

Rudolph Hermann Lotze's philosophically informed psychology

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Abstract

This essay deals with four main topics: the notion of philosophical psychology; the idea that physical events and mental events cannot be compared to one another; psychophysical mechanism; and the theory of local signs. These are all key elements in the *Medizinische Psychologie* of Rudolph Hermann Lotze (1817–1881). By philosophical psychology, Lotze understands not only the collection of experimental data regarding physiological and mental states but also their philosophical processing outlining an interpretation of the *real nature* of the mind–body connection. Within this framework, Lotze introduces the psychophysical mechanism as based on a key philosophical idea: mind and body are *incomparable*, but, nevertheless, they are in reciprocal relation (*Wechselwirkung*). In virtue of said special relation, movements that take place in the mental sphere of reality are transferred or translated in the bodily sphere and vice versa. This rearrangement (*Umgestaltung*) from one sphere of reality to the other is termed by Lotze “transformation to equivalent.” Through the concept of *equivalence*, Lotze supports the idea that the mind and the body form an organic whole. However, psychophysical mechanisms should not be seen as not a fixed series of physical changes followed by an equally fixed series of mental changes: physical changes are “read,” organized, and

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then transformed by the mind into something purely mental. This, in turn, produces new mechanical force and more physical changes. Lotze's legacy and long-term impact is finally read against the background of his contributions.

KEYWORDS

local signs, Lotze, philosophical psychology, physiology, psychophysical mechanism

1 | INTRODUCTION

The interest in medical doctor and philosopher Rudolph Hermann Lotze, has been rekindled in recent years.¹ The reasons behind such a revival of interest are manifold. Studies by Gottfried Gabriel, Nikolay Milkov, and Ernst Wolfgang Orth have shown how around 1880s Lotze was seen as a leading philosopher not only in Germany, but also in England and in the United States of America. Lotze had an impact on the development of analytic philosophy (on Gottlob Frege and to some extent Bertrand Russell), phenomenology (on Carl Stumpf and Edmund Husserl), the Neo-Kantianism of Wilhelm Windelband and Heinrich Rickert, Wilhelm Dilthey's philosophy of life (*Lebensphilosophie*), the British idealism of Bernard Bosanquet and F. H. Bradley, and the pragmatism of William James.

In his *A Hundred Years of Philosophy*, John Passmore (1957, p. 49) called Lotze the most "pillaged" philosopher of the 19th century. Many of his theories were picked up and further developed by the philosophers mentioned above, although his name was not always explicitly mentioned. Just to take a few examples, one could refer to the "Lotzean roots" of Frege's and Husserl's antipsychologism as well as of Frege's context principle. Lotze's theory of local signs, developed in his *Medizinische Psychologie*, was also adopted and expanded upon both William James and Hermann von Helmholtz.

Around the beginning of the 19th century, psychology was slowly becoming differentiated from philosophical reflection. Philosophers and physiologists such as Johann Friedrich Herbart (1776–1841), Ernst Heinrich Weber (1795–1878), and Gustav Theodor Fechner (1801–1887) contributed decisively to the scientification of psychology. Unlike these authors, though, in his *Medizinische Psychologie*, Lotze argues that psychology as a discipline is based not only on physiological research, but also on the philosophical interpretation of empirically acquired data. A strictly mathematical or experimental psychology is seen as one-sided. In short, according to Lotze, while part of consciousness and its content is scientifically experienceable, some other parts of consciousness resist such efforts.

Lotze refers to philosophically informed psychology as a psychology that develops as a tandem of science (physiology) and philosophy. Such a physiologically and philosophically informed psychology collects facts and examines how the body and mind relate to one another not only empirically but also "metaphysically." So understood, psychology is supposed not only to collect experimental data regarding physiological and mental states, but also to philosophically examine them and outline an interpretation of the *real nature* of the mind–body connection. Such a philosophically informed psychology would, therefore, describe the various developments that the content of consciousness undergoes both during everyday life experience and within the context of scientific elaboration (Lotze, 1852, p. 495).

Mental life, more than other fields, is suitable for both scientific and "speculative"² treatment. Lotze reminds us that humans, alongside scientific endeavors, have developed knowledge of their inner life (*lebendige Menschenkenntnis*), which is very closely linked to individual experience, tradition, artistic and literary production, and moral and religious doctrines. This kind of living knowledge of the mind and "scientific" knowledge have,

according to Lotze, equal value. Physiological psychology and practical knowledge of the mind are seen as complementary and their cooperation as key to the achievement of plural knowledge in psychology.

It is also worth mentioning that Lotze's project for a philosophically informed psychology, far from being of merely historical-archival interest, was later developed, in the late 19th and early 20th centuries, by thinkers such as Franz Brentano, Carl Stumpf, and Edmund Husserl, whose descriptive psychology and phenomenology is presented as an *analysis* of psychic phenomena.³

What is more, Lotze's famous theory of local signs was later reworked by Hermann von Helmholtz (Hatfield, 1990). Two key points are namely drawn from Lotze's *Medicinische Psychologie* to develop an empiricist theory of vision: (i) local signs are additional sensations produced by retinal stimulation, eye movements, and head and body position; (ii) the center of the retina is the place to which all local signs refer.

A clear reference to Lotze's work is also included by William James in the Preface to *The Principles of Psychology* (1890). This text prominently features the idea that psychology should not only take into account the results of an experimental investigation on the central and peripheral nervous systems, but it should also philosophically interpret these data.

Equally significant is Lotze's impact on Emil Du Bois-Reymond and Carl Gustav Jung. In this respect, Lotze had the merit of stating clearly that the human mind is unable to know "how" a physical state actually transforms into a mental state.

The aim of this article is to dig deeper into the notion of philosophical psychology, the incomparability of physical and psychic events, psychophysical mechanisms, and the local sign theory, as the core elements of *Medicinische Psychologie* and Lotze's far-reaching legacy. The deepening of these elements, which constitute Lotze's project for psychology that develops as a tandem of science and philosophy, was further elaborated by important figures in late nineteenth- and early 20th-century philosophy: Brentano, Stumpf, and Husserl. Hermann von Helmholtz's empirical theory of vision also owed much to Lotze's local signs theory. Lotze's *Medicinische Psychologie* (1852) is, therefore, a valid starting point, on which we need to shed light, which allows us to better understand the later development of the philosophy of psychology.

2 | PHILOSOPHICALLY INFORMED PSYCHOLOGY AND LOTZE'S PERSPECTIVISM

Lotze's *Medicinische Psychologie* (1852) deals with the reciprocal relations (*Wechselverhältnisse*) between mind and body. Rather than a purely philosophical account of the mind, this text provides insights aimed at the clarification of mind-body relations. As is well-known, in the first half of the 19th century, physiological research on the nervous system experienced rapid development (Cabanis, 1802; Flourens, 1858; Müller, 1826, 1834; Volkmann, 1836; Wagner, 1842/1853; Weber, 1851). What had been until then the prerogative of philosophical speculation only, that is to say, the study of mental phenomena, started to attract genuine interest from the natural sciences (i.e., physics, physiology, and chemistry) as well. A great debate then ensued concerning the possibility of reducing all mental life to the physiological constitution of the bodily elements that partake in it. Physiological research seemed indeed to provide scientists with enough experimental data to explain with scientific accuracy the dynamics of mental life. Lotze's distinctive take on this matter is that observational data based on empirical acquisitions are not always unambiguous: they require interpretive work. According to Lotze, interpretation can be substantially supported by metaphysical knowledge. Science, in this respect, would be a process starting with empirical research combined with philosophical interpretation.

As a result, Lotze's psychology presents a form of mediation between the output of empirical research and philosophical knowledge. According to him, the facts of experience, which he calls "scientific content," can be accurately captured in a unitary and general vision against the background of philosophical-metaphysical knowledge, which he calls "principle of judging" (*Prinzipien der Beurteilung*).

And when it comes to the laws governing mind–body relations, Lotze claims that they can be grasped neither by pure speculation nor by empirical observation only. They can be correctly identified through a self-reflecting observation (*reflectirende Beobachtung*). Such observation, by means of speculative principles, interprets the observational facts (*Thatsachen des Augenscheins*). This does not mean, however, that Lotze sees metaphysics as the foundation for psychological research; he was by no means a foundationalist. Metaphysics should not be seen, according to Lotze, as a dogmatic theory. In this respect, it is incomplete and contradictory (Lotze, 1885/1891, p. 2). However, metaphysics can provide, so Lotze, useful indications to *orient* the psychologist while analyzing problems. As they determine a scientist's attitude toward the facts collected through observations, these indications are a key element for science. A clear link (*Anknüpfung*) is thus established between concrete science and philosophical knowledge. And this is what philosophically informed psychology is about (Lotze, 1885/1891, 1 ff.).

In short, the connection between science and philosophy is said to be bijective: philosophy requires science and science requires philosophy. As previously mentioned, collected observational facts require philosophical interpretation. This means that neither observational experience alone—pace the positivists—nor pure philosophical speculation alone—pace the German idealists—are sufficient to achieve true knowledge of reality. What is required is instead cooperation between the two. Science is indispensable to philosophy: it provides the data, the “microscopic” observations that fill and give content to the orienting schemes; philosophy, in turn, delivers knowledge of the “interrelation of things” (*Zusammenhang der Dinge*) (Lotze, 1856, 1858, 1864, 1885, 2017, pp. 571–658).

Lotze further states that philosophy should deal with general issues and that it has a vocation for unity. Faced with the plurality of philosophical systems, Lotze's wishes to show that philosophical variety is not self-contradictory. Different ways of conceiving the same reality, different expressions, and different perspectives on the same being are always possible. This idea is not new. Similar to Hegel (1830, §13), Lotze also believes that the history of philosophy is not a sequence of contradictory systems, but rather a set of different systems referring to the same universe (*Weltall*), whose fundamental features (*Hauptzüge*) are made clear from different points of view (Lotze, 1885/1891, p. 3). In other words, Lotze sees reality (*Wirklichkeit*) as a whole (*Ganzes*) that can be grasped from different points of view (*Standpunkte*) (Lotze, 1856, 1858, 1864, 1885, 2017, pp. 334–35; see also Baab, 2018; 131n, pp. 185–88).

§14 of the *Medicinische Psychologie* helps clarify Lotze's perspectivism. While discussing Herbart's realistic stance and Hegel's idealistic point of view in psychology (Lotze, 1852, pp. 151–60), Lotze points out that these two philosophical perspectives simply have different but very well-defined goals and, therefore, their mutual “coexistence” is possible without contradiction (Lotze, 1891, p. 9). Realists see the world as a multiplicity of appearances (*Erscheinungen*). They also believe that beyond appearances, a simple (*einfach*) and unchanging (*unveränderlich*) structure can be found, whose main points are unrelated (*beziehungslos*). Idealists, on the other hand, believe that beyond all appearances, a level of the world exists that alone constitutes reality. A typical realist feature is a strictly causal understanding of the world (Lotze, 1852, p. 156). Idealists, in contrast, maintain that the structure of the world is ideal. In agreement with Hegel and the idealists, Lotze maintains that the structure of the mind is ideal. However, he also claims that it is not merely an idea, but it is closely related to matter, anatomy, and physiology, and, therefore, to science (p. 157). Psychology as a result relies on a self-reflecting philosophical observation of scientific (“microscopic”) content to organize it into a unity.

A key distinction needs to be introduced concerning Lotze's perspectivism and his dialectics. Lotze dialectically argues that reality has two dimensions, the natural and the mental world, which can be observed and handled from two different points of view: the scientific point of view and the philosophical point of view. To put it simply, he believes that there are two distinct levels of reality that have different structures and can be investigated from two different points of view. The natural world has a mechanical structure that follows the law of inertia, while the mental world is teleologically ordered. The former is studied by science according to the principle of mechanism, the latter by metaphysics according to the teleological one. These principles have different norms and different goals. The principle of mechanism follows the causal chains and aims at the *description* of the natural world, while the

principle of teleology is structured on the concept of finality and aims at the *explanation* of the mental world. Having different norms and goals, the two principles are not contradictory and can coexist.

Based on a dialectical view of reality and a perspectivist theory of knowledge, Lotze then introduces the principle of teleomechanism (Vagnetti, 2021, pp. 319–326). This is seen as particularly helpful in biology and psychology, that is to say, disciplines dealing with living systems. Biological nature is seen as oriented according to purpose. However, as soon as a system has developed its purpose, it is seen to keep on mechanically. According to this model, numerous intersections are identified between the mechanical world and the finalistic world. A purely scientific point of view would only allow mechanistic descriptions; similarly, a purely metaphysical point of view would only see teleological explanations as valid. The distinctive feature of Lotze's theory, and also its difficulty, is its richness in interconnected perspectives: from mentalistic tendencies understood as “a personal manner of reading things, a poetic intuition of the cosmic life” to extremely objectivistic and scientific tendencies, as exemplified for instance by his atomism, antipsychologism, and local sign theory (Santayana, 1889/1971, p. 155).

3 | PHYSIOLOGICAL PSYCHOLOGY BETWEEN MATERIALISM AND MENTALISM

The main issue addressed by Lotze in *Medizinische Psychologie* is that of mental phenomena (*psychische Erscheinungen*): are they produced by a psychic principle of the mind without any bodily action, or are mental states produced by the cooperation (*Zusammenwirken*) of the physical forces of the body and the life of the mind (Lotze, 1852, 9 ff; Lotze, 1891, p. 4)?

Concerning the reciprocal action of body and mind, Lotze lists three possible points of view: materialism, the identity of real and ideal, and mentalism.⁴ Materialism embraces the methodological principle of natural science and denies the autonomous existence of the mind, to avoid any unjustified duplication of the explanatory principle. In defense of the unity of the explanatory principle of reality, materialism not only rejects the existence of a psychic principle, but also and more importantly lays claim on psychology as a natural science. Mental life is accordingly seen as exclusively depending on the material elements of the body (Lotze, 1852, p. 30). According to Lotze, materialism is based on a “fragmentary and naturalistic metaphysics,” which mistakenly claims that everything can be reduced to the level of experience and intuition of natural sciences (p. 32). The body would then have ontological primacy; the mind would be only a secondary effect of brain processes. Materialism consequently disregards all inquiry on the deepest and most essential needs of the human mind, such as esthetic and moral needs. Materialist positions are bound to reject the immortality of the mind and free will as well (p. 35). On these points, Lotze clearly does not see eye to eye with materialists (p. 65).

A second set of points of view on psychology is labeled by Lotze “identity of the real and ideal” (45 ff.). According to this point of view, real and ideal are identical, and living beings (*beseelter Körper*) lead so to speak a double life (*Doppelleben*). This identity is not achieved through the reduction of the mind to the body, but ensues from the fusion of the two, which gives rise to an indivisible unity. Organisms are both matter and mind; they are chemical–physical processes and phenomena of consciousness. According to the identity theory, real and ideal, body and mind are equally original (*ursprünglich*) and feature an indissoluble (*unlösbar*) unity. Materialist unity refers to the atoms of matter with their masses and specific properties, and includes mental life as one of these properties. As a result, mind turns out to be a property of matter. Differently, the *ideal-reality* unity is an original unity based on which mind and body have the same ontological value.

Supporters of the identity theory would furthermore see materialist theories as applying an exclusively external point of view to reality, inasmuch as all events, mental and bodily life alike, are, materialistically speaking, explained in terms of masses, forces, and the application of forces to material atoms—each of them with its own mass—under certain circumstances. Such an understanding of bodies as simple aggregates of atoms would fail to account for inner phenomena and the sense of wholeness. In contrast, core to Schelling's *Naturphilosophie*, the theory of

identity understands the living organism as an absolute with both a bodily and a mental side. Simultaneously corporeal and mental, the organism is seen to move according to its own force: a *Lebenskraft*, which is inherent in things.

While qualifying it as an all-causing mystical force, Lotze rejects the explanatory value of the notion of *Lebenskraft* for physiology (Lotze, 1842, pp. IX–LVIII; Lotze, 1851). He believes, in fact, that an organism cannot have only one drive for its existence. In addition, he points out that the identity theory fails to clarify the connection between the all-encompassing life force and individual physiological forces. Nevertheless, the notion used to be quite popular among physiologists, such as Gottfried Reinhold Treviranus (1831/1833) and Johann Heinrich Ferdinand von Autenrieth (1836). It seemed indeed to provide the advantage of explaining how things are moved and shaped from within, as well as a way out from the model of the world populated by mere objects on which external forces act. Living beings could accordingly be seen as subjects of movement. However, Lotze is adamant that such a mystical and nebulous concept is not useful for scientific research. The organic body, he argues, cannot have only one cause that moves it and shapes it, because the body is an aggregated system of multiple contemporary activities connected to its constituent elements. The physiological research cannot rely on the use of the *Lebenskraft*, then, because one single absolute force would not be able to explain the multiplicity of forms, sizes, and directions characterizing the molecules that form organic aggregates. And if one is to assume one vital force for each single molecule, then an explanation is required of how the universal vital force coordinates these particular forces (Lotze, 1852, pp. 53–55). At variance with this approach, Lotze claims that the organic body is a means (*Hilfsmittel*) for the activity of the mind.

All in all, Lotze is not persuaded by the fusion (*Verschmelzung*) of body and mind giving rise to an indissoluble unity. In short, whereas materialism is a radical reduction of the mind to the body, the identity theory identifies the mind as an organic body. But their mistake is similar. In variance with both, Lotze argues that the mind and body are *incomparable*. Be this as it may, at the same time, they interact.

One more approach to psychology is called *mentalism*. Introduced for the sake of completeness, mentalism is said to understand reality as mental, and matter as secondary or dependent on the mind (55). One should remember that Lotze's goal is a unitary understanding of reality both in its mechanical and in its teleological or mentalistic aspects. What mentalism allows him to do is to establish a connection between the esthetic and moral needs of the mind and the natural sciences, notably physiology.

Mentalism sees “matter as the appearance-form (*Erscheinungsform*) of super-sensory things (*übersinnlichen Realen*)” (p. 64). In this regard, the object studied and analyzed by the natural sciences would not be the whole world or reality itself, but a portion of it, that is, its observable and experienceable properties. To better understand this key point in Lotze's theory, one should keep in mind, once more, his dialectical understanding of reality. While the mental dimension of reality is given primacy over the natural one, the former alone cannot determine or define the latter. One has a finalistic structure and the other a mechanical one. Lotze clarifies, for instance, that mechanisms such as the law of inertia are universally valid and extensive; they apply to both natural and cultural processes. All sciences, from physics to physiology to psychology, are not wrong in applying the principle of mechanism. Lotze's *Medizinische Psychologie* is no different in that it prominently features the “psychophysical mechanism.”

As previously mentioned, the principle of mechanism is the methodological principle through which the natural sciences *describe* their objects. However, the esthetic and moral needs of human beings are not satisfied by the mere description of these objects. They require us instead to *understand* and *interpret* these objects. In other words, they seek to grasp their value and meaning; it is no coincidence that values and meanings find ample space in Lotze's work. This higher dimension of the mind (*höhere Sphäre des Geistes*) with its teleological structure is given primacy over the natural and mechanical one. A reconciliation of these two principles, for the sake of a global understanding of reality, remains, nevertheless, the main task of Lotze's contributions. To clarify this point even further, in his *Medizinische Psychologie*, he distinguishes between two different forms of knowledge: *cognitio rei* and *cognitio circa rem* (p. 57). *Cognitio rei* is the knowledge of indefinable essences, as hinted at, for instance, by Plato (*Theet.* 201d–202b) and Aristotle (*Metaph.* 1039b27).⁵ *Cognitio rei* cannot be put into words. *Cognitio circa rem*, on

the other hand, is the knowledge of the relations between objects. This is also the difference between intuitive and discursive knowledge, between values and facts. This is exactly what Lotze's teleomechanism principle states. One can *describe* the world scientifically, but only teleologically *interpret* it. The principle of teleomechanism states that scientific description represents only one level of reality. But the reality is much richer than that. All of this leads Lotze to claim that mentalism is only to be understood as a "goal of [one's] views, but not as a formula that can be helpful in the practice of explanation of individual things. [...] Its mention would therefore be necessary only for the sake of completeness" (Lotze, 1891; third vol., first section, 5). Mentalism is, therefore, only a regulative principle. The *ideal of science* is not the same as the *practical realization of science*, Lotze says.

This amounts to saying that mentalism is not useful for physiological psychology in its practical realization; it represents only a higher perspective on science. Understood as an ideal, science should be able to see the given laws of nature simply as the necessary consequences of mental states. As a result, psychology would be seen as a theory of the fundamental principles of being and action, and physics only as a demonstration of the particular forms developed by mental life activity (*Regsamkeit*) within the spatial-temporal perceptions (Lotze, 1852, p. 64). But things are different when it comes to the practical realization of science. Understood in its practical use, science deals with constant multiplicity and, in the case of psychology, with the dualism of mind and body.

All in all, although he agrees with the methods and objectives of science, Lotze outlines a philosophical view effectively contrasting materialist claims. He notably rejects the materialist idea of matter as explanatory principle for the life of the mind, and claims that "the idea of matter [is] the darkest and most uncertain product of our reflection" (Lotze, 1852).

Lotze also criticizes the "mechanic of mind" developed by Johann Friedrich Herbart and Moritz Wilhelm Drobisch. Their ideas for mathematical psychology, based on which our representations vary in intensity and can be quantified mathematically, are rejected all together. In particular, in his "Psychologischen Untersuchungen" (1853), Lotze argues, at variance with Herbart, that there is not a variation of intensity, but what varies is rather the content of our representations. As it is captured through sensation and then reproduced through representation, content should be understood as having empirical origins. Intensive magnitudes have, therefore, to do with sensation and not with representation. Lotze finally advocates the connection between intensity and psyche—he refers, for example, to emotions as intensive magnitudes—although it mostly defies mathematical quantification.

By way of conclusion, we will say that Lotze rejects the idea that matter and mind are identical. Furthermore, he maintains that, for the sake of the practical development of science, a clear separation between body and mind is valid. He consequently raises the problem of how to explain the interaction between body and mind, and develops the idea of a "physical-psychic mechanism" (p. 65). In this respect, to understand the relationship between body and mind, he focuses on the causal relationship between body and mind as a key issue.

4 | PSYCHOPHYSICAL MECHANISM

As a scientific discipline, physiological psychology embraces a mechanical understanding of nature. Its results require, as previously said, philosophical examination. On the whole, the approach of psychophysical mechanism is based on a philosophical idea of primary importance: mind and body are incomparable (*unvergleichbar*), but, nevertheless, in reciprocal relation (*Wechselwirkung*). A very special relationship or nexus is assumed between the two. The task of psychology is to deal with the basic incomparability (*Unvergleichbarkeit*) between the physical change of a material body and the psychic event of the mind (p. 70).

Concerning this latter Lotze theorizes, the two-fold meaning (*Doppelsinnigkeit*) of the ideal elements. The types and designs of our psychic organization are said to be ideal, in that their form of existence is ideal and, as such, the mind is the opposite of the real and material form of the world. But it is also true that, like matter, the human mind exists in the world and has a positive reality of autonomous existence, which enables the ideal to act in the bodily world. The interaction between mind and body is said in conclusion to be "dialectical." In other words, they are

simply two different kinds of reality (*zwei verschiedene Gattungen des Wirklichen*), and the movements that take place in one state of reality are transferred to the other and take up a different form.

What is more, whereas natural sciences have exclusively to do with movements that are *comparable* (as physical movements) and can analytically infer processes based on given conditions, in psychology, no inference of inner states of mind is possible based on physical states of matter. The two need to be seen as incomparable (p. 76). That a scientific explanation of their interaction is not viable, however, does not mean that it does not exist. On the contrary, according to Lotze, the causal connection between these two elements is a fact. It is us who just cannot provide an appropriate explanation. In short, human knowledge is seen as failing to achieve a full understanding of the mediation element (*Vermittlungsglieder*) between mind and body, that is to say of what allows the physical element to become mental and vice versa. This does not hinder, however, the possibility of scientific research in general. It only prevents psychology from taking the constructive form of science (p. 77).

According to Lotze, psychology will never be a natural science able to explain “how” within the psychophysical mechanism the transformation of a bodily state into a mental state takes place, but an *occasionalistic* understanding of the physical-psychic mechanism is certainly possible. He claims in this respect, that the fundamental incomparability between body and mind, “does not allow any construction of mental states based on movements, but rather only the real and proportional reciprocal concatenation (*Aneinanderkettung*) of the two” (p. 78).

Allowing for the empirical *description* of the mutual interaction between mind and body, Lotze's occasionalistic theory outlines the methodological ground on which, based on the recognition of the limits of human knowledge, scientific research in this field can be carried out.

In other words, the occasionalist understanding of the physical-psychic mechanism does not allow us to explain “how” a material stimulus, running through bodily sensations, can produce a mental state. This notwithstanding, we are able to grasp the *correlation* between body and mind. As Lotze writes in *Medizinische Psychologie*:

We cannot say then how a material movement-based stimulus meeting our body starts to produce a mental state, but we can hope to answer the question of *which* simple outer stimuli formulation for the perception of are generally and by law concatenated with *which* simple inner states; and how the whole interaction between body and soul, that is to say, the physiological life of the soul results from the further composition of these couplets of inner and outer events. Since we draw from experience the fact that always and in general, a given bodily state A produced by an external stimulus is connected to a state of the soul α , or that from a given state of the soul B always consequently follows a bodily state β , we consider A and B as causes, to which the course of nature has tied consistently and in general the reality of α and β . (Lotze, 1852, pp. 77–78).

Of the special, refined, and subtle nexus underpinning the mutual interaction of mind and body, the empirical psychologist can grasp only the empirical-phenomenal component, that is to say, a series of physical and mental states connected with general regularity. Such regularity is the object of concern of physiological psychology. Instead of analytically inferring the mind from the body, it assesses and investigates “which” physical stimulus is connected, according to laws, to a given psychic event. Some regularities can thereby be discovered in the relationship between physical movements and psychic states. Psychology then *records* these regularities as psychophysical phenomena—that is why one can speak of “concrete laws”—without being able to explain what actually happens in the transition from one state to the other. This is a mystery beyond human intellectual faculties.⁶

As physiological psychology investigates the mutual interconnection of the mind and body (i.e., psychophysical mechanism) only from a scientific-naturalistic point of view, it only deals with the empirical-phenomenal effects of this mechanism. However, according to Lotze, the empirical data collected by the experimental psychologist are in need of philosophical interpretation. In this respect, Lotze presents a philosophical theory of the *real nature* of the mutual interconnection between mind and body. As previously mentioned, this philosophical interpretation should

be taken as a higher perspective on things. In this regard, Lotze claims that changes that take place in one sphere of reality are simply reflected on (or “translated” in) the other and vice versa. He also maintains that the mental world has primacy over the material and corporeal sphere; the latter is nothing more than a mere form of appearance of the former. Mental states (i.e., to say, internal changes of the mental sphere) do not act directly on the body—which is merely an appearance—but are themselves phenomena (Lotze, 1852, pp. 79–80). This amounts to saying that, whereas from the scientific point of view incomparability is unavoidable and only an occasionalist view can be applied, from the metaphysical point of view, body and mind are homogeneous, and the body is just an appearance of the mind.

5 | INTERACTION (WECHSELWIRKUNG) OF MIND AND BODY

The idea of the psychophysical mechanism is, according to Lotze, directly connected to that of freedom of the mind. Freedom has a two-fold meaning. One can understand freedom as freedom of will: are we free to decide or are our choices predetermined? Only metaphysical inquiry can answer this question. As a work of physiological psychology, *Medizinische Psychologie* only deals with the other meaning of freedom, connected to the following question: are the links in the causal chain that determines the will uninterruptedly made up of bodily functions? or are also mental states active in it? While granting that mental states are indeed bodily stimulated, Lotze argues that they act in that causal chain according to their own laws, and not according to merely physical laws. He mentions indeed “psychic links” acting in the causal chain according to psychic laws. But this is also the furthest physiological psychology should aim to reach. It cannot go beyond this threshold without turning into metaphysics. Whether or not the mind is also free from causality, in general, is a matter for metaphysics. In other words, metaphysics is supposed to explain whether such inner states of the mind form, in turn, a causal determination mechanism devoid of freedom similar to what we assume in the natural course of nature.

Based on common experience, one can say, for instance, that will-based impulses give rise to muscular contractions. In other words, a measurable amount of mechanical movement *derives* or *arises* from an inner state proper to the mind. Mental states, however, have a different nature from bodily states; they are both supersensible and embedded in bodily masses. Mental states that are based in the body can then be regarded as starting points of spatial movements. Such spatial movements arise due to a cause that is inhomogeneous to them. While the effect is physical, the cause is mental. However, the ladder of causation is maintained. As Lotze thoroughly explains in *Mikrokosmos*, causation does not lose its universal—that is to say, with no exception—reach. But the question remains: how is it possible for something mental (e.g., thoughts, emotions, aspirations) to cause bodily movement? Lotze addresses this question by applying the dialectical method again: mental states are both ideal and bodily. Mind and body stand “on the same ground of reality” (*auf gleichem Boden der Wirklichkeit*) (p. 93).

It is not only the case that a mental cause produces a physical effect. The opposite also occurs: also bodily states can cause mental states. According to Lotze, the mind absorbs (*absorbieren*) part of the physical quantity of body's movement (pp. 93–94). In the act of seeing or hearing, sound or light waves propagate from the object, strike the sense organs and cause nerve excitation. Such excitation should be regarded as the transformed equivalent of the actual magnitude of the light or sound wave (*umgeformtes Aequivalent seiner Wirkungsgrösse*) (p. 94). The change of form that occurs in the transition from wave to nervous excitation is called “transformation to equivalent.” Such transformation to equivalent occurs not only between wave and nerve, but also between nerve (and muscle) and mind-producing sensations, emotions and thoughts.

The psychophysical mechanism is interpreted by Lotze as a chain that causally connects the physical and psychic parts of the mechanism itself. Granted that a physical movement produces a psychic state and vice versa, there is no break in the causal chain but only a transformation (*Umgestaltung*) of the triggering cause into the proper form of the effect (p. 95). The cause-and-effect relationship between incomparable states is maintained.

In sum, for Lotze, every sensation (*Empfindung*) is to be interpreted as a transformed equivalent of a previously differently appearing magnitude or quantity, for instance, that of organ oscillation, muscle contraction, or some other bodily movement. Every muscular contraction is to be seen as equivalent to the excitation that preceded it in the form of the psychic process of exertion (*psychischer Strebungsprozess*). Thus, in general, it can be said that the cause occurs in its peculiar form (bodily or mental) and stimulates the production of an effect as its equivalent, which is given in another form.

Bodily and mental functions are of different “quality,” however, the former presuppose the latter, or rather, they presuppose, as an inborn (innate) property of the mind, the organizing capacity that, from the information the body sends it, produces (*erzeugt*) events or states that have an entirely new form than the original one. In other words, the body provides the object of application of that capacity of the mind. Once the mind has transformed or “translated” the physical impulse into its psychic equivalent, the latter applies as a stimulus for other physical processes in the body or for other psychic processes.⁷ The synergy between mind and body is so deep that Lotze describes it in terms of organic unity (p. 97). Through the concept of *equivalence* Lotze namely supports the idea that the mind is in the body and the body is in mind and for that reason, they merge into an organic whole. As a result, a dynamic view of the mind is outlined (Vagnetti, 2020, pp. 37–39).

The mind activity elaborates the data provided by the body in a nonpassive way. The mechanism at issue is not a fixed series of physical changes accompanied by an equally fixed series of mental changes: physical events, that stimulate the sense organs, are “read,” organized, and then transformed by the mind into something purely mental that exerts a new mechanical force and produces new physical changes. Physiological psychology showed that the brain is much more than a mere material object within the path of mechanically predetermined physical movements.

In the interaction between body and mind, as described in Lotze's *Principle of Mechanism*, while the mind uses the body for the realization of its own ends, the body supports and drives various mental functions. Sensations, intuitions as well as the highest functions of the mind always have bodily support. Based on the functional form of the particular histological elements, on the convergence of several organs into one, on the proportions between the organs and the different parts of the body, and, finally, on the succession of the various stimuli and stages of the development of the body, this latter drives the formation and combination of the human mind (pp. 97–106).

6 | LOTZE'S THEORY OF LOCAL SIGNS

When venturing into Lotze's theory of local signs, a preliminary annotation is required: Lotze differentiates the space of perception or *sinnlicher Raum* connected to the theory of local signs and space in general (*vollständiger Raum*). Only the former is an object of concern for the *Medizinische Psychologie*. It is important to add, in this respect, that, whereas space, understood from a metaphysical point of view, is a pure extension with an infinite multiplicity of directions, the perceived space has three directions only (pp. 333–334; 417–418).

With the theory of local signs, Lotze aims to explain how comes that the objects (*qualia*) in the visual field appear spatially ordered. Spatial perception is seen to begin with the stimulation of the eye nerve fiber by an external object. A transformation (*Umgestaltung*) then takes place between the excitation of the nerve fiber and the actual representation in the visual field. Lotze states that the excitation of the nerve fiber turns into a nonspatial and nonmaterial element, that is to say, a sum of intensive states of the mind.

In this regard, Lotze claims that our vision of space is never a mere reflection of the outer world, but always a reproduction or reconstruction of space (*Wiedererzeugung der Räumlichkeit*) (pp. 328–29).⁸ This reproduction includes three factors: the physiological element or local sign, the psychological element such as the feeling of movement, and the global vision of space. Lotze clearly rejects any naïve correspondence theory of space, according to which there would be no difference between perceived space and the effective space of the external world (Lotze, 1891, p. 12).

While tackling the issue of the reconstruction of spatiality in general (*Wiedererzeugung der Räumlichkeit*), Lotze's theory of local signs is based on an *interaction* between physiology, psychology, and philosophy. The system of local signs is envisaged as a physiological nervous process that accompanies (*begleiten*) sensations. For example, when I see an external object, Lotze would argue, this generates a sensation of color in me. This sensation is, however, not sufficient to spatially locate the object to which a given "sensory quality" refers. The localization of the object requires an additional (secondary) sensation (*Nebenempfindung*) which carries the spatial information necessary to locate the object, that is to say, to locate the stimulated nerve. The nerve localization allows to place a given object in the space "through a sort of projection of the disposition assumed by the sensations of the object's qualities during their manifestation on the epidermis or on the retina" (Poggi, 1977, p. 517; see Lotze, 1852, pp. 330–31).

In reference to the above-outlined basic perception of space, the oculomotor movements responsible for vision direct stimulation toward the center of the retina. As a result, a system of local signs is developed. Concerning vision, Lotze could rely on pioneer studies by Jakob Friedrich Fries (1839), Alfred Wilhelm Volkmann and Marshall Hall (1842) (see Woodward, 2015, p. 211). As to touch, Lotze picks up Ernst Heinrich Weber's idea that local signs develop in sensory circles. Being a merely physiological nervous process, the system of local signs is not provided with an intrinsic spatial order. The spatial order is introduced by the mind (Lotze, 1852, pp. 334–36).

According to Lotze, when our nerve structure is stimulated by the outer world, it creates a whole system of differentiated local signs connected to given body and muscle movements. Muscles receive an immediate impression (*unmittelbarer Eindruck*) and perceive the size of their movement (*die Größe der Bewegung*). What is more, muscle movements are connected to certain psychical states. In this respect, echoes of Gustav Adolph Spiess' (1844) theory of the feeling of movement (*Bewegungsgefühl*) and muscle-feeling (*Muskelgefühl*) can be found in Lotze's account (Vagnetti, 2021, pp. 116–17).

In the specific case of visual perception, the psychological component consists in the continuous movements of the optical muscle and the related feeling of movement, which introduces the spatial order as part of the intensive elements. As for touch, the psychological component is always the sensory circle. The various sensory circles, through their reciprocal overlapping, give rise to the sensation of extension, as suggested by Weber's inquiries. In conclusion, as Woodward (2015, p. 210) aptly puts it:

In his general formulation for the perception of visual and cutaneous surfaces, Lotze postulated a system of nervous excitations, *a* and *b*, accompanied by sensations. These are joined by a new nervous event *c* and a new sensation signaling their location in relation to one another. His definition of the local sign *c* assumed an interactionist theory of mind. Bodily movements release mental changes, whereas mental laws characterize mind.

One should also add that, according to Lotze, the ability to organize elements in spatial series is innate to the mind, while the organized elements (i.e., the local signs) are empirical. Thanks to its innate ability, the mind organizes local signs into spatial series within a two-dimensional visual field; depth is instead empirically acquired through touch (Lotze, 1852, pp. 417–418). In this sense, Lotze takes a median position between empiricism and nativism (Stumpf, 1873, p. 73).⁹

Lotze's *interactionist* theory of mind develops on three levels: a physiological level (in terms of local signs), a psychological level (in terms of feeling of movement), and a philosophical level. Lotze is notably well aware of what philosophical implications his physiological account has. In his *Kritik der reinen Vernunft*, more specifically in its section "Die transzendente Ästhetik," Kant argues that any theory of perception must presuppose a priori forms of intuition that organize the sensible manifold into the unity of consciousness. Lotze's innovation is to claim that there are physiological mechanisms underlying the forms of intuition that enable the mental "reconstruction" of space in consciousness.

It is also worth mentioning that, according to Lotze, there is not a one-to-one correspondence between the physical stimulus and sensation. The products of the activity of the mind do not correspond exactly to external

reality. According to Lotze, the mind *produces* representations on the basis of sensation; similarly, sensibility spontaneously produces sensations or feelings on the basis of physical stimuli. The life of the mind, even at its lowest levels, is productive. In this sense, Lotze writes that our perceptions and the outer world share the same relation as the wooden key of a piano and the sound that it provokes (p. 177). Along the same lines, Hermann von Helmholtz later claims that sense organs produce not a corresponding image of the external world, but only “signs” that we mentally re-elaborate and then transform into ideas or representations valid for us. Similar ideas had been further developed by the Southwest Neo-Kantian Heinrich Rickert (Milkov, 2023, Ch. 9).

In conclusion, Lotze's radical opposition to the reduction of mental events to physical events leads him to argue that certain crucial elements of human mental life, such as knowledge, will, and emotion, cannot be explained in strictly physical-physiological terms. The general objective of Lotze's philosophy is thus to overcome any partial vision of humans and nature, whether mechanistic, materialistic, or idealistic. In this respect, the greatest achievement of Lotze's *Medicinische Psychologie* lies less in the results of empirical research presented there concerning specific mental processes, and more in its in-depth scrutiny of the interrelation between physiology, psychology, and philosophy.

The in-depth scrutiny of the interrelations among physiology, psychology, and philosophy in Lotze's work is of interest and importance to the historian of early scientific psychology today because it graphically shows the genesis and development of that discipline. Between 1850s and 1870s, Lotze's interactionist theory of mind was discussed by a generation of experimental psychologists: Georg Meissner, Johann Czermak, Wilhelm Wundt, Edwin B. Titchener, Hermann von Helmholtz, and Carl Stumpf, among others. Meissner and Czermak further developed Lotze's concept of the “sensory circle”; Wilhelm Wundt, referring to *Medicinische Psychologie*, stated that Lotze deserves most credit for analyzing sensory perception from the psychological side (Wundt, 1858, p. 240). Titchener essentially agreed with Wundt. Helmholtz employed many of the ideas contained in Lotze's *Medicinische Psychologie* to develop his empirical theory of vision.¹⁰ In 1873, Lotze was instrumental in offering his former graduate student Carl Stumpf a professorship in Würzburg (as a successor of Franz Brentano), on the basis of Stumpf's dissertation on spatial perception (*Über den psychologischen Ursprung der Raumvorstellung*, 1873) that became influential of its own. Lotze also wrote an appendix (*Anhang*, pp. 315–324) to Stumpf's book, discussing agreement and disagreement regarding Stumpf's interpretation of his theory of local signs. Lotze's theory was psychophysiological; Stumpf's interpretation was psychological. Clearly, psychologists had already made extensive use of Lotze's psychophysiological programs in the first two decades of the 20th century, in many cases long before the establishment of laboratories and experimental institutes.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in Universität Paderborn, Dissertation, 2020 at 10.17619/UNIPB/1-968, reference number urn:nbn:de:hbz:466:2-37262.

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ENDNOTES

- ¹ This has been supported by very recent new editions of his main books: in 2017 a new edition appeared of *Mikrokosmos* and in Lotze (2021) of *Medicinische Psychologie oder Physiologie der Seele*. In addition, Lotze has been given ample space in scholarly contributions, such as: *Hermann Lotze's Influence on the Twentieth Century Philosophy* (forthcoming, 2023) by

Nikolay Milkov; *The New Yearbook for Phenomenology and Phenomenological Philosophy*, Volume 18, Special Issue: Gian-Carlo Rota and *The End of Objectivity* with a chapter on Lotze's philosophy; the Italian journal *Philosophical Readings* published the issue *Lotze's Back!* (2018); Hermann Lotze. *An Intellectual Biography* by William R. Woodward (2015); *Lotze et son héritage* edited by Federico Boccaccini (2015); and *Late German Idealism: Trendelenburg and Lotze* by Frederick C. Beiser (2013).

- ² According to Lotze, as it is the case also for Hegel, "speculative" means theoretical.
- ³ Husserl was indirectly influenced by Lotze's thought through Carl Stumpf. Carl Stumpf studied and earned his doctorate at the University of Göttingen under the supervision of Lotze. On Lotze's influence on Husserl, see Hauser (2002).
- ⁴ I translate the German term *Spiritualismus* as "mentalism" for three reasons: (i) Today, the word "spiritualism" is mainly a term of parapsychology which means belief that the spirits of the dead exist; (ii) In the 170 years after Lotze published his *Medicinische Psychologie*, this term failed to become established in germanophone philosophical literature as well as in anglophone philosophical literature; (iii) At pp. 55–65 of Lotze's *Medicinische Psychologie*, one finds the term "spiritual" (*das Geistige*) employed in the sense of "primordial reality" (*ursprüngliche Realität*). The German word *Geist* is commonly translated into English as "mind." That's why "mentalism" seems nowadays a more appropriate translation than "spiritualism."
- ⁵ On *cognitio circa rem* and *cognitio rei*, see, Milkov, N. (2021).
- ⁶ Lotze's idea was later adopted by Emil Du Bois-Reymond (1872) and Carl Gustav Jung (1964).
- ⁷ This idea of transformation as "translation" is key to Lotze and Helmholtz's theory of local signs.
- ⁸ According to Kant, the idea of space is innate to us; differently, according to Lotze, it is the mind's organizing activity that is innate and that makes it possible to coordinate and process sensible data.
- ⁹ Empiricism claims that spatial representation is empirically acquired through the senses, nativism affirms that it is innate. Nativism has many forms: Kant affirmed that space was part of the transcendental structure of subjectivity, while Karl Ewald Konstantin Hering affirmed that spatial perception was innate in the physiological structure of the nervous system. In fact, Lotze overcame both empiricism and nativism because the representation of space was neither innate nor empirically acquired but consisted of specific mental acts (innate) that ordered empirically acquired data.
- ¹⁰ On Lotze's influence on Helmholtz see, Vagnetti, M. (2023). Hermann Lotze and his reception by Hermann von Helmholtz. In *Zeitschrift für philosophische Forschung* (forthcoming).

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