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**The Mind-Body Problem in the Origin of Logical Empiricism:
Herbert Feigl and Psychophysical Parallelism**

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It is widely held that the current debate on the mind-body problem in analytic philosophy began during the 1950s at two distinct sources: one in America, deriving from Herbert Feigl's writings, and the other in Australia, related to writings by U. T. Place and J. J. C. Smart (Feigl [1958] 1967). Jaegwon Kim recently wrote that "it was the papers by Smart and Feigl that introduced the mind-body problem as a mainstream metaphysical Problematik of analytical philosophy, and launched the debate that has continued to this day" (Kim 1998, 1). Nonetheless, it is not at all obvious why these particular articles sparked a debate, nor why Feigl's work in particular came to play such a prominent part in it, nor how and to what extent Feigl's approach rests on the logical empiricism he endorsed.

Following the quotation cited, Kim offers an explanation backed by a widespread (mis)conception of logical empiricism. He claims that work concerning the mind-body relation done prior to Feigl and Smart dealt either with the logic of mental terms – as Wittgenstein's and Ryle's work had – and therefore missed the point, or lacked the sophistication of our modern approaches. One exception, C. D. Broad's laudable work, could not alter this, for it "unfortunately . . . failed to connect with the mind-body debate in the second half of this century, especially in its important early stages" (Kim 1998, 1). Kim seems to extend his verdict on Ryle and Wittgenstein to include all authors writing on the mind-body problem throughout the decades preceding Feigl and Smart.

If we ask what distinguishes the young mind-body dispute of the late 1950s from older debates on the topic, we are told that Feigl and his friends and precursors of the Vienna Circle introduced new methods of logical analysis for solving or dissolving the mind-body problem. Feigl himself would probably have given that very answer. Others might say that the debate grew out of general frustration with Cartesian dualism and that it acquired its own specific character in dealing with the problems created by refuting that position (Jackson 1998, 395; see also Bieri 1997, 5-11). The story goes that reflection on the mind-body relation was horribly wrapped in Cartesian obscurity and confusion until Feigl and the Australian materialists entered the scene. Their "brain state theory," writes Kim, "helped set basic parameters and constraints for the debates that were to come – a set of broadly physicalist assumptions and aspirations that still guide and constrain our thinking today" (Kim 1998, 2).

Interpreting the difference between the older and younger mind-body debate in the United States in this way may contain a grain of truth, but from the perspective of German-speaking scholars, it is entirely wrong. Seen against the backdrop of nineteenth-century German and Austrian philosophy, Feigl's approach was neither novel nor audacious; he merely revived a tradition that had once been a mainstream topic turned unfashionable; to be exact, he modified and spelled out one specific traditional position.

It is time to readjust our appraisal of Feigl. I intend to show that Feigl's treatment of the mind-body problem upheld an active anti-Cartesian tradition; it follows a pattern in philosophy that was widespread in German-speaking countries throughout the nineteenth century and well into the twentieth, even after World War I.¹ According to Thomas Kuhn's categories, not only Feigl, but almost all the scholars who discussed the mind-body problem within the Vienna Circle and similar movements, were doing "normal science," guided by one single paradigm, so there was nothing revolutionary about Feigl's endeavors. Clearly, Feigl's solution is characterized by the particular twist he gave to the dominant paradigm – an originally neo-Kantian attitude passed on to him by his mentor Moritz Schlick.

In order to understand Feigl's project, we need to first take a look at how the mind-body relation was discussed from mid-nineteenth century onward. So sections 1 and 2 of this chapter will deal with psychophysical parallelism, its popularity during the second half of the nineteenth century and how it was subsequently treated up to the late 1920s. My aim is to capture the setting in which young Herbert Feigl must have encountered the issue when he took up his university studies in Vienna in 1922. The third section deals with the special twist that Moritz Schlick and Rudolf Carnap gave the issue in their writings from that period. Finally, in the fourth section I analyze Feigl's fundamental essay "The 'Mental' and the 'Physical'" (1958) and discuss how it compares to positions he had advocated prior writing it.

Psychophysical Parallelism Dates Back to the 1850s

In order to properly understand twentieth-century mind-body debate, we must turn our attention to the 1850s.² At that time German-speaking scientists were engaged in a quarrel over materialism that came to be known as the "materialism dispute." In reaction and opposition to German idealism's metaphysical and speculative post-Kantian philosophy, authors like Carl Vogt, Ludwig Büchner, and Jacob Moleschott propagated a very radical, albeit philosophically indigent, materialism identifying mental processes with physical processes. Vogt, for example, stated that any astute scientist must come to the conclusion "that all those capacities that we consider to be activities of the soul are merely functions of brain substance; or, put in simple terms, that thoughts issue from the brain just as gall is produced by the liver or urine by the kidneys" (Vogt 1847, 206). Büchner refers to Virchow, who wrote: "An expert on nature acknowledges only (material) objects and their properties; whatever goes beyond that is transcendental, and transcendence means intellectual confusion" (Virchow, as quoted by Büchner 1855, 274).

As Büchner's reference suggests, at that time the materialistically motivated movement also aimed to weaken religious dominance; it contributed notably to political liberalism prevalent in 1848 and afterward. The outcome was that hardly a natural scientist or otherwise educated person dared risk seriously adhering to Christian or Cartesian dualism in solving the mind-body enigma. In one famous case the physiologist Rudolph Wagner gave a lecture at a congress for German natural scientists and physicians that started the whole materialism dispute. He insisted that for ethical reasons science must maintain belief in a personal God and in immortality, not only when scientific proof is lacking but even when science seems to disprove it. Needless to say, materialists scoffed.

As uncouth and simple as both the materialists' and their opponents' opinions were, combined with turbulent progress in physiology and gradual alienation from idealistic phi-

losophy of nature (*Naturphilosophie*), the dispute over materialism aroused more scientific interest in the question of how mind is possible in a wholly physical world. Any solution offered for the mind-body puzzle that violated scientific conceptions or was reminiscent of substance dualism was strictly rejected. The latter hypothesis never had many devotees among scholars in Germany anyway.

The introduction of Darwinism pressed the relevance of finding the mind's place in physical nature and increased support for materialism. Slowly this movement became "monism" – led initially by Ernst Haeckel, Darwin's advocate in Germany, and then by the founder of physical chemistry, Wilhelm Ostwald. In fact, it is most likely that in their youth all our (German-speaking) heroes of logical positivism devoured the monists' books, as Carnap himself admitted (Carnap 1963, 11). It is also known that Moritz Schlick played a prominent role in a monistic organization.

In terms of providing a serious philosophical position, the second edition of Friedrich Albert Lange's history of materialism, published in 1873-75 (Lange [1873-75] 1974), offered the most effective and sophisticated criticism of early popular materialism. While Lange defended Büchner against the claim that materialism terminates in a loss of morals, and also admitted that as a *method* materialism was not only feasible but also necessary for scientific work, he went to great lengths to analyze the difficulties, weaknesses, and contradictions inherent in materialism, if taken as a serious philosophical position. This critique in turn decidedly raised momentum for neo-Kantianism and contributed considerably to a revival of philosophy in general in Germany after 1860.

Lange ventured beyond offering a mere critique of materialism by affirming a doctrine that was to determine the course of the mind-body debate well into the twentieth century, namely the theory of "psychophysical parallelism." Along with many other scientists and philosophers of the period, Lange viewed psychophysical parallelism as compatible with science and science's materialistic inclination, without necessitating recourse to crude materialism of the type disseminated by Büchner and others. Simultaneously, psychophysical parallelism promised to provide a sophisticated program of empirical scientific research into the mind-body relation.

Psychophysical parallelism had been established and developed by the physicist, philosopher, and psychologist Gustav Theodor Fechner. First mention of his theory dates in the 1820s, but the contents became well known through his mature work, *Elements of Psychophysics*, in 1860.³ This work marks a turning point in the history of experimental and quantitative psychology, and, I claim, also marks a crucial moment in the history of the mind-body debate and the history, or – if one prefers – the prehistory of scientific philosophy in general. Fechner himself did not use the term "psychophysical parallelism" to designate his standpoint. My guess is that this designation has been taken from Alexander Bain's book *Mind and Body* (1874), published in an authorized German translation fourteen years after Fechner's main work; but it may equally be to the merit of the unremitting psychologist Wilhelm Wundt (see Mischel 1970, 10).

A widespread misconception pervading pertinent English literature confuses this type of parallelism with forms of Cartesian doctrine of two noninteracting substances, such as doctrines of occasionalism or preestablished harmony.⁴ Psychophysical parallelism means the exact opposite: It declines the Cartesian division of the world into extended substance (matter) and nonextended substance (mind).⁵ While this conception is congruous with Leibniz's

notion of noncausal "conformity of the soul and the organic body" (Leibniz 1714, § 78), at the same time it entirely rejects the theological and metaphysical explanation that Leibniz offered for it. Psychophysical parallelism has an entirely different explanation. It propounds a kind of aspect dualism that must be strictly distinguished from what should preferably be called "Cartesian parallelism."

In fact, it is best to distinguish three different kinds of psychophysical parallelism (not only regarding Fechner, but in general), each built upon the other.⁶ The *primary* form of psychophysical parallelism is an *empirical postulate* – a methodical rule for researching the mind-body relation, claiming that there is a consistent correlation between mental and physical phenomena. In the living human body, mental events or processes are regularly and lawfully accompanied by physical events and processes in the brain; or, as Fechner put it, they are "functionally dependent" on them. A particular physical state corresponds to every mental state; for every mental event there is a correlated brain state.

It is important to emphasize that functional dependence between the mental and physical says nothing about the causal nature of the relationship; causal influence is neither claimed nor denied. This type of psychophysical parallelism refrains from all causal interpretation of the mind-body relation. Fechner said that it is neutral regarding every imaginable "metaphysical closure" compatible with it. This sort of parallelism constitutes the factual foundation for any and every ambitious explanation of the relation holding between the body and the mind, whether or not such explanations ultimately turn out to be causal and interactive.

As a maxim for research, psychophysical parallelism is not only neutral in terms of any causal interpretation that may later seem necessary, it is also neutral regarding the exact nature of the correlation holding among mental and bodily phenomena – namely, whether it is one to one or one to many – and also neutral in terms of precisely which mechanism physically manifests the mental. Understood this way, psychophysical parallelism presupposes nothing about the exact nature of the mental and the physical and how these relate. It is to be taken as a metaphysics-free description of phenomena on which any advanced and scientifically acknowledged mind-body theory must be founded. In his endeavor to clearly state – without any recourse to metaphysics – just how the mental depends on the physical, Fechner came quite close to what we today call "supervenience" (see Heidelberger forthcoming, chap. 2).

Many scholars, who were skeptical in other respects, found this type of parallelism thoroughly agreeable. William James, for instance, confined himself – as he said – to "empirical parallelism," although he rejected all stronger forms of parallelism (see below). "By keeping to it," he wrote in *Principles of Psychology*, "our psychology will remain positivistic and non-metaphysical; and although this is certainly only a provisional halting-place, and things must some day be more thoroughly thought out, we shall abide there in this book" (James 1891, 182). The *second*, stronger, form of psychophysical parallelism is a *metaphysical theory* about the relationship between the body and the mind. It adds to the primary form of parallelism a certain interpretation, or enhances it, by providing a metaphysical explanation for the alleged correlation. Fechner called his own interpretation the "identity view" of the body and soul. It provides philosophical underpinnings for functional dependence, including the following theses: (1) A living human being is not to be considered a conglomeration of two substances – a human being is one single entity; (2) the properties of this entity

are considered mental when they are perceived inwardly, meaning from the perspective of the entity itself; and (3) the entity is considered something physical, when it is viewed from the outside, meaning from a perspective that is not the perspective of the entity itself. The mental and the physical are therefore two different aspects of one and the same entity. This position is also sometimes called double aspect theory, or – more correctly – the "doctrine of two perspectives."

The theory suggests that each human being has double access to, or has two perspectives of, himself: When I am aware of myself in a way in which no one else can be aware of me, I am aware of mental processes. When I am aware of myself in a way in which other persons can also perceive me (for example, when I see myself in a mirror), then I see the same processes in a physical, objective form; I appear to myself as a physical, material being.

This second form of psychophysical parallelism abandons the neutrality implied by the primary form and takes a stand on the true nature of the mind-body relation. It is defined as noncausal and therefore noninteractionist. But this noncausal interpretation is not merely postulated *per fiat*, as is the case for Cartesian parallelism; instead, it results from the definition of the psychical and the physical in terms of the perspective in which something is given. Viewing the physical as something that causes the mental, or vice versa, results from scrambling differing perspectives. Wherever causality may be found in the world, that will not be within the mind-body relation. We can demonstrate that distinguishing perspectives is nothing mysterious by considering a bent coin. It would be ridiculous to say that a dent on the head's side causes a bulge on the tail's side. While both sides of the coin are intimately connected, their joint occurrence has nothing to do with causality; they are merely two sides of one underlying substrate – two aspects that appear parallel to each other when the coin is damaged.

Obviously, the metaphysical identity view is not the only logically possible improvement on empirical parallelism. Reductive materialism and Cartesian interactionism can also be seen as being augmentative. Fechner finds all these theories that build upon empirical parallelism metaphysical, not because they lack empirical significance or because they are speculative, but because, ultimately, no finite experience can prove them. In Fechner's opinion, any meaningful interpretation of empirical parallelism must be conceivable as something that anticipates future experiences. The status of an improvement on empirical parallelism achieved by amending parallelism with metaphysical interpretation is – evaluated epistemologically – in principle no different than the status of a normal law of nature: Based on inductive generalization, both refer hypothetically to future experiences.

Some of the benefits of psychophysical parallelism presented as an empirical postulate can also be found in psychophysical parallelism presented as an identity view. First and foremost the identity view provides a nonarbitrary way of defining those claims of materialism that are reasonable, as well as imposing limits upon it. It allows for nonreductive materialism and dismisses crude reductive materialism, without reverting to antimaterialism. Materialism can thus be upheld as a research avenue while being dropped as a universal metaphysical doctrine. Another important benefit is that this stance confers upon psychology the autonomy it requires for explaining the mental and its phenomenal reality without colliding with the causality of physical reality. And, finally, the notion offers the additional benefit that it does not infringe on the autonomy of philosophy. Philosophy is not condemned to skepti-

cism, but it can work on a reasonable explanation for the mind-body relation, one that goes beyond neutral scientific description.

It is noteworthy that Ernst Mach, one of the earliest and most enthusiastic devotees of Fechner's psychophysical parallelism, ultimately abandoned Fechner's own amendment to the empirical postulate and instead tried to do without any explanation whatsoever – not only in terms of the psychophysical relationship but also for all relations among phenomena in the whole of science (see Heidelberger forthcoming, chap. 4). Mach wanted to restrict natural science exclusively to those neutral functional dependencies among phenomena, which Fechner had only meant to be a provisional stage of psychophysics. In doing so, Mach desired to banish causal claims not only from psychophysics but also from physics and psychology. This indicates that Mach's prime motive for rejecting causal explanation and scientific realism originated in his preoccupation with mind-body theory, rather than in his work on physics or from some basal animosity to atoms. It also shows that Fechner actually (if perhaps unintentionally) headed an antimetaphysical movement skeptical of causation that Mach picked up and furthered, and that ultimately led to logical empiricism and beyond.⁷

Basically, the identity view form of psychophysical parallelism was supported by four arguments: First, none of our experiences compels us to acknowledge the reality of a thinking substance independent of a material bearer of mental properties. Second, the realm of physical phenomena and processes is causally closed; this means that each event is caused by another physical event and in physics there are no "gaps" in which the mental could "intervene" with the physical. The same holds for phenomena in the psychical realm: they, in turn, can only be explained in mental terms. Third, the law of the conservation of energy shows that physical energy can only be transformed into or derived from other physical energy. Therefore, the physical can neither affect the mental nor vice versa. And the fourth argument for the identity view – and Fechner considered this one the most important – is that it is simple and frugal. All other amendments to the basic empirical fact of the psychophysical relation are metaphysically stronger than the identity view because, for the purpose of explanation, they involve more causality than the identity version does.

In its third form, psychophysical parallelism is a cosmological thesis stretching beyond the range of human life. It claims that even inorganic processes have a psychical side to them. Fechner was convinced that we can, by reasoning from analogy, plausibly assume in a scientifically respectable way that there exists a psychical dimension other than the realm of inner human experience. He believed that his identity view applies not only to humans and perhaps also to animals, but also to plants, the earth, planets, and the whole universe. His argument rested on the premise that the mental must not necessarily correlate to a nervous system; it could also be realized in other material systems. This notion became popular in our times under the banner of functionalism. Fechner elaborated the idea several times beginning around 1848, but it met with resistance and ridicule – even as late as 1925, brought forth by Moritz Schlick (see Heidelberger forthcoming, chap. 3, § 3.2).

The way that Fechner heightened psychophysical parallelism in this third type of parallelism (to become full-blown panpsychism) led many of his contemporaries to also dismiss his identity view – I feel, unjustifiably – as entirely speculative and inappropriate. But even extending the view into cosmology was not simple nonsense; it actually represents the origin of what later came to be called "inductive metaphysics," as opposed to dogmatic metaphysics. In order to prevent being mistaken for panpsychists and to explicitly limit psychophysical

parallelism to living human beings, many authors preferred the term "psychophysiological" to "psychophysical" parallelism (see for example Erdmann 1907).

At first glance one would think that a cosmological type of parallelism could be interpreted as pure Spinozism. But Spinoza saw the difference between mental and material attributes as something ontological and objective, something that refers to real intrinsic properties; whereas Fechner and many of his followers viewed the distinction as epistemological, based on the perspective from which the substance is investigated. This difference between Fechner and Spinoza demonstrates that Spinozism is more strongly tied to Cartesian dualism than is Fechner's parallelism.

Another difference is how Fechner treats teleology. While Spinoza rejected all teleological assumptions, Fechner chose to do the exact opposite and used psychophysical parallelism to argue *for* a teleological view of nature. According to this interpretation, the purposiveness of the mental inner side as seen from the outer perspective is completely compatible with mechanistic, nonteleological natural necessity, including the Darwinian version of it. Leibniz would have agreed to a similar type of reconciliation, one stating that causal laws to which bodies are subjected are compatible with the laws of final causes that hold for activity of the soul (see Heidelberger forthcoming, chap. 7; Leibniz 1714, § 79).

Another difference from Spinoza is Fechner's treatment of the concept of substance. Very early on, Fechner noticed that letting psychophysical parallelism depend unquestioningly on the concept of substance is very problematic, both for the identity view version and for the cosmological version. That sort of a substance would be a strange metaphysical entity, neither purely mental nor purely material and thus even worse than the notion of noumenon, a concept he opposed energetically. In order to dispense of this undesirable entity, he suggested a phenomenalistic conception of substance: a substance is nothing but a bundle of lawfully connected appearances. And since physical appearances are nomologically connected to other physical appearances as well as often connected to psychical appearances, we end up with it being entirely admissible to speak of material substances that also possess mental properties. Readers may recognize that this is precisely the source of Mach's view that substance is nothing but a "complex of (sensory) elements."

But most scholars failed to notice Fechner's early phenomenalistic modification of the identity view, so that for a long time it was regarded as faulty and obscure metaphysics. This was particularly the case when, in the last years of his life, Fechner came to consider all appearances, whether mental or material, to be appearances in the mind of God, thus landing in "objective idealism" of a sort similar to that of Charles Sanders Peirce.

Psychophysical Parallelism from Fechner to Feigl

From a philosophical point of view the most pressing problem for psychophysical parallelism was the question of the precise role attributable to causality. It was one thing to dismiss causal interaction between the body and the soul, but to determine which role legitimately remains for the causality of nature and the causality of the mind – without forgoing psychophysical parallelism – was quite another matter. It seems that Fechner favored various options at different times: When he was young he tended to think that there are two different sorts of causality and that these are neither exclusive of one another nor intolerant of one another: physical causality in the realm of physical phenomena and psychical causality in the realm of

inner experience. (Thus, on this issue Fechner also tended toward Leibniz's interpretation, which says that "bodies are active as if souls did not exist . . . and souls likewise, as if there were no bodies, and yet both move as if one had influenced the other" [Leibniz 1714, § 81]). But throughout the phase represented by his major works, Fechner limited causal efficacy to that realm of reality that underlies all appearances of both types of aspect. In his old age, as mentioned previously, he adhered to objective idealism, which says that the correct place for causality is within the sphere of the mental. The distinctions separating these three views are subtle and tend to vanish if we take Fechner's phenomenalist dissolution of the concept of substance seriously. "Neutral monism" as it was later propagated by William James and taken up by Ernst Mach and Bertrand Russell became the logical outcome of these ruminations (James [1904] 1976; Mach [1886] 1922, 14, 35, 50; Russell 1921, chap. 1).

As the controversy continued, several other variations were suggested and many new distinctions were introduced, raising the complexity of the issue.⁸ The discourse centered mainly around the role played by causality in the second type of psychophysical parallelism. Some scholars limited causal efficacy – and thus also reality – to the realm of the physical, ending up with "materialistic" parallelism implying epiphenomenalism for the mental. For many, this seemed to be the price to be paid for psychophysiological parallelism absent of panpsychism. The result implies a discontinuity in causality for the realm of the mental.

Others assumed the opposite – namely, that the realm of the mental is primary – and this led to causal inefficacy on the material side. Besides materialistic and idealistic parallelism, a third type was suggested, occasionally called "realistic monism" or "monistic parallelism." It held both the psychical and the physical sides for equally causally inefficacious epiphenomena of an underlying and causally efficacious actual reality. So, in the end, parallelism itself encompassed all those philosophical positions that it had originally intended to conquer! We have already noticed Ernst Mach's reaction to this confusing situation. He cut the Gordian knot by entirely forgoing causality and permitting solely functional dependence.

But the most significant form of psychophysical parallelism of interest here is not Ernst Mach's, but rather what is called "critical realism." The main advocate of this interpretation during Fechner's and Mach's time was the Austrian philosopher Alois Riehl. He wrote on the mind-body problem in 1872 and then extensively again in 1887 (Riehl [1872] 1925, 128; 1887, 176-216; 1894, 167-205).⁹ Riehl defended the second type of the monistic form of psychophysical parallelism, which assumed that the reality underlying physical and psychical aspects of our perception is identical with Kant's noumenon. Since he shared this and other concepts with Kant, he is usually considered a neo-Kantian. But contrary to the other – for the most part Marburger scholars – he interpreted noumena as objective and causally effective reality independent of human consciousness, and he defended, in contrast to Kant, the notion that noumena are to a certain degree recognizable. Riehl labeled this mind-body conception "identity theory" and "realistic monism," thereby idiosyncratically constricting the traditional meanings of those terms (This contradicts Place's claim that in 1933 the American psychologist E. G. Boring may well have been the first to use the term "identity theory." See Place 1990, 23).

Let us now briefly discuss Wilhelm Wundt's opinion. Wundt, the principal representative of "new psychology" in Germany advocated an interesting form of partial parallelism. On the one hand he was an outspoken opponent of the "theory of reciprocal effect," and therefore there are many passages in his writing where he unrestrictedly endorses psycho-

physical parallelism at least as a research maxim. But on the other hand he wants parallelism confined to those physical and mental events for which we have actual proof that they are parallel (Wundt 1894, 42). In his opinion parallelism applies "*only to those elementary* psychical processes (sensations), *to which alone* certain limited movements run parallel." Parallelism is "merely the parallel running of elementary physical and mental events, never parallel movements amongst complex performances on both sides" (Wundt [1863] 1990, 1:509, 513; see also 487). Wundt does not claim that there is thought without brain activity. It would seem, rather, that he struggles with a distinction familiar to present-day mind-body study – namely, the distinction between type identity and token identity. Elementary mental processes, Wundt maintained, are type identical with corresponding physiological processes (each occurrence of a specific sensation always corresponds to a specific physical event), while one and the same complex or higher mental event can, at different times, also be accompanied by differing physiological processes. While it is possible on the elementary level to know the psychical meaning of physical events, this is no longer possible on the sophisticated level (Wundt 1894, 42). It is true that the perceptual contents of our mental life are linked to physiological events, but the "mental configuration" of these contents, "being what links them according to logical and ethical standards," can no longer be bound to physiological events (Wundt 1880, 67). The outcome of Wundt's partial parallelism is a very complex theory of volition.

In spite of the complications and modifications, psychophysical parallelism was endorsed by the majority of both psychologists and physiologists well into the twentieth century. To them it seemed to be a scientific and philosophically respectable doctrine that honored the autonomy of psychology, permitting it to peacefully coexist alongside physiology and science in general. It also gave philosophers enough room to exercise sagacity in criticizing deviating positions and to discover new ways to fill in the outline provided. Toward the end of the nineteenth century idealistic notions gained more significance. Charles Sanders Peirce said: "The new invention of Monism enables a man to be perfectly materialist in substance, and as idealistic as he likes in words" (Peirce 1960, § 15-126). Of course, an author not at home in the ongoing philosophical discussion had less interest in and awareness of the distinctions separating the various forms of psychophysical parallelism. But the result was a widespread diluted type of psychophysical parallelism that obscured many of the important distinctions that Fechner and subsequent thinkers had introduced into the debate.

Fechner's adherents included many prominent names. For instance, a letter from 1922 addressed to a Swiss journal and dealing with the theory of relativity shows that Albert Einstein adhered to Fechner's ideas: "To guard against the collision of the various sorts of 'realities' with which physics and psychology deal, Spinoza and Fechner invented the doctrine of psychophysical parallelism, which, to be frank, satisfies me entirely" (qtd. in Bovet 1922, 902).¹⁰ Although Niels Bohr apparently never mentioned it in print, he adopted Fechner's psychophysical parallelism as taught by his philosophy mentor, his father's close friend Harald Høffding.¹¹ In his successful book *Psychology*, Høffding had discussed the identity theory at length and praised Fechner as the first "to construct the theory of the relation between the mind and body based on the consequences ensuing from the axiom of the conservation of energy" (Høffding 1893, 92).¹² It is no coincidence that as late as 1932 John von Neumann phrased the distinction made in quantum mechanics between the observer and the system under observation in terms taken from the "principle of psychophysical parallelism."

He made reference to Bohr, who was the first to have pointed out that "the, in formal respects unavoidable, duplicity in describing nature in quantum mechanics" is related to psychophysical parallelism as a fundamental principle of the scientific worldview (Neumann [1932] 1968, 223-24, 262, n. 207).¹³

Of course, psychophysical parallelism also had opponents. Many natural scientists were not particularly interested in philosophical controversies and did not wish to be involved in anything resembling philosophy of nature in the post-Kantian tradition, with which Fechner initially had been closely associated (see Heidelberger 1994a). Simply using the expression "identity theory" or "identity view" suggested proximity to F. W. J. Schelling's "identity philosophy," or at least it seemed so for scholars like Hermann von Helmholtz. This criticism could be easily refuted by noting that the first form of psychophysical parallelism was limited to being a mere empirical postulate. Helmholtz was not even willing to concede that and opposed even the more or less harmless form of psychophysical parallelism. He argued the incompatibility of free will and determinism. In his opinion, the realm of the mental, with all its voluntary and spontaneous activity, should not be mixed with nomological and necessary processes of nature, as psychophysical parallelism mixes them, and that even in natural science, for the time being, one must tolerate interactionism (see Heidelberger 1994b, 493; 1997, 43-47). His student Heinrich Hertz advocated a similar opinion in the introduction to *Principles of Mechanics* in 1894.

It was entirely natural for other critics to reject parallelism's pan-psychical implications, arising in its generalized third form. But it is surprising to discover that a willingness to adopt such an idiosyncratic and highly speculative consequence of Fechner's doctrine was much greater then than it would be today. For example, in a private letter, the physicist H. A. Lorentz admitted in 1915 that he believed in Fechner's psychophysical parallelism and came to the conclusion that "the mental and the material are inviolably tied to one another, they are two sides of the same thing. The material world is a way in which the *Weltgeist* appears, since the smallest particle of matter has a soul, or whatever one chooses to call it. This is all closely tied to Fechner's views . . . and I think that we have to assume something similar."¹⁴

By way of reviving a bit of the atmosphere in which parallelism enjoyed such widespread recognition over such a long period of time and in order to also demonstrate the significance that the law of the conservation of energy had for this controversy – even for philosophers – I would like to quote a passage taken from a letter of 1875 from the philosopher Hans Vaihinger to Friedrich Albert Lange, mentioned above, written forty years prior to Lorentz's letter. In this letter Vaihinger deals with some of the motives that made the identity theory – at least as an empirical postulate – so attractive for the scientifically enlightened public. (When he writes about "moderate occasionalism" he means something like psychophysical parallelism of the first type. This letter was intended to deny rumors – that Lange had heard – claiming that Vaihinger had converted to occasionalism.)

I made the following distinction: a scientist has two options: either "moderate *occasionalism*," or *Spinozism* as rectified by Kant. For a scientist may only *either* say: *occasionally* certain brain activity occurs *simultaneously* with certain psychological events; but he may not permit them an inner connection at all; he makes no hypothesis about how they are connected, he states only the *fact* that the totally inclusive cycle of mechanical causality in the brain is *accompanied* in some mysterious way by psychical phenomena. If he were not satisfied by this provisional and insufficient notion, a

notion that serves only those who are anxious and overly careful, then the scientist would have to proceed towards the wider *Spinozian* hypothesis, which says that whatever appears to us to be an *external material event*, is – for us – *inwardly* a *sensation*; and I added that this latter opinion, which after Kant has been advocated by *Fechner*, *Zöllner*, *Wundt*, *Bain*, and others, and which is also your view, seems to me to be the only possible consequence of the *Law of the Conservation of Energy*. So you see, my dear professor, that "occasionalism" is hardly perilous. It is merely a provisional stopover for those unwilling to address the other conclusion; and for those persons advocating an intermediate position it is at least better than either opposite position, viz., *materialism* or *spiritualism*, both of which violate the law of the conservation of energy by allowing physical things to "become" psychical and psychical things to "effect" physical things and be involved in the "mechanic series of causes" (see Lange 1968, 358).¹⁵

During the late 1870s the arguments and methods supporting Fechner's psychophysics were more frequently attacked by neo-Kantians (see Heidelberger forthcoming, chap. 6). But that hardly damaged the peaceful and fruitful rule of psychophysical parallelism within German-speaking culture. What abruptly ended that rule was a new chapter that the philosopher Christoph Sigwart added to the second edition of his *Logic* in 1893 in an attempt to refute psychophysical parallelism and demonstrate its intolerable conclusions (see Sigwart 1911, 2:542-600). (We must remember that opposing psychophysical parallelism and subsequently adopting a form of psychophysical interactionism did not necessarily mean that one embraced Cartesian substance dualism.) Sigwart tried to show that neither the concept of causality nor the principle of the conservation of energy encompass parallelism and that only the doctrine of reciprocal effect between the mental and the physical is philosophically permissible and valid.

As if Sigwart had opened the locks, a flood of refutations against parallelism broke through. The author of a dissertation in Vienna in 1928 noted dryly that the ensuing dispute over parallelism was surpassed only by the Trojan War (Kronstorfer 1928, 173; see also 95). The most influential critiques of parallelism after Sigwart were written by Wilhelm Dilthey, Carl Stumpf, and Heinrich Rickert, but there were also many other authors who spoke out against parallelism, who were of lesser importance for academic philosophy or less interested in the relationship between philosophy and natural science. Most critics were bothered by parallelism's proximity to materialism, which robbed the human soul of causal efficacy and subjected the mind to determinism.

Dilthey was one of the founders of an antinaturalistic movement that came to be called *Lebensphilosophie* and sought an autonomous fundament for the sciences of the spirit – that is, the humanities. In the 1880s he had already come to the conclusion that a "correlation" between the mind and body that was understood as being noncausal was "the worst of all metaphysical hypotheses" and that the various attempts of his coevals to establish empirical psychology were nothing more than "poor metaphysics" (Dilthey 1982, 281; see also 279). In 1894 Dilthey read two essays to the Prussian Academy of the Sciences, to which he had belonged since 1887, contrasting two types of psychology: One was descriptive and analytic, a type to which he himself subscribed. This type of psychology strove to describe and analyze real psychological experience. The other was explanatory and constructive psychology, a method used in contemporary scientific psychology, going beyond actual experi-

ence and postulating an abstract psychological reality in an entirely hypothetical and deductive manner.

In this context Dilthey branded psychophysical parallelism an essential but unfounded and hypothetical construct for new psychology. He reproached its advocates for their "refined materialism" that reduces the "most powerful mental facts" to "mere accompaniments of our bodily life." Its deterministic consequences, he thought, had already begun to disintegrate "political economics, criminal law, and constitutional law" (Dilthey [1894] 1974, 142). The experimental psychologist Hermann Ebbinghaus, who adhered to psychophysical parallelism, replied skillfully to these heavy attacks and defended new psychology against Dilthey's accusations. Debates over the Dilthey-Ebbinghaus controversy lasted well into the Weimar Republic period and left traces that are more or less noticeable to this very day.¹⁶

Although William James, as we saw earlier, provisionally advocated "empirical parallelism," he criticized identity theory as early as 1879 in a way similar to Dilthey. Simply by calling it *automaton-theory* he made it clear that in his opinion parallelism degrades man to a mere automaton, such that "whatever mind went with it would be there only as an 'epiphenomenon', an inert spectator . . . whose opposition or whose furtherance would be alike powerless over the occurrences themselves." But mind, according to James, must have some effect on the body, otherwise it would not have been able to outlive the "struggle for survival." James came to the conclusion that "to urge the automaton theory upon us, as it is now urged, on purely *a priori* and *quasi*-metaphysical grounds, is an *unwarrantable impertinence in the present state of psychology*" (James 1891, 129, 138).¹⁷ Thirty-two years after publication, James's critique was echoed by Edmund Husserl, who protested that parallelism treats the psyche as a "merely dependent modification of the physical, at best as a secondary parallel accompaniment" and that it interprets all beings as having "a psychophysical nature unequivocally determined by fixed laws" (Husserl [1911] 1987, 9).

Dilthey arranged Carl Stumpf's appointment to a chair for psychology in the department of philosophy in Berlin in order to prevent parallelists like Ebbinghaus, Wundt, or Benno Erdmann from attaining this position, to which they claimed rights. (What he could not prevent, however, was the call for Friedrich Paulsen for another chair in Berlin. Paulsen's interpretation of psychophysical parallelism, however, did not tend toward materialism, but in the exact opposite direction, toward panpsychism.) Although Stumpf was a leading psychologist at the time, who emphasized experimental and scientific methods, he defended interactionism vehemently in a well-received opening speech at the third congress for psychology in 1896 in Munich (Stumpf [1896] 1997, 154-82; 1910, 65-93). It is possible that he was then still influenced by his teachers Franz Brentano and Rudolph Hermann Lotze, who belonged to a small group of older scientists cum philosophers of the nineteenth century refusing to follow the fashion of psychophysical parallelism and advocating an interactionist position instead.¹⁸ Stumpf found parallelism obscure and ambiguous, a theory that, if examined carefully, actually represents a concealed form of dualism, since it assumes two different realities. He also claimed that since according to Darwin's theory of evolution all reality must be causally efficacious – then causal efficacy must also be attributable to the mental.

The third prominent antiparallelismist was Heinrich Rickert, a leading advocate of decidedly antinaturalistic neo-Kantianism in southwest Germany. In a contribution to a *Festschrift* for Sigwart in 1900, Rickert claimed with astute elegance that any concession made to parallelism that weakens the relation of psychophysical causality inevitably leads to intolerable

panpsychism (Rickert 1900). He tried to show that the mind-body problem is a pseudo problem, originating in unqualified attempts to reunite the sciences of physics and psychology after such great effort had been made to distinguish and divorce them – the former as the science of quantity and the latter as the science of quality. Rickert believed in a special type of causality holding for the realm of qualities that is different from "mechanical causality" as found in the realm of quantity and therefore not subject to the law of the conservation of energy. He emphasized that both determinism and parallelism are useless categories for historians and that the discipline of history, dealing as it does with real human activity, must assume psychophysical causality and interactionism. If we start with this concept, instead of some kind of parallelism, human action appears to be an exception to determinism. In history, individual actions of civilized humans have nothing in common with mechanical causality of the kind found in natural science.

Since this kind of antinaturalistic neo-Kantianism surged mainly in Germany, throughout the 1890s resistance to psychophysical parallelism was greater in Germany than in Austria. There were frank interactionists in Austria too, however, and among their most eminent advocates were Franz Brentano, Wilhelm Jerusalem and – less obviously – Alois Höfler, although their motives for resisting parallelism differed from those of Germany's neo-Kantians.¹⁹ The Viennese academics and Hapsburgian culture in general seem to have been more favorable for identity theory, a fact attested by the work of Ernst Mach, Friedrich Jodl, Ewald Hering (who later taught in Prague), as well as Josef Breuer and – at some distance – Sigmund Freud.²⁰ There were even parallelists among the followers of Brentano, the dualist. (A late member of this group was Gustav Bergmann, who subsequently was to become a member of the Vienna Circle. After Feigl helped him get a job in Iowa in 1939 he tried to enhance psychophysical parallelism by combining it with Brentano's concept of intentionality and with methodological behaviorism (compare Natsoulas 1984). Like Herbert Feigl, he was involved in bringing psychophysical parallelism to the United States, although to a lesser degree.)

As early as 1896 Friedrich Jodl had phrased identity theory in terms of a two-language theory, a development for which both Feigl and Schlick later claimed the credit (and which, incidentally, came up again with Donald Davidson's "anomalous monism.") Jodl thought that physiological and psychological descriptions for a state or process in a living organism are identical and refer to the same event, although they take on different forms (Jodl 1896, 74). We can probably trace this early two-language theory back to Hippolyte Taine, who in 1870 had already compared the relation of descriptions for the mental and the physical with the relation of two languages that mutually augment and elucidate one another (Taine 1870, pt. 1, bk. 4, chap. 2, §§ 4, 5). Höffding also advocated a two-language theory when writing that brain processes and processes of consciousness refer to one another "as if one and the same fact were expressed in two different languages" (Höffding 1893, 85).

It is only a small step from Riehl's and Jodl's identity-theoretic interpretations of parallelism to Moritz Schlick and his Viennese colleague Robert Reininger. In 1916 the latter dedicated an entire book to *The Psychophysical Problem* (Reininger 1916) and taught a course on Gustav Theodor Fechner during the summer term at the University of Vienna, almost two years after the young Herbert Feigl (1902-88) had come to Vienna – it was perhaps the one single course ever to be given dealing solely with Fechner (see Kronstorfer 1928, p. iv of the bibliography).

Schlick and Carnap Enter the Scene

Considering all that has been said, it is not surprising that philosophers well educated in natural science, as Moritz Schlick and Rudolf Carnap were, stood squarely within the tradition of psychophysical parallelism when it came to dealing with the mind-body problem. In *General Theory of Knowledge*, published in 1925, Schlick referred to himself explicitly as an advocate of that doctrine (Schlick [1925] 1979, 336). He stressed, however, that his own position is more radical than that of common parallelism and surpasses it in two respects: First, his position includes the "reduction of psychology to brain physiology" in the sense that there is an "identity" of reality such that "two different systems of concepts" – psychological concepts and concepts of physics – refer to it, and, second, his parallelism is not of a metaphysical but of a purely epistemological nature (351, 335, 336). In a letter to Ernst Cassirer in 1927, Schlick wrote the following: "The psychophysical parallelism in which I firmly believe is not a parallelism of two 'sides' or indeed 'ways of appearing' of what is real, rather, it is a harmless parallelism of two differently generated concepts. Many oral discussions on this point have convinced me (and others) that this way we can really get rid of the psychophysical problem once and for all."²¹

Schlick's solution for the mind-body problem reflects two components of his philosophy, which originate from diverging traditions and therefore appear at first contradictory. On the one hand we have Schlick's critical realism, which (besides naive realism) rejects positivism and every other form of "immanence philosophy" while simultaneously accepting a reality that transcends the given. On the other, we have Schlick's positivistic inheritance that views reality as consisting of qualities, whether or not they are actually given for consciousness. Schlick explicitly used a positivistic strategy adopted from Richard Avenarius claiming that the riddles of the mind-body connection (and other challenges) can be seen as an inappropriate use of "introjection" (more on this later).

Schlick's realism rests on a threefold distinction: First, there is a realm of noumena, consisting of complexes of qualities, which must not necessarily be given to any consciousness. Second, there exists reality characterized by the quantitative concepts of natural science; it results from eliminating (secondary) qualities in the course of scientific progress. And, third, there exist our intuitive perceptual events with which reality (in the second sense) is represented in consciousness – namely, experience. In understanding reality we must learn to distinguish "knowing" (*kennen*) from "recognizing" (*erkennen*). In this sense, noumena can never be directly known – they are never given to consciousness – but we can at least partially recognize them by their causal effects and thus determine their place in the network of objective relationships by characterizing them with scientific and quantitative concepts. Recognition consists of assigning systems of symbols to circumstances. However, objectively recognized reality, which to a certain extent also encompasses what is not given, is represented through our acquaintance with our perceptual subjective experience, for only in this way can we have access to the realm of noumena. But since these qualities and complexes of qualities themselves are part of reality, they can in turn be described using scientific concepts.

Now, these distinctions imply a very specific meaning for "psychical" and "physical." For Schlick, the concept of the psychical refers to what is at all given (The Given), meaning what is identical to "content of consciousness." Reality is called physical, "inasmuch as it is described by the spatio-temporal quantitative system of concepts provided by natural science"

(Schlick [1925] 1979, 324, 329). It is important to note the special role of spatial extension in this distinction. Schlick insists that space appears in two ways that must be kept strictly separate: one is perceptually imaginable space as we know it in sight, from touch, and from our kinesthetic sensations and so on; the other is physical space as conceptually construed by natural science. If we do not make this distinction and use introjection instead, meaning that we locate mental properties inside the brain or that we attribute experiential extension to the physical, we suffer from the fundamental confusion that Schlick considered to be the source of the mind-body problem. Schlick remarked with amazement that – in spite of all their differences – Avenarius and Kant nonetheless were both able to avoid that kind of unfounded introjection.

So we must now pose the crucial question regarding how Schlick intends to avoid introjection in the relationship of the psychical to the physical. This can best be done using Schlick's example of person *A* looking at a red flower and that person's brain processes ("with *A* having an open skull exposing the brain") being observed by another person, person *B* (Schlick [1925] 1979, 348-50). *B* is interested in those cerebral processes that are necessary and sufficient for *A* to see a flower. *A* is not acquainted with the noumena, the flower, at all, but she can comprehend it using scientific terms; she can employ botanical and physical terms of classification, she can describe its molecules, and so forth. Thus *A* can recognize the flower in a scientific way. But *A* also undergoes a perceptual event; she experiences the flower in a way that can be described as "red," "which in the same sense is something very real in itself, just as the transcendental object 'flower' is real." Person *B* does this: His experience shows him that the same reality that *A* describes as "red" can – using a physical term – be described as a brain process of such and such a kind. But *B* cannot only know about *A*'s brain and her mental world, he can also have a perceptual experience of *A*'s brain.

Schlick felt that this example shows well just how the mind-body problem arises by confusing characterized reality with the terms used in that very characterization, or confusing it with its perceptual representative. The first mistake is to think of the actual brain process in *A* as a physical concept of the brain process. The result is an unwarranted reduplication of reality: Instead of assuming just one reality, which is either described as physical or mental, a distinction is made between the reality of *A*'s brain and that of her consciousness. It is this sort of confusion that encourages the question of how both realities are related.

Another mistake is to confuse the concept that a physicist might have of *A*'s brain for the real intuitive experience that *B* has of that brain. All three realities, says Schlick, the flower itself and the contents of *A*'s and *B*'s consciousness, are equally valid and must each be understood for itself. And for all three of these realities it is clear from the start that they are causally tied to one another: The first causes the second and this causes the third. For what *A* and *B* know, we have a "parallelism of ways of description: both psychological and physical concepts can be applied to them" (Schlick [1925] 1979, 350).

If we compare Schlick's discussion with other, earlier attempts made at psychophysical parallelism, we inevitably fall back on Alois Riehl. He seems to be the true representative of "Spinozism rectified by Kant," mentioned by Vaihinger in the letter quoted above. As I already noted, Riehl considered noumena to be at least partially recognizable (*erkennbar*), even if they are not direct objects of experience. In a way similar to Schlick's, he was also convinced that scientific progress consists in increasingly freeing scientific objects from secondary qualities and reducing those objects to primary qualities. He also thought that spatial

extension was a property capable of being experienced, therefore deserving a status similar to that of color and taste (Riehl 1887, 38; 1894, 40). In dealing with the psychophysical problem, he stressed, just as Schlick did, the "definite identity of that process which underlies at the same time physical and psychical phenomena." He rejected "the hypothesis so popular today that physical and psychical correspond" because it involves "some hidden dualism" (Riehl 1887, 196; 1894, 185). And, finally, Riehl and Schlick entirely agree on disposing of metaphysics. Neither wants to turn the identity of the physical and mental into a "theory of the universe" but to confine it to those "points at which the objective and the subjective world actually touch" – as Riehl put it (Riehl 1887, 196; 1894, 185).

In commemorating Schlick, Feigl claimed that Schlick's solution to the mind-body problem differed entirely from all traditional metaphysical solutions. "Neither materialism," he wrote, "nor spiritualism is being maintained here, neither monism nor dualism, neither parallelism, the double-aspect theory, nor interactionism in the usual sense." But Feigl did admit that Schlick came closest to identity theory "as found, say, in the 'philosophical monism' of Alois Riehl's." Nonetheless, Feigl hurried to make clear, "even this must first be divested of its metaphysical character." He concluded that "Schlick's solution is best described, no doubt, as a two-language theory" (Feigl 1937-38, 413).²² Still, I find Feigl's attempt to detach Schlick from the tradition of psychophysical parallelism exaggerated. The obvious conformity of Schlick's and Riehl's views demonstrates Schlick's involvement in that traditional debate. If we compare Schlick to his predecessors, we see that he did not express a more radical, effective antimetaphysical or materialistic attitude, nor did he make a progressive "semantic ascent" (Quine), meaning a linguistic analysis of the problem in the manner of 20th century analytic philosophy.

Let us now consider how Carnap dealt with the problem prior to turning toward physicalism. There is not much to say, since his treatment of the problem was relatively brief. But, naturally, that does not mean that he found it insignificant. In *The Logical Structure of the World* he even called the psychophysical relation the central problem of metaphysics (Carnap 1928, § 22). He said that the "essence problem" of the psychophysical relation lies in the difficulty of understanding and explaining the surprising parallelism of such heterogeneous phenomena as that of the mental and the body (Carnap 1928, § 166). In his opinion, only three different metaphysical solutions need be considered seriously: the hypothesis of mutual effect, the identity thesis, and the thesis of parallelism without identity. However, none of the three hypotheses is better than any of the others, for strong arguments refute all three. Carnap's most important argument was the standard objection to identity theory, stating that identity is an empty term, as long as it is not entirely clear what it means to "underlie an inner and outer side" (Carnap 1928, § 22).

Carnap's radical solution to the "essence problem" of the psychophysical relationship is well known and follows the pattern provided by his general critique of metaphysics. The fact that the given can be ordered in two parallel series should be accepted without reserve. If the issue of "interpreting" or "explaining" parallelism persists, this can only be seen as an unqualified inclination toward metaphysics. Within the means provided by the system of constitution such issues can no longer be stated seriously or meaningfully. "The question of how to interpret the finding [that the Given can be ordered in parallel series] lies beyond the scope of science. This can be seen in the very fact that it cannot be expressed in constitutive terms. . . . The question of interpreting that parallelness belongs to metaphysics" (Carnap 1928, §

169). Science investigates functional dependencies, not "essence relationships." Carnap mentions Ernst Mach as the chief advocate of this interpretation.

Compared to the previous development discussed thus far in these investigations, neither Carnap's nor Schlick's interpretation of the mind-body problem appears to be particularly revolutionary. We can certainly say that Schlick's and Carnap's solutions convey and focus a tension that was already prevalent in Fechner's treatment of the problem and that ruled the whole ensuing discourse. It is a tension and a dilemma, if you will, between the antimetaphysical and empiristic tendency of psychophysical parallelism of the first type and the realism of the second type of parallelism's identity theory. The problem with which the Fechner tradition struggled was the following: If we want solely to deal with the facts, then parallelism can only be understood as research heuristics. But this would mean that we dismiss any explanation for a very strange regularity that obviously seems to suggest some underlying causal mechanism that would make it understandable. But accepting the simplest imaginable explanation for this regularity – namely, the identity theory – means to transcend the direct realm of facts and invite panpsychism or similar metaphysics.

Confronted with this dilemma, Schlick – properly following the tradition set forth by Riehl and other "critical realists" – opted for realism and tried to modify the concept of the physical object as much as necessary in order to make undesirable metaphysical consequences vanish. The best elucidation of the parallelism between mind and body is seen as the two-language theory. The unobservable realm underlying the different conceptual constructs is – as it were – tamed by realism. Carnap, though, was more willing to follow up Fechner's original solution, which was later radicalized by Ernst Mach, William James, and Bertrand Russell, thus dealing with the other side of the dilemma. Like many others in logical empiricism, he strove to demonstrate that natural science can describe the world without losing something in the process and without recourse to explanations that transcend the given. If we shun every reference to realms and objects that are inaccessible to experience and restrict natural science to the description of what is observable, we can retain meaningful science without unwelcome metaphysics.

Psychophysical Parallelism in the United States: Herbert Feigl

For a long time Herbert Feigl was a devotee of Schlick's critical realism and its related realistic solution for the mind-body enigma. Since he set up both the subject and the name index for the second edition of the *General Theory of Knowledge* and helped Schlick with corrections, he must have been well acquainted with his teacher's views (see Schlick [1925] 1979, 11). Thus it is not surprising that – as he himself reports – he "opposed Carnap's phenomenalism from the start in Vienna" and that he was involved "in a standing dispute with Carnap . . . over the 'realism', 'subjective idealism' or the 'phenomenalism' issues" (Feigl 1964, 231.) His Viennese friends must have made life quite difficult for him. He later recalled being scorned for advocating realism: "You metaphysician! they told me in Vienna. Imagine! This was the worst thing that could happen to a philosopher at that time" (Feigl 1964, 243). To his "great chagrin" he watched his teacher and friend finally give in and under Wittgenstein's influence become "a positivist in terms of the problem of reality." That was too much for young Herbert, for – as he later recalled – he himself was "temporarily overwhelmed" by Carnap, a

thinker "tremendously resourceful in discussion . . . has thought through everything a hundred times more fully than is evident from his publications" (Feigl 1964, 242).

In the period between the late 1920s and 1958, when Feigl's essay was published, the Vienna Circle turned to embrace physicalism. We are uncertain whether Feigl went along with this change in every respect. In retrospect he described the first phase of physicalism as an error: In his opinion it soon became obvious that mental states could be neither identified with overt behavior nor reduced to neurophysiological states. But in Carnap's retreat from the principle of verification and his concern after 1956 with bilateral reduction laws as a method for introducing mental terms Feigl saw a revision of the original view of the *Logical Structure of the World* leading back to critical realism and a two-language theory for mind and body. He considered two factors responsible for reinstating "clarified critical realism": One was Tarski's "pure semantics," which Carnap further developed, and the other, the "pure pragmatics" demonstrated in Wilfried Sellars's work. These developments encouraged Feigl to return to his own previous interpretations and those of his mentor, Schlick.

In his first publication on the mind-body problem, in 1934, after the general turn to physicalism, Feigl held the relationship between the physical and the mental for a *logical* identity between two descriptions of the given, a description in psychological and a description in physical vernacular (Feigl 1934, 436).²³ It was a more radical version of Schlick's notion interpreting the identity spoken of in identity theory as a relation holding between realities.²⁴ This focus can be understood as a concession made to logical behaviorism, which at that time was quite popular within the Vienna Circle. But by 1958 at the latest, Feigl returned to Schlick's views and those he himself had held prior to 1934. (Incidentally, in the foreword to the essay he remarks that he was initially introduced to "philosophical monism" by reading Alois Riehl and that he found "essentially the same position again in Moritz Schlick" [Feigl [1958] 1967, v; see also 79 n.]). Growing criticism regarding behaviorism at that time might have encouraged Feigl ([1958] 1967, 62, 109). The most significant change was that now Feigl no longer saw the identity of the mental and the physical as a necessary, but as an empirical identity.

In several passages of the essay Feigl asks what distinguishes his own identity theory from parallelism and concedes that the distinction is not of an empirical nature. "The step from parallelism to the identity view is essentially a question of philosophical interpretation." Thus, deciding for one of the two positions is similar to making a choice between phenomenalism and realism or between the regularity theory and the modality theory of causality – things that cannot be decided empirically. The principle of frugality, or "inductive simplicity," demands that we forgo the doubling of realities, such as parallelism assumes, in favor of identity theory (Feigl [1958] 1967, 94).²⁵ The advantage of this theory is that it "removes the duality of two sets of correlated events and replaces it with . . . two ways of knowing the *same* event – one direct, the other indirect." If we admit a synthetic element in the psychophysical relation, then "there is something which purely physical theory does not and cannot account for" (Feigl [1958] 1967, 106, 109). The translation of the mental into terms of the physical still assumed in 1934 has totally disappeared here. In lieu of a two-language theory we now have Feigl's "double-knowledge, double-designation view" (Feigl [1958] 1967, 138), which is nothing other than a revival of the second form of psychophysical parallelism.

The preceding discussion shows once again that even twentieth-century logical empiricism is more firmly rooted in tradition than has often been assumed and more so than the

logical empiricists themselves conceded. And we have also seen which wealth of options, distinctions, and arguments lay and still lie waiting in the tradition of identity theory, which unfortunately have frequently been lost in contemporary discourse. In the present tiny renaissance of the identity theory it is time to recall forgotten history. In this exposition I limited myself to the tradition leading up to Herbert Feigl and neglected the Australian version of identity theory (for the latter see Place 1988). An excellent comparison of both schools of thought, which elaborates the differences separating them, is available, however, and it confirms my view of Feigl's proximity to parallelism (Stubenberg 1997; see also Sturma 1998).

But the story told here also shows (and I intend to suggest it to my readers repeatedly) that the mind-body problem is not simply one problem amongst many, nor one that logical empiricism could have skipped elaborating. The twists and turns in discussing this very problem has formed logical empiricism in essential ways. Do not forget that the prehistory of logical empiricism roots not only in logic and physics but also particularly in psychology and physiology. At times, these two latter disciplines were of greater interest in the nineteenth century than the former two. I mentioned earlier that a tendency of many empiricists in the tradition of logical positivism to replace causality with functional dependency can be explained by reviewing the discussion of the mind-body problem. Their antimetaphysical inclination also originated not (only) in physics, but was due to the efforts made to find a serviceable scientific basis for emerging empirical psychology. Even the preference for "description" over "explanation" resulted from psychophysics' neutrality regarding causality. Something similar can be said for the origins of phenomenalist critique of the concept of substance in the discussion on parallelism. And the early logical empiricists' antirealism, as expressed at the dawn of the twentieth century, has roots not only in physics, but also in the endeavors of psychophysical parallelism to prevent from the start any sort of conclusion about a panpsychical side of the world. It seems an irony of history that precisely Feigl's theory, a realistic variation of parallelism, "survived." In light of what I have reported it seems even thoroughly possible that Carnap's philosophical neutrality in epistemological matters, as he elaborated it in the system of the *Logical Structure of the World*, and that pervades all of his work, in the end is obligated to Fechner's demand for neutrality in psychophysical parallelism as a maxim of research and to the two-language theory related to it.

(Translated by Cynthia Klohr)

Notes

I wrote and read an earlier version of this essay in 1998-99 as fellow at the Center for Philosophy of Science at the University of Pittsburgh. I am grateful for the support I experienced there. Further versions were read at universities in Hannover, Mainz, Florence, and Tunis, as well as at the Humboldt University in Berlin and in a work group on "Psychological Thinking and Psychological Praxis" at the Berlin-Brandenburg Academy of the Sciences. I would like to thank all my audiences for helpful discussions and especially Cynthia Klohr for translating this paper. The German version appeared as: "Wie das Leib-Seele Problem in den Logischen Empirismus kam." In *Phänomenales Bewusstsein – Rückkehr der Identitätstheorie?*, ed. M. Pauen and A. Stephan, 40-72. Paderborn: Mentis 2002.

1. To my knowledge, the only author writing in English aware of identity theory's long anti-Cartesian prehistory is Milič Čapek. Cf. Čapek (1969), which provides valuable information.

2. More recent portrayals of nineteenth-century materialism are given in Wittkau-Horgby (1998) and Heidelberger (1998).

3. The most important source for Fechner's psychophysical parallelism is the foreword and introduction to *Elements of Psychophysics*. See Fechner (1860, 1:vii-xiii, 1-20).

4. This is probably partly due to Bertrand Russell's incorrect portrayal of psychophysical parallelism in *Analysis of Mind* (1921). Therein he claimed that modern psychophysical parallelism is hardly distinguishable from Cartesian theory (35). For later authors expressing similar views, see Armstrong (1993, 8) and loci mentioned in that book's index; Heil (1998, 27); and (lacking all knowledge of the German tradition) Bieri (1997, 7). See also note 17 below.

5. The situation is, in fact, much more complicated. Occasionalism is logically *compatible* with (but not identical to) the first version of psychophysical parallelism, but not with the second version, which is, to a greater degree, of philosophical interest. (See the following discussion.)

6. A general depiction is given in Heidelberger (forthcoming, chap. 2).

7. For a detailed comparison of Fechner's and Mach's mind-body theories, see Heidelberger (2000a; 2000b; forthcoming, chap. 4, § 4.4).

8. A contemporary's survey of the issues is given in Busse (1913), with an excellent appendix.

9. Cf. also Riehl (1921, 112-46).

10. Thomas Ryckman kindly drew my attention to this source.

11. See Favrholt's introduction to Bohr (1999, xliii, 7). Favrholt is wrong in claiming that Höffding's psychophysical parallelism is indebted to Leibniz (xliv).

12. See also Höffding (1891; 1903). On page 30 of this latter work, Höffding dismisses the term "parallelism" as actually being inappropriate and ambiguous and prefers "identity theory" instead.

13. Neumann ([1932] 1968, 262, n. 208) also feels obligated to discuss this topic with Leo Szilárd.

14. H. A. Lorentz to theologian H. Y. Groenewegen, April 5, 1915. Inv.-No. 27, Archive H. A. Lorentz, Rijksarchief Noord-Holland, Haarlem, The Netherlands. Private information of Dr. L. T. G. Theunissen, Institute for the History of Science, Utrecht University. I would like to thank Bert Theunissen for permission to quote from Lorentz's letter, which he discovered while working on a project with his colleague Henk Klomp.

15. Vaihinger emphasized using the term "moderate occasionalism" in Lotze's interpretation of it.

16. Recent research on this controversy can be found in Kusch (1995, 162-69) and Gerhardt, Mehring, Rindert (1999, 162-68).

17. Chapter 5 in James's *Principles*, where these quotations are to be found, is titled "The Automaton-Theory" and appeared in almost the same wording in 1879 in *Mind*. A discussion of James's arguments is given in Čapek (1954). It is a serious mistake and highly misleading to characterize James's concept of automaton-theory as "logically identical to the sort of parallelism familiar from the writings of Leibniz and Malebranche," as Owen Flanagan puts it in his article (1997, 32; cf. also note 5 above).

18. See Pester (1997, chaps. 3.3 and 3.5) on Hermann Lotze's sophisticated methodical occasionalism. The Cambridge philosopher James Ward (1902, 66-69), who had studied with Lotze for some time, gives a remarkable defense of Lotze's view, containing one of the very rare presentations of psychophysical parallelism written in English.

19. See Höfler (1897, 57-63). Höfler mentions a discussion he had with Boltzmann on this topic (58 n.).

20. In dealing with the mind-body problem, Jodl appears to have been influenced by Alois Riehl. On the relationships of Breuer and Freud to Fechner, see Heidelberger (forthcoming, chap. 1, sect. 1.11; chap. 7, sect. 7.3); for further information on the situation in Austria, see ditto chap. 6; on Mach's relationship to Fechner, see Heidelberger (forthcoming, chap. 4).

21. Schlick to Ernst Cassirer, Vienna, March 30, 1927, Moritz Schlick, Papers, Inv. No. 94. Used with kind permission from the Vienna Circle Stichting, Amsterdam, and the

Philosophical Archive of the University at Constance, which let me see copies of the Schlick literary collection.

22. Feigl also wrote that Schlick, "perhaps with greater clarity than all other monistic critical realists of the times[,] elaborated a physicalistic identity theory" worth being rediscovered "in modern semantic terms" (Feigl 1963, 261, 254). Once again, Riehl is explicitly mentioned as the scholar to whose views in these matters Schlick comes the closest. See also Feigl ([1950] 1953, 614), where Schlick's view is called "double-language theory." In this article Feigl repeatedly characterizes his own theory as "identity or double-language view of mind and body" (617, 624, 626).

23. Cf. Feigl's own elucidation of his standpoint in 1934 in Feigl ([1958] 1967, 23). In Feigl ([1950] 1953) Feigl reports Felix Kaufmann's insistence that strict identity must be understood logically. Cf. also Sturma (1998).

24. Cf., for instance, Schlick ([1925] 1979, 347).

25. Cf. also 95-97, 104. See also Feigl ([1950] 1953, 616-17), where he refers to the "principle of parsimony."

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