‘first order’ intellect, a concrete notion of a singular essence is generated; then the intellect is able to engender universals". Thus, abstraction is no longer attributed to the (unknowing) agent intellect, but seen as a successive elaboration of sensory information by the possible intellect. The next step is to substitute generalisation for abstraction. Indeed, according to Suarez, the universal does not arise from ‘abstraction’, but rather from a process of “comparatio”. The intelligible kernel of substantial reality is known by discursive reasoning on the basis of the information made available by the agent intellect.

In Telesio’s view, conceptual structures arise from two sources: the structured nature of bodily experience (the perceived “similitudines”), and a wired-in capacity to elaborate certain well-structured aspects of bodily and interactional experiences into abstract concepts. Intellection is determined by the functional interaction of this wired-in capacity and the stored notions. From this interaction emerge mental acts, through which man models or rather reconstructs the environment based upon experience. The spirit’s operations do not rely on internal representations, nor are sensory and intellectual experiences stored as images or concepts.

Telesio shares the insight with the Aristotelian tradition that direct realism in the sense that the world affords a direct
transfer of information that suffices for perception and action, is untenable. How does Telesio explain the ability to categorize objects and events on the basis of sensory signals received from the environment? Like some medieval and Renaissance Aristotelians, he rejected the distinction between mental act and representation, and held that conceptualisation depends on preceding, primary mental acts. However, his view cannot be re-phrased in the Aristotelian framework. Cognition and conceptualisation consist in a process of self-modification by the brain. The spirit neither receives nor abstracts forms, but re-constructs 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. Telesio tried to show that the facts of human knowledge, memory and recalling argue against the view that what is involved in such cognitive activities is some iconic and uninterpreted 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 a skill or an ability for organizing 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 pulling something out of the herd, that has been stored there.

5. TELESIO AND EARLY MODERN ENGLISH PSYCHOLOGY

The Telesian spirit is an aggregate of interacting parts, which follow biological rules of operation, induced by self-preservation. The spirit can be perturbated and can undergo internal, structural changes. In reaction to these
changes the living organism generates perceptual information. Perception and cognition are mental responses attuned to useful affordances, to be found in the environment. Perception involves the gathering of information about the environment on the basis of physical stimuli impinging on the sensory structure. The peripheral spirit transforms the physical energy of the affections into a coded, information-bearing, structure, which comprises data for the (mental) processes of the central portion of the spirit in the brain. Evidently, survival requires the ability to categorize objects and events on the basis of sensory signals received from the environment. Thus, the subsequent higher-level elaboration is progressively selective in its response to features of the sensory stimuli. Sensory experiences are not passive affections, but acts of a living being, operating according to sensations of pleasure and pain. The spirit’s principal activity is that of making changes in itself. The organism may also operate independently from external stimuli: cognition is produced by the spirit’s interaction with itself. It consists essentially in a reconstruction of a state of affairs which is not immediately present.

According to Telesio, perception and cognition do not consist in 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. Mental acts are integrated in a self-organized process of adaptive interaction with the environment. Mediated representations are not required for this kind of system to behave adaptively.

Telesio did not have, strictly speaking, English followers. Yet, the psychological ideas developed by authors such as Walter Warner and Thomas Hobbes show a remarkable affinity with some of his views. With the Cosentine philosopher they share:
(1) a generic aversion to Scholastic philosophy; (2) a materialistic psychology; (3) the idea of man as an organism, striving for self-preservation, and not fundamentally different from animals; (4) the primacy of sensation over cognition, regarding the latter as the result of notions starting from what the senses furnish; (5) a rejection or else relativization of traditional faculty psychology

There are also important differences, however. Unlike Warner and Hobbes, Telesio thought that some psychological functions and acts of man—most noticeably his aspiration to divine and immortal things that belong to his eternal preservation—cannot be explained without postulating an immaterial mind. Telesio and Warner had a keen interest in biology and medicine, problems which Hobbes deliberately left to the competence of professional scientists. Therefore, the theory of spirit—crucial notion in Telesio and Warner—was of no particular interest for Hobbes. According to Hobbes, instead, knowledge and science are based on the human capacity for retrieving sensory information (images) by means of language. The language faculty is found in man alone. Thus, logic, which treats the definition and computation of words, has a central role in philosophy.

In the next section a comparison is drawn between Telesio, Warner and Hobbes, but first the psychological insights of Warner and Hobbes are briefly summarized.

5.1. Warner and Hobbes

Walter Warner's notes on psychological functions, probably written between ca. 1590-1610, show a combination of novel and traditional views. In his view, all animal organisms are ruled by a homogeneous, warm, active spirit. Warner
regarded the soul as a central system of animal spirits. The soul is a material entity that in its operations is impelled to self-conservation. These operations can be reduced to motion. Thus, mental acts are related to corresponding bodily processes.

Warner is less polemical than Telesio towards Aristotelian philosophy and continues to use its explanatory principles, such as the distinctions between matter and form, act and potency. Moreover, he had a quite traditional view of the processes underlying perception and cognition. In his view, sense perception is the result of the impression of a species on an organ of sense. This impression is due to a local motion, because sensation is alteration and no alteration can be without local motion. From the sense organs the species are transferred to the common sense or phantasy, where sensation occurs. Common sense or phantasy is the faculty which receives, stores and recalls the impressions of the senses. These impressions are called phantasms with respect to their reception and retention in phantasy. However, Warner did not distinguish between impressions, species, or ideas. As in Peripatetic psychology, Warner attributed to the intellect the task of "speculi phantasmata et recipere species intelligibiles". And its speculation consists in a comparative analysis of the phantasms.

Hobbes explained the genesis of perceptual and mental representations exclusively in terms of matter and motion. Perception and the production of primary knowledge (images, ideas etc.) are phenomena that belong entirely to the physical realm. This is why he discussed them not only in De homine, but more generally also in De corpore. The object causes a motion in sense organs that elicits a reaction in the brain,
BERNARDINI
TELESII
CONSENTINI
DE RERVM NATVRA
IVXTA PROPRIATPRINCIPIA.
LIBRI IX.
*AD ILLUSTRISSIMUM, ET ECCELLENTISS.
Don Ferdinandum Corresam Nuceria Ducem.
SUPERIORVM PERMISSV.

NEAPOLI
Aqua Horatium Seleionum. M. D. LXXXVI.
CVMM PRIVILEGIO REGIO.

Frontespizio dell'ultima edizione del De rerum natura.

Fig. 1. Frontispiece from De rerum natura, published in
Filosofia e scienza in Calabria nei secoli XVI e XVII,
L. De Franco, Cosenza
Fig. 2. Portrait of Telesio, reproduced in *Introduzione a Telesio*, R. Bondi, Bari-Roma 1997.
namely a representation97. The phantasm or mental picture is an effect in the nervous system, which reacts to the motions by external objects98. According to Hobbes, perception is motion. Sensations are produced through a physical and physiological process. When the brain is stirred by physiological motions it generates an effect that is propagated ‘outwards’, that is, a perception consisting in images or phantasms. Thoughts about general features are based on a comparison between phantasms99. Concepts or ideas (which are not fundamentally different from images or phantasms100) are translations of the motions occurring in the perceptual apparatus101. Indeed, Hobbes made no essential distinction between imagery and (primary) cognition. His theory of perception did not envisage any hierarchical ordering between sensory processes and intellectual processes102.

Hobbes believed that phantasms and ideas are physical responses of the brain to stimulation by external objects. Thus, phantasms and ideas depend on the perceptual apparatus as much as they depend on the external agents of change. They may be said to represent the world beyond the senses inasmuch as they are mechanically produced by that world. Hence, they may be used by man (the rational animal) as a relatively reliable basis for scientific inference about the world. However, since phantasms and ideas are the joint product of a causal interaction between at least two physical agents, it is impossible that they represent the formal nature of material things, with the sole exception of magnitude and motion (the two “accidentia communia” of all bodies)103.
5.2. Motion and materialism

The psychological research by Telesio, Warner and Hobbes was deeply inspired by the scientific innovations of their time. However, there are some significant differences with respect to the specific context of their speculation. Telesio’s psychology was influenced by the 16th-century findings of anatomy and physiology. Warner’s notes on animal organisms depended mainly on similar sources. However, he was principally a mathematician and scientist. And his psychological research must be understood also in the context of early experimental science. Moreover, in remarkable contrast with Telesio and Hobbes, Warner did not reject Aristotelian psychology tout court. Hobbes regarded himself mainly as philosopher and developed a philosophical psychology on strictly mechanistic grounds. The use of the concept of motion by Telesio, Warner and Hobbes in the explanation of mental functions and acts reveals the development in the psychological research by late Renaissance and early modern naturalists. Telesio regarded the spirit as a hot, mobile substance. According to him, motion pertained to the very nature of the spirit. Therefore, he explained psychological acts in terms of motion. Similarly, Warner defined the soul as a complex of spirits, whose operations can be reduced to motion. In Hobbes, motion has become a strictly relational term, it is no longer seen as pertaining to the nature of the spirit of the soul. The human soul is material and therefore subject to motion. Thus, like every natural science, psychology explains its object in terms of matter and motion.

Telesio’s central methodological stance, aiming at explaining natural phenomena “iuxta propria principia”, leads in matters psychological to a strange mixture of physicalist and
mentalistic terminology. And the view of a “motus recolens” offers a most remarkable specimen of this mixture. Telesio described the complex interaction between the central spirit and the peripheral parts in strictly psychological terms. For example, in all its activities the central part is prompted by the desire of self-preservation. Thus, the specific laws that govern complex mental acts, such as memory and intellectation, remain mysterious. Telesio seems to suggest that the organism contains criteria to develop information upon sensory stimuli. This entails that the ability of the spirit to categorize an unlabelled world in an adaptive fashion is seen as a primitive capacity.

Also Warner and Hobbes developed a naturalistic account of psychological phenomena. With Telesio, Warner shares a form of materialism without reduction. He thought that the language of biology and physics may explain mental phenomena. Yet, the latter are not denied as such. Also his views of the spirit and its functions are characterized by a mixture of materialistic and mentalistic explanations. The animal spirits are material, but the spirit is endowed with mental powers. Hobbes put forth a more straightforward form of physicalism. He explained psychological phenomena in terms of matter and motion. Yet, he did not regard the traditional psychological terminology as meaningless or void of reference, nor did he challenge the existence of psychological functions and mental phenomena.

5.3. Representation and object

In several early modern English works on psychology and epistemology the doctrine of species is accepted. Richard Burton, Nicholas Hill, Francis Bacon, and Herbert of Cherbury are cases in point. Also Warner and Hobbes
should be mentioned. Warner endorsed the traditional doctrine of sensible and intelligible species\textsuperscript{109}. Hobbes drew up a doctrine of (sensible) species in his early \textit{Short Tract} (ca. 1634)\textsuperscript{110}, which shows some affinity with medieval perspectivist optics\textsuperscript{111}. In \textit{Anti-White} (ca. 1643), Hobbes still used the term “species”, which was now identified with the mental image or picture derived from the action of an agent outside the mind\textsuperscript{112}. Adopting the term “species” from Thomas White, Hobbes defined it here as “apparentia et aspectus materiae”, equating “species, sive imaginem, sive ideam in sentiente”\textsuperscript{113}. In later works, however, he definitely broke away from the Scholastic psychology of cognition, and relentlessly emphasized the absurdity of the theory of species.

Telesio dispensed with any form of representationalism. The term “species” is used only in its original sense, namely as aspect of a thing\textsuperscript{114}. Most remarkably, also terms, such as phantasm, idea, and thought, are absent in his works. As we have seen in the preceding section, Telesio did not presuppose any type of mental representation to be retained or stored in the spirit. This seems a crucial difference between Telesio’s psychology of cognition, on the one hand, and those of Warner and Hobbes, on the other hand. The latter two held that the action of external bodies on the senses results in phantasms, or else species, images, ideas, concepts (they are not too strict in terminology)\textsuperscript{115}. However, the traditional terminology used by Warner and Hobbes suggests differences which at a closer examination appear to be quite inessential. Warner regarded phantasms as configurations pressed into the spirits, and Hobbes regarded them as motions.

What do we know, or, more precisely, which is the object of cognition? If what we receive or store are motions or
configurations in the spirit, what do we know effectively? Telesio accepted that perceiving a physical object is a causal relation. Percepts may owe some of their properties in part to the conditions of perception, such as the disposition of the body and that of the spirit at a given moment. Yet, what we experience are items of our physical environment, and not surrogates or images or intermediaries. Thus, the spirit is able to detect the nature of things. Warner, more cautiously, thought that the external senses do not perceive the things themselves, but their qualities, while the internal senses perceive only motions of spirit. Subsequently, the intellect’s objects are the relations between phantasms. Hobbes’ philosophy constituted a profound rupture with Peripatetic thought. He accepted mental representations, but he denied that their contents correspond to objective properties of the external world. Images and ideas are the products of motion, and have no formal affinity with their causes. Perception is apparition unto us of that motion, that the object works in the brain or spirits. “All sense is fancy”, as Hobbes famously put it, with the exception only of extension and motion.

6. MOTUS RECOLENS: A CONCLUDING REMARK

The affinity between Telesio’s naturalistic philosophy of mind and the psychological research by early modern English scientists and philosophers, such as Warner and Hobbes, may not be an indication of a direct influence of the Cosentine philosopher. Rather, with Telesio they shared a common philosophical and scientific milieu, characterised by anti-scholasticism and materialism. The three authors examined here regarded human soul as an integral part of natural reality and developed psychology in the context of contemporary science. Therefore, the main differences between their
positrons as well as the possible line of development one may trace between them reflect the development of science between the second half of the 16th and the first half of the 17th century. Telesio's psychology was indebted to the 16th century discoveries in anatomy and physiology. Warner was active at the dawn of the scientific revolution and his psychological research must be interpreted in the context of his broader scientific interests. His psychology is essentially eclectic, however. Hobbes formulated a new philosophical psychology in mechanistic terms as a response to recent developments in modern physical science. They all departed from traditional psychology, even though the rupture with past conceptions was not complete. For example, Telesio held the possibility of knowing the essences of the external reality, while Warner and the early Hobbes stuck to a theory of mental representation which was largely phrased in traditional terms.

The psychological theories of Telesio, Warner and Hobbes are grounded on a central conviction: mental phenomena supervene on physiological processes which are essentially analysable in terms of motion. Without eliminating classical psychological terminology, they attempted to analyse psychological phenomena in terms of motion. Telesio broke away from a merely metaphorical use of motion, as present 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 on specific types of motion. The specific characteristics of 'psychological' motion ("motus recolens") remain unexplained and obscure, however. Also Warner described the activities of the spirits as motions. His psychology is essentially eclectic, however, and his theory of mental representation is only the Scholastic theory translated
into mechanical terms. According to Hobbes perceptions are motions, and ideas or concepts are elaborations of the motions occurring in the perceptual apparatus. Here a remarkable development in psychological theorizing can be detected. While Telesio and Warner, more or less explicitly, regarded motion as a property pertaining to the nature of the spirit(s), Hobbes adopted a relational concept of motion. Thus human soul does not move in virtue of its nature. Rather, as a natural entity, it is analysed as matter in motion.

NOTES


5 Also in *The History of the World*, Ralegh develops psychological theories. However, the attribution of this work is questionable; see P. Lefranc, *Sir Walter Ralegh Écrivain*, Paris 1968, p. 57.


6. I owe many references of Telesio’s presence in England to the aforementioned studies of Jan Prins.
10. See Prins, Walter Warner, 133, who quotes III, Add. MS 4394, f. 135v: “(...) all those alterations of the pulse or motion of the heart which are commonly observed to follow or accompany the passions and perturbations of the mind which are in great variety (for which examine Galen & Teleseio) do manifestly argue a continuation of these pulsatory spirits with those of the intellect or rationalization or a dependence of the one on the other (...).”


For a general description of Telesio's psychology, see my "Telesio's reform of the philosophy of mind", in Brannus & Cospolitana 3(1997), pp. 123-143.

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De rerum natura, VIII.3, 172. c. 11-12, 208-220 and c. 21, pp. 294-96. For discussion of the divine soul, see my "Elementi aristotelici e polemica anti-perpustica nella dottrina dell'anima divina di Telesio", in Verifiche 21(1992), 351-370.


De rerum natura, V.3, 248-220. See also VII.4.5, pp. 14-18. VII.3, pp. 86; VIII.10, p. 204; and VIII.21, p. 268.

See De rerum natura, V.11, p. 270; cf. c. 27, 364, l. 21-23.

De rerum natura, V.12, 274-78. See also V.27, 360-64; animals are governed like cities.

Cf. V.34, 406; animals are like ships, with different parts, a number of sailors, a captain, etc.

De rerum natura, V.13-14.


De rerum natura, V.14, 292-302; cf. V.12, 274.

Cf. also De rerum natura, V.12, p. 278-80.

De rerum natura, VIII.4, 14-16.

De rerum natura, VIII.29, p. 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 essentially 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.


De rerum natura, V.31, p. 386-88. For a similar position, see Agostino Doni, De natura hominis, Basileae 1581, II, c. 21, f. 106f: "Cum imaginatur spiritus, recoll omnino secum formas motuum, quos antea in se effecerit dum ad sensibilia moventia moveret se sicut exposimus, vel omnino illis assimiles." This work is now available with an Italian translation in L. De Franco, L'erotico Agostino Doni. Medico e filosofo cosentino del 300, Cosenza 1973.

28
I, the context of this valuation is the refutation of the Peripatetic doctrine of the hierarchy of cognitive faculties, from p. 190 onward. This refutation is built on the methodological role, expressed in VIII 16, p. 240: "Non modus sed rex". For discussion, see my "Elementi aristotelici e potenzia anti-peripatetica nella dottrina dell’anima divina di Telesto", in Verifiche 21 (1992), 351-370.

Memory requires the continuous attention of the spirit; cf. VIII 10, p. 204: "Nam præteritorum motuum memoria cognitiva ut centum, et dum sic susceps inténtns ít spiritus et cessavit esæpius recollat opuscit."

Recall that all mental states, also those of the divine soul, are strictly sense dependent. cf. De rerum natura, VIII 6 and 15.

Recall that all mental states, also those of the divine soul, are strictly sense dependent. cf. De rerum natura, VIII 7, p. 186.

See De rerum natura, VIII 28, p. 794-96.

De rerum natura, VIII 5, p. 16: "(...) et mobilém sui natura, motum sédicet program quibus casibus operatio summopercipie co oblectari servarique."

De rerum natura, VIII 6, p. 182.

See De rerum natura, VIII 7, p. 185, cf. V 12, p. 280-82.

De rerum natura, VIII 10, p. 204.

De rerum natura, VIII 29, p. 298-300: intellectio is "praeteritorum praesentiumque motuum collatio."


Diogenes Laertius, Lives, VII 157-158. As a matter of fact, they resume Plato’s doctrine exposed in Theaetetus, 151-56.


See De anima, III 5 and Metaphysics XII. See also Metaphysics, 1032a-b, for the possibility of the soul originating motion without itself moving.

29

Metaphysics, 1072a27-30. In the same context, Theophrastus described the operation of the active intellect as *know*. See Thesaurus. In libros Aristotelis De anima paraphrases, ed. R. Henne, Berolini 1899, p. 108, II. 22-28, cf. 102, II. 26-29. For discussion, see E. Barbiéru, La théorie aristotélicienne de l'intellect d'après Théophraste, Louvain-Paris 1954, 105-125.


Peter de Bruxelles (Crokan), Argumineum, subiteis et serenae quaestiones physicales (...) in octo libros Physicorum et in tres de Anima (...) Aristotelis, Parisii 1521, (first and second edition, respectively, 1510 and 1515), unnumbered files, III, q. 2, a. 2: "Dicitur autem talis motio abstractus cum quia intellectus est superior causa quantum a fantasma. Qua dicitur fieri abstraciou tunc quia ex parte intellectus est aliqua virtus activa quae habet effectum causatum a fantasmate et ideo videtur quod quasi intellectus trahat ad se speciem."

"Ut torum sit dare intellectum agentem", in Averroisme bolonais au XVe siècle, ed. Z. Kłoszewicz, Wrocław-Varsovie-Cracovie 1965, p. 305, where Matthew of Gubbio appealed to Averroes, In De anima, III, c. 18, cf. also his Quaestiones de anima, ed. A. Ghisalberti.
Milano 1981, 173-74. See "Ultima species vel imago, qua est organum mediante quo aliqua
res cognoscamur. (... cognoscimus)" in Averroisii灞abanis, 309: "Ideo est sexitus et ultimus
modo dicens, et est magisri Mathiei de Lugubio, et est: quod ista species seu fantasma
movet intellectum solus delalave. non autem impressio nec cognitio, et loquor quando
meditante ea intellectus intelligi objectum extra illam speciem. (...) sunt effectus defect
causam." Cf. idem, 311: "H illa dictis posita species existit in cognitiva product
speciem in intellectum. Verum est, non quia movet intellectum cognitivum, sed solum delalave, 
sunt non videbim species et imagine existimae in aere, non solum delalave."
73 Commentaria in III libri Sententiarum. Venetiis 1564, 175sa.
75 In exto partem ed. I. Barn, Aristotelis de anima, quae est De Mente Ilmnn data lectura,
Ferrariae 1576, 393 and p. 433.
76 Questio de Spectibus Intelligibilis, in Operaomnia, Neapoli 1578, 31v-36v, p. 35vb.
77 De rerum natura, VIII, 29, pp. 296-300.
78 Cf. the polemics with Aristotle's, too narrow, conception of phantasy. Telesio argued that
the Aristotelian fantasy depends on stored images. For a similar position in modern
psychological research, see R. Gregory, Concepts and Mechanisms of Perceptive, London
1975, p. 628. There is an extensive contemporary discussion as to whether mental images are
pictorial, descriptinal in iconic. Cf., inter alia, Z. W. Pylyshyn, "Imagery and artificial
170-194, idem, "Mental pictures and cognitive science", in Philosophical Review 92(1983),
499-541; K. Sterelzyk, "The imagery debate", in Philosophy of Science 55(1988), 360-583;
79 See, for a general discussion of the inner images in medieval philosophy, H. A. Wolfson,
"The internal senses in Latin, Arabic, and Hebrew philosophical texts", in idem, Studies in
80 During the Middle Ages, Godfrey of Fontaines, Peter Olivi, Rudolph Brizo, Thomas
Aitton, and John Baconneborpe tended to assimilate species and cognitive act. During the
Renaissance, Leibniz d'Etuples, Charles de Loveltes, Tiberio Baslheri, Nicoletto Vernia,
Francesco Casaferra, Francesco Vimercati, and Jacopo Zabarella developed a similar
position. For these authors, see my Species intelligibilis. From Perception to Knowledge, 2
81 See Thomas Wilton, Questio disputata de anima intellcctiva, ed. W. Senko, in Studia
Medievalia et Neo-Latin, 5, Warusra 1964, 119, Gregory of Rimini, Lectura super primum et
84, Super I, dist. 3, q. 1, 352; John Buridan, In tres libros de anima, in Quaestiones et
decisiones physicales (...). Alberti de Saxoii (...). Buridani in Aristotelis (...), ed. Georgius
Lokert, Paris 1518, f. 3ra; Paul of Venice, Summa philosophiae naturalis, Venetiiis 1503
(reprint Hildesheim-N.Y. 1974), 90vb, and idem, In libros Aristotelis de anima explanatio,
Venetiiis 1504, 137vb, Jacques Leclerc d'Estunes, Paraphrasis trium de anima
complectorum, in Philosophiae naturalis Paraphrasis, Parisiis 1525 (first ed. 1492), 224r;
Pietro Pomponazzi, Cori inediti dell'insegnamento padovano, 2 vols., ed. A. Poppi, Padova
1966-1970, vol. I, 204; Girolamo Francastor, Opera omnia, Venetiiis 1574 (2nd ed.), 129r-v;
H. I. Castaness, Celebriorum distinctionum philosophicarum synopsis, Lugduni Batavorum
1645, 101; Francisco Suarez, De anima, in Opera omnia, ed. nova D.M. Andre, tomus ill.,
Parisiiis 1856, 722a-28a; Collegium Complutense, Disputationes in tres libros Aristotelis de
31
Telesio leveled a heavy attack onto the Aristotelian faculty psychology; cf. De rerum natura, book VIII. Warner rejected the real distinction between rational and irrational faculties; see Prins, Walter Warner, 57, 78. Although he did not completely abandon the traditional psychological distinctions (cf. idem, 118-125, 136, 153-54, 158, and 161-164), he assigned the functions of reception, retention and representation to one faculty (idem, 136). He regarded faculties as forces of the different parts of the spirits; in this sense they are substances; idem, 251-52. In Thomas White’s “De mundi” examined The Latin translated by H. Whitmore Jones, London 1976, Hobbes stated that man’s intellectual faculties do not differ from those of animals except in degree; see p. 353. Elsewhere, he defined faculties as accidents of bodily substances, and explained their operation in terms of motion; Opera latina, vol. I, p. 144; The Elements of Law Natural and Polite, ed. F. Tomnis, London 1889, 28-29. Hobbes thought that sensation implies already distinguishing and comparing; cf. Opera latina, vol. I, 320.

83 See De rerum natura, V 2, 210; VIII.15, pp. 232-36. See also above, section 2.
84 In the Short Tract, Hobbes defined the animal spirits as instruments of sense and motion; cf. Thomas Hobbes, Courte Traité des Premiers Principe, Le Short Tract on First Principles de 1660-1633, La naissance de Thomas Hobbes à la pensée moderne, texte, traduction et commentaire par Jean Bernhardt, Paris 1988, pp. 40-42.
86 His physiological and psychological research relied on medical authorities, such as Galen and his 16th century followers, such as Archangelo Piccolomini, Varolius, Basimius; cf. J. Prins, Walter Warner, p. 66, and ch. 3.1.
87 Prins, Walter Warner, 130. Like Telesio, Warner rejected Galen’s theory of three different spirits; cf. also pp. 90-95.
88 Prins, Walter Warner, 78, and note 124. Warner endorsed the view that the cosmos is constituted by matter composed of atoms enclosed by a radiating force setting these atoms in motion; cf. pp. 22, and 45ff on the possible relations with Bruno and the traditional light metaphysics.
89 Prins, Walter Warner, 132-33.
90 Prins, Walter Warner, 176, 261.
91 Prins, Walter Warner, 139-147.
92 Prins, Walter Warner, 151: “(...) by way of sensation habitually informed with impressions or characters or signs of <species> or ideas (...) which in respect to their aptitude to be reenacted or retranslated or recognized or represented or internally speculated are called notions or concepts or fantasms.”

97 See also Treatises Optics I, in Opera Latina, vol. V, 220.

98 See De corpore, 317 and 319: "sensio est ab organi sensorii constat ad extra, qui generatur a conatus ab objecto versus interna, coeqe aliquando manente per reactionem factum phantasma." For discussion, see I. Leschen, "Reason and perception in Hobbes: An inconsistency", in Nous 19(1985), 429-437, on p. 430.


100 Cf. The Elements of Law Natural and Politic, ed. E. Tönnies, London 1889, 2: "This imagery and representation of the qualities of things without us in that we call our cognition, imagination, ideas, notion, conception, or knowledge of them", De corpore, 317, where the "causa ideant" is identified with "motus". Cf. Objectiones ad Cartesii Meditationes, in Opera Latina, vol. V, 258f, where Hobbes argued that the idea is not distinct from sensible intuition.


104 De rerum natura, V.14, p. 296-98.


107 F. Bacon, Works, vol. II, 430: "The species of visibles seem to be emissions of beams from the objects seen; almost like odours; save that they are more incorporeal: but the species of audibles seem to participate more with local motion, like percussions or impressions made upon the air." In general Bacon showed little respect for Aristotle and avoided the classical terminology of abstraction; see Works, vol. IV, pp. 58-59, 69, 88, 292-93, and 344-45. For discussion, see K.R. Wallace, Francis Bacon on the Nature of Man, the Faculties of Man's Soul, 45 and R.F. Jones, "The Bacon of the seventeenth century", in Essential Articles for the Study of Francis Bacon, ed. B. Vickers, London 1968, 3-27, on p. 5.

110 See Thomas White's "De mundo" examined, ch. III 2, p. 41, and ch. XXVII 10. Cf. De corpore, 329-30. See in this context also the mind-mirror definition in De principiis cognitionis, in M.M. Rossi, Alle fonti del deismo e del materialismo moderno, Firenze 1942, 104.
111 Thomas White's "De mundo" examined, ch. XXXVIII 11
112 De rerum natura, VIII 3, p. 168.
113 Cf. Prins, Walter Warner, 152, 163, 262; for Hobbes, see, inter alia, Short Tract, 44.
114 The seed sent, although different from the body, is affected according to the nature and disposition of the body; see De rerum natura, V 35, 416.
115 Cf., for example, De rerum natura, VII 10, p. 36.
116 Prins, Walter Warner, 159 and 163.
117 Elements, 4.
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