Wundt, Avenarius, and Scientific Psychology

A Debate at the Turn of the Twentieth Century

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Chiara Russo Krauss
University of Naples Federico II
Naples, Italy

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To my grandparents Meri and Dameris
for making me feel part of the family from the first day

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About the Author

Chiara Russo Krauss, Ph.D. is a researcher in the history of philosophy at the University of Naples "Federico II." Her field of expertise is the German philosophy of the late nineteenth century, with special attention to the problems connected with the development of modern sciences, and psychology in particular. She published studies about Wilhelm von Humboldt, Neo-Kantianism, Oswald Külpe, Wilhelm Wundt, and, especially, Empiriocriticism and its main representatives: Ernst Mach and Richard Avenarius. Russo Krauss translated from German into Italian two Avenarius' books and published several essays on his thought, based not only on his works but also on his unpublished documents.

Russo Krauss is the Principal Investigator of the project "Scientific Philosophy: Avenarius, Petzoldt and the Berlin Group," founded by the SIR Program of the Italian Ministry of University and Research.

CHAPTER 1

Introduction

1.1 Wundt and the Rise of Scientific Psychology

At the beginning of the nineteenth century, psychology was still regarded as the branch of philosophy studying the soul. However, the situation changed rapidly as the development of experimental physiology resulted more and more in the adoption of scientific methods for the study of phenomena that seemed only classifiable as psychical.

Over the course of a century, Europe—and Germany in particular—experienced breathtaking advances in the knowledge of living organisms. Johannes Müller (1801–1858) trained a whole generation of experimental physiologists. Mathias Schleiden (1804–1881), Theodor Schwann (1810–1882), and Rudolf Virchow (1821–1902) put to good use the recent improvement of microscope optic and developed the first cellular theories. Justus von Liebig (1803–1873) made a great contribution to the development of organic chemistry. But the list goes on.

This scientific renewal led to the unfolding of a grand research program, aiming at questioning the assumptions of the so-called *Naturphilosophie*, i.e., the speculative biology that was based on the assumption of a teleological living force animating organic matter. In its place, this new trend affirmed the possibility and necessity of a mechanistic explanation of living beings.

As soon as the perceptual apparatus and the nervous system became the objects of research, the advances in the field of physiology impacted significantly on psychology too. The focus was increasingly on the

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organism's reaction to stimuli. Ernst Weber (1795–1878) and Gustav Theodor Fechner (1801–1887) formulated the law that mathematically described the relationship between the change in a physical stimulus and the change in perception. Charles Bell (1774–1842), François Magendie (1783–1855), Marshall Hall (1790–1857), and Hermann von Helmholtz (1821–1894) outlined the phenomenon of reflex arc, according to which peripherical signals travel toward the central nervous system through sensory nerves, from where a response departs, that proceeds centrifugally down the motor nerves.

As a result, from the field of pure physiology, a new science originated, named psychophysics by Fechner. He defined it as the "exact science of the functional or dependency relations between body and mind." An "ancient task," indeed. Nonetheless, what was new was how this discipline intended to tackle such a task: by building on "experience and mathematical connections of empirical facts" (Fechner 1860, V).

Although all these studies on the physiology of sensations and nervous system had already started to change the understanding of human mind, none had yet proposed a complete remake of the old psychology on these new bases. It was Wilhelm Wundt (1832–1920) who first took this further step. For this reason, "even though he cannot be credited with a single significant scientific discovery, any genuine methodological innovation or any influential theoretical generalization," it is generally recognized that he "played the crucial role in constituting the field" of scientific psychology (Danziger 1990, 396).

Indeed, it was Wundt's merit if psychology became aware of itself, of what it had become. In his magnum opus *Grundzüge der physiologischen Psychologie* (Principles of Physiological Psychology 1874), he brought together in a coherent fashion the psychophysiological findings that had been accumulating for over a century. Secondly, but even more important, in this book he explicitly conceived psychology as an autonomous science, defining its object, method, and aim, as well as its relations with other disciplines, such as philosophy and physiology.

The book began with this declaration of intent:

> The work which I here present to the public is an attempt to mark out a new domain of science. I am well aware that the question may be raised, whether the time is yet ripe for such an undertaking. The new discipline rests upon anatomical and physiological foundations which, in certain respects, are themselves very far from solid; while the experimental

> treatment of psychological problems must be pronounced, from every point of view, to be still in its first beginnings. At the same time, [a general survey of the present status of a developing science is the best mean of discovering the blanks that our ignorance has left in its subject matter] (Wundt 1874, III, trans. Wundt 1904, V, translation modified)

In spite of the somewhat rhetorical cautiousness of this statement, the book turned out to be anything but too ahead of its time. On the contrary, it met the widespread need for orientation in the vast but chaotic world of the physiological study of psychological phenomena. The immense success of the work made Wundt the preeminent figure in the world of psychology, even though his scientific value was probably not comparable to that of other scientists from that era.[1]

The subsequent foundation of the Leipzig Institute for Experimental Psychology (1879) further consolidated Wundt's role as the "pope" of the new discipline.[2] Here again, the importance of his laboratory lies not in the number of discoveries that were made in those rooms,[3] rather in its impact and meaning for the culture of the time. A continuous flow of students from all over the world came to the Leipzig Institute, eager to learn the rudiments of the new science from the man that was regarded as its highest representative.[4]

1.2 The Historiography of Wundtism

In 1929 Edward Boring wrote what can be considered the first history of psychology. His partition of scholars into several different schools and trends, as well as his reconstruction of their ideas, became a historiographical canon.

Boring saw in Wundt the origin of scientific psychology, "the first man who without reservation [was] properly called a psychologist" (Boring 1929, 310). Of course, there were other leading scholars of psychology,

[1] An account of Wundt's—not quite impressive—scientific career up to the time of the publication of the *Grundzüge* can be found in Diamond (2001).

[2] The definition of Wundt as the "psychological pope of the old world" is in a letter that William James wrote to Hugo Münsterberg in 1896 (Perry 1935, 145).

[3] On the research conducted in Wundt's laboratory see Robinson (2001).

[4] Wundt tutored 186 students during his stay in Leipzig, but this number does not take into account all the scholars that visited the laboratory for purely scientific reasons (Tinker 1932).

such as Franz Brentano (1838–1917), Carl Stumpf (1848–1936), and George Elias Müller (1850–1934), who had different conceptions of this science. However, their positions were minority ones, therefore, at that time, "orthodox experimental psychology [was] the psychology of Wundt" (Boring 1929, 377).

Still, at the end of the nineteenth century, this orthodoxy was increasingly questioned. The emerging trend was addressed by Boring under the heading "The 'New' Psychology." He used this label to indicate the Wundtian psychologists that progressively embraced anti-Wundtian positions, among whom he included Hermann Ebbinghaus (1850–1909), Oswald Külpe (1862–1915), and Edward B. Titchener (1867–1927). In the same chapter, Boring also discussed the "new epistemology of Mach and Avenarius," since they "affected, on the systematic side, the new psychology" (Boring 1929, 389).

Around 1979 the centennial of the foundation of the Leipzig Institute for Experimental Psychology breathed new life into the dormant field of Wundt studies. The anniversary was an opportunity to bring up to date the historiographical canon that had aged over five decades.[5] The result was a rediscovery of the true Wundt, opposed to the common but distorted depiction inherited from Boring, whose misinterpretations—as the new research found out—were affected by Boring's master Edward B. Titchener. As an English man, the latter viewed Wundt through the distorting lens of British empiricism, thus placing the German psychologist in the same line of descent with Locke, Mill, and Hume. Moreover, despite having the merit of introducing Wundt in the United States by translating his works, Titchener amended the texts, blue-penciling the parts that did not fit with the narrative of Wundt as the founding father of experimental psychology.[6]

[5] The main fruits of this new wave of studies are the collective books by Bringmann and Tweney (1980), and Rieber (1980). This latter also have a new and expanded edition (Rieber and Robinson 2001).

[6] On this subject see Blumenthal (1980). Specifically, Blumenthal claims that Boring wrongly attributed to Wundt the following ideas: (1) psychology coincides with physiological psychology; (2) psychology belongs to natural sciences; (3) "scientific" equals "experimental;" (4) introspection is the primary method of psychology; (5) consciousness can be reduced to a sum of elemental sensory contents; (6) mind and body are dualistically opposed; (7) there is no such thing as free agency in mental processes (Blumenthal 1980, 438–42). Similarly, Kurt Danziger stresses that Boring only focused on Wundt's research on perception, while his main interest was actually the voluntary action (Danziger 2001).

The renewal of Wundt studies that began in 1979 was also the occasion for revisiting the history of the so-called "new psychology." Kurt Danziger's well-known paper *The positivist repudiation of Wundt* presented a more accurate account of the disavowal of Wundtian ideas by younger psychologists like Külpe, Titchener, and Ebbinghaus. Namely, Danziger focused on the role played by the "positivist" Ernst Mach and Richard Avenarius, whose conceptions influenced Wundt's pupils, driving them to reject the master's ideas. According to Danziger, despite his citing of Mach and Avenarius, Boring lacked philosophical insight into the more theoretical aspects of the discussion (Danziger 1979, 206).

Danziger's paper indisputably corrected many inaccuracies of Boring's account, clarifying the different positions of the protagonists of the debate. For this reason, it has become the reference point for anyone interested in this phase of experimental psychology's early history. Still, on closer inspection, even Danziger's work is not without shortcomings. His reconstruction of the "repudiation of Wundt"—as subsequently all those who draw on it—is affected by a common mistake in the history of philosophy: the failure to recognize Richard Avenarius' role in German culture at the turn of the century.

1.3 Mach and Avenarius in the History of Philosophy

Avenarius is still regularly mentioned in the studies concerning German philosophy of late nineteenth century. His name—as in the case of Boring's and Danziger's works—mostly appears alongside that of Ernst Mach. The two thinkers are regarded as representatives of the same school of thought, indicated by various tags: critical positivism, realistic empiricism, phenomenalism, neutral monism, philosophy of immanence, and—last but not least—Empiriocriticism, the only term that designates exclusively and unambiguously their philosophies.

The adjective "empiriocritical" was coined by Avenarius to characterize some key concepts of his philosophical system.[7] Later on, he and his pupils adopted the noun "Empiriocriticism" to indicate that system of thought as a whole (Carstanjen 1898, 54). Even though Mach and Avenarius mutually acknowledged the similarities between their ideas, they never had a close relationship, but only exchanged some letters

[7]For instance: "empiriocritical axiom," "empiriocritical standpoint," "empiriocritical finding," "empiriocritical substitution" (cf. R. Avenarius 1888, 1890, [1891] 1905).

over the years. It was Joseph Petzoldt, one of Avenarius' foremost disciple, that vigorously promoted the association between the two thinkers throughout his career, since he believed that they were the harbingers of a new era in the history of philosophy. Petzoldt was very active in Berlin at the beginning of the twentieth century, having founded the Society for Empirical Philosophy, that was the base of the so-called Berlin Group, formed by Hans Reichenbach and other logical empiricists.[8] With his works, Petzoldt succeeded in creating and consolidating the link between Mach and Avenarius. Yet, he was not quite as successful in keeping alive the attention on Avenarius' ideas. Because of Mach's great fame, and because of Avenarius obscure style of writing, the latter was progressively overlooked, being cited next to Mach as a mere companion.[9] The book that cemented this situation once and for all was Lenin's famous *Materialism and Empirio-Criticism*, where the latter term was used as a label to indicate the duo Mach/Avenarius, even though the Austrian physicist had the lion's share.[10]

Given the above, we might say that the association with Mach was both a blessing and a curse for the memory of Avenarius, since it ensured that his name continued to circulate in the history of philosophy, while at the same time it turned Avenarius into a sort of pale duplicate of Mach. As stated earlier, Danziger's partial account is an example of this progressive oblivion, since it overlaps Avenarius and Mach, letting the first fade into the second, to the point that the positivist and anti-Wundtian position is often simply called "Machian." The same is true for most of the works that deal with the debate between Wundt and the representatives

[8] On Petzoldt and the Berlin Group see Hentschel (1990), Haller and Stadler (1993), Danneberg et al. (1994), Milkov and Peckhaus (2013).

[9] For example, it is revealing how hastily Boring deals with Avenarius: "Titchener seized especially upon Mach and was ever after greatly influenced by him. Külpe, more given to philosophical intricacies, favored the difficult Avenarius. There is no real difference here, for the two men later agreed that they were both saying the same thing though in very different words;" "Richard Avenarius […] was as difficult, uninspiring, and involved a thinker as Mach was simple, dramatic, and clear. He worked without knowledge of Mach, though at the same time, but both men later agreed that their theories were essentially the same" (Boring 1929, 389, 391).

[10] To get a sense of the disproportion between the two: throughout Lenin's book, Avenarius is mentioned 279 times and Mach 692 times. In 72 of these occurrences, the two are cited together. This means that Mach is cited over three times more than Avenarius (around 620 to 200, excluding the joint citations). Cf. Lenin (1927).