



University of Pennsylvania
ScholarlyCommons

IRCS Technical Reports Series

Institute for Research in Cognitive Science

1-1-2001

Psychology Old and New

Gary Hatfield

University of Pennsylvania, hatfield@phil.upenn.edu

Follow this and additional works at: https://repository.upenn.edu/ircs_reports

 Part of the [Psychology Commons](#)

Hatfield, Gary, "Psychology Old and New" (2001). *IRCS Technical Reports Series*. 23.
https://repository.upenn.edu/ircs_reports/23

University of Pennsylvania Institute for Research in Cognitive Science Technical Report No. IRCS-01-07.

This paper is posted at ScholarlyCommons. https://repository.upenn.edu/ircs_reports/23
For more information, please contact repository@pobox.upenn.edu.

Psychology Old and New

Abstract

Psychology as the study of mind was an established subject matter throughout the nineteenth century in Britain, Germany, France, and the United States, taught in colleges and universities and made the subject of books and treatises. During the period 1870-1914 this existing discipline of psychology was being transformed into a new, experimental science, especially in Germany and the United States. The increase in experimentation changed the body of psychological writing, although there remained considerable continuity in theoretical content and non-experimental methodology between the old and new psychologies. This paper follows the emergence of the new psychology out of the old in the national traditions of Britain (primarily England), Germany, and the United States, with some reference to French, Belgian, Austrian, and Italian thinkers. The final section considers some methodological and philosophical issues in these literatures.

Disciplines

Psychology

Comments

University of Pennsylvania Institute for Research in Cognitive Science Technical Report No. IRCS-01-07.

Psychology Old and New

Gary Hatfield
University of Pennsylvania

Psychology as the study of mind was an established subject matter throughout the nineteenth century in Britain, Germany, France, and the United States. This established psychology was in part a school discipline, conveyed in textbooks and lectures surveying the theory of mind. Standard topics included the senses, imagination, memory, intellect, emotions, will, bodily motion, the nature of mind, and the question of mind-body interaction. During this time psychology was also an object of research and speculation by physicians and independent scholars. James Mill, John Stuart Mill, George Henry Lewes, Francis Galton, and George Romanes, none of whom held university appointments, published general works or specialist treatises on psychological topics. From early in the century physicians conducted empirical research on sensory perception, drawing on their own perceptual experience and clinical observation. Textbooks in human and comparative physiology contained psychological chapters, and medical journals published psychological work (e.g., Carpenter 1837, Dunn 1858). Early on J. F. Herbart (1816 [1891], 1824-25) and F. E. Beneke (1833) in Germany, and later Alexander Bain (1855, p. v) and Lewes (1857, p. 621) in Britain, renewed the call for a genuinely scientific psychology or 'science of mind' (a call issued earlier by Bonnet 1755 and Krüger 1756, among others). By mid-century quantitative studies, found sparsely but regularly in eighteenth-century works on vision, were becoming common in sensory physiology and psychology.

At universities, the discipline of psychology was variously located

*Forthcoming as Chapter 8 of Thomas Baldwin (ed.), Cambridge History of Philosophy: 1870-1945 (Cambridge: Cambridge University Press).

within faculties or schools of philosophy. 'Philosophy' at this time had both broad and narrow senses. Broadly, it was roughly equivalent to the 'arts and sciences'; narrowly, it might be restricted to logic, metaphysics, moral philosophy, and natural philosophy (though the latter was becoming separate as 'natural science'). Psychology was variously positioned under these rubrics, sometimes in metaphysics (Lotze 1881 [1886]), sometimes as an autonomous division of philosophy (Mill 1846, p. 532), but most often as an empirical natural science (Beneke 1845, p. 5; Wundt 1863, 1:iv). It was known under various titles, including 'moral science', 'mental science', 'theory of the mind', 'physiology of the mind', and Seelenlehre or theory of the soul.

During the period 1870-1914 the existing discipline of psychology was transformed. British thinkers including Herbert Spencer, Lewes, and Romanes allied psychology with biology and viewed mind as a function of the organism for adapting to the environment. British and German thinkers called attention to social and cultural factors in the development of individual human minds. In Germany and the United States a tradition of psychology as a laboratory science soon developed, which was called a 'new psychology' by contrast with the old, metaphysical psychology (Ribot 1879 [1886, pp. 1-15]; Scripture 1897). Methodological discussion intensified. New syntheses were framed. Chairs were established and Departments founded. Although the trend toward institutional autonomy was less rapid in Britain and France, significant work was done by the likes of Galton and Alfred Binet. Even in Germany and America the purposeful transformation of the old psychology into a new, experimental science was by no means complete in 1914. And while the increase in experimentation changed the body of psychological writing, there was considerable continuity in theoretical content and non-experimental methodology between the old and new psychologies.

This chapter follows the emergence of the new psychology out of the old in the national traditions of Britain (primarily England), Germany, and the United States, with some reference to French, Belgian, Austrian, and Italian thinkers. While the division into national traditions is useful, the psychological literature of the second half of the nineteenth century was generally a European literature, with numerous references across national and linguistic boundaries, and it became a North Atlantic literature as psychology developed in the United States and Canada. The order of treatment, Britain, Germany, and the US, follows the center of gravity of psychological activity. The final section considers some methodological and philosophical issues from these literatures.

British Psychology, 1870-1914

In 1870 the French philosopher and psychologist Théodule Ribot surveyed British psychology, hoping to transplant a non-metaphysical empirical psychology to France to replace the dualistic 'science of the human soul' (1870 [1874, p. 17]). He praised the British tradition stemming from Locke, Hartley, and Hume and now embodied in the empirical and non-metaphysical psychologies of Bain, Spencer, Lewes, and J. S. Mill (and soon represented in France by Taine 1870 [1871]).

British psychology was indeed flourishing in 1870, as the ensuing quarter century reveals (see Hearnshaw 1964, chaps. 1-11). In 1876 Bain founded the journal Mind, subtitled A Quarterly Review of Psychology and Philosophy (until 1974, long after properly psychological work was excluded). Roughly half its pages were devoted to psychology, including some experimental and statistical reports. While the journal was international in coverage, it reflected the two major trends in English psychology, toward a biological psychology on the one hand, and toward phenomenological analysis of mental phenomena on the

other.

The traditional associationist psychology was represented by Bain, by James Mill (annotated edition, 1869), and then by Sully (1884, 1892). It treated psychology as a science of mental phenomena or of consciousness. Indeed, J. S. Mill contended that unconscious mental states (as postulated by Hamilton) are a contradiction in terms (Mill 1865, chap. 15). Associationists adopted the usual classification of mental phenomena under intellect, feeling, and will, but denied that it revealed underlying discrete mental faculties. Their main explanatory strategy was to discern or posit elements of consciousness and then show how the laws of association, operating on such elements, can explain mental abilities and mental phenomena more generally. The associative laws usually included a law of spatial or temporal contiguity and a law of similarity.

Biological psychology was developed in England by medical physiologists such as William Carpenter and Henry Maudsley, by biologically inspired intellectuals such as Spencer and Lewes, and by research naturalists including Charles Darwin, Romanes, and C. Lloyd Morgan.

Carpenter's Principles of Mental Physiology (1874) emphasised the mutual interaction of mind and body. Following a chapter on the nervous system it was organized into psychological topics, including the usual coverage of the senses, attention, higher cognition, and motor action, together with medical topics such as intoxication and delirium. Carpenter, who adopted a comparative perspective, recognized psychologically relevant instincts in animals, but argued that in humans there are no instincts beyond those involved in basic maintenance, such as the beating of the heart. He explained all other apparently instinctual behavior in humans associationistically, as 'automatic' behavior acquired through experience (1881, §191). The book built

a strong case, using clinical evidence and ordinary observation, that much mental activity occurs automatically as 'unconscious cerebration' (1881, chap. 13). Carpenter nonetheless maintained that a certain 'fact of Consciousness' available in immediate experience, namely, 'that we have within us a self-determining Power which we call will', was sufficient to refute materialism and show that two sorts of forces (mental and material) operate, and interact, in organic life, (1881, ¶28; see also ¶¶4-5, 26-7).

Maudsley published his Physiology of Mind in 1876 (separated from Maudsley 1867). He held mental states to be identical with brain states. Mental phenomena are grouped together because they are (partly) accessed through 'inner sense' as opposed to outer sense (1876, p. 39). He disparaged the reigning method of introspection in psychology, citing several grounds, including: lack of agreement among observers; the disturbing effect of the introspective act on the phenomena to be observed; restricted applicability to adult human minds, as opposed to the developing mind of the child, or mind in other species; and failure to reveal the basis for the laws of association, which must be physiological (1876, pp. 16-50). He denounced introspection's inability to reach the great majority of mental states and processes which, he contended, are unconscious (1876, pp. 24-40). He recommended that introspection be replaced with 'objective' methods, including physiological, comparative, and developmental observations, and the study of pathological cases, biography, and history--the latter because (with Comte) 'the individual is a social unit and cannot be comprehended independently of the social medium in which he lives' (1876, p. 53). After discussing the spinal cord and reflex action, he discussed the central nervous system according to the traditional psychological topics. Maudsley was one of the few materialistic monists (1876, chap. 2) who contributed to the new psychology, most other monists

arguing for parallelism or dual-aspect theory.

Spencer and Lewes promoted a biological psychology that regarded mind as a means of adjusting or adapting the organism to environmental circumstances. In 1855 Spencer defined life as 'the continuous adjustment of internal relations to outer relations' and intelligence as 'the adjustment of inner to outer relations' (1855, pp. 374, 486). In the enlarged (and widely cited) second edition of 1870-72, he distinguished 'objective' psychology, dealing with material organismic processes, from the study of 'subjective' processes available to consciousness (pt. 1, chap. 7). Objective psychology concerns the adaptive adjustment of the relations between states internal to the organism to relations of external states of affairs. If its explanations are restricted to 'actions' or 'conduct', that is, to behavior, they need appeal only to 'objective' factors (see also Mercier 1888). Such explanations hypothesize that nervous states become adapted to external situations, as when the nervous action initiated by sight of an apple comes to trigger reaching for the apple (an internal relation that now 'corresponds to' the de facto external relation between the physical shape and color of the apple and its nutritional composition). Subjective psychology describes consciously available mental states that correspond (by a parallelism between mental and physical, both expressing a single unknown reality) to some of the processes of objective psychology. Lewes' Problems of Life and Mind (1874, 1877, 1879, 1880) similarly treated mind as a biological function of the organism, and recognized an essential social condition on mind in humans (which accounted for the observed differences between humans and their biologically similar primate relatives). Spencer and Lewes both made association the engine of psychological development, but they also recognized a fixed organic component in psychological responses. Typical associationists restricted innate factors

to sensations and associative laws, but Lewes saw that evolutionary theory supported attribution of a wider range of innate mental adaptations to organisms, including humans (1879, chaps. 1, 9), a point of view developed more extensively by Romanes (1883, 1888) and Morgan (1891, pp. 336-8).

James Ward brought psychology back to phenomenology in his influential survey for the Britannica (1886). He drew widely on the established literature, including Herbart, Lotze, Wundt, Hamilton, Mill, Bain, Spencer, and Lewes. For Ward the standpoint of psychology is individual consciousness; scientific psychology is agnostic about the metaphysics of realism or idealism. Ward contended that an active self or ego must be recognized in psychology, apart from representations or 'presentations' to that self. He endorsed attention as the fundamental psychological activity, more important in thinking than association, which he saw as having its primary effect in memory. He adopted a developmental or 'genetic' view, according to which instincts arise from psychological habits that become fixed through inheritance of acquired characteristics (a mechanism endorsed by Darwin [1859, p. 209; 1872, p. 29] and majorized by Spencer and Lewes). Ward's student, G. F. Stout, also criticized the atomizing tendency of associationism, stressing the phenomenal unity and directed activity of mental life (1896). Stout drew from the early phenomenological tradition in psychology, including the work of Stumpf, Brentano, Ehrenfels, and Meinong.

University laboratories arose late, founded in the mid 1890s at Cambridge and in 1897 at University College London. But from the 1870s onward there was frequent discussion of the relations between 'subjective' and 'objective' methods and subject matter in psychology. The method of introspection, attacked by Maudsley (and earlier, Comte 1830-42 [1855, pp. 33, 383-4]), was widely defended as the only access to the 'subjective' side of psychology's

subject matter, the conscious states of the individual, and its scientific (hence, 'objective' in the sense of true, or properly established) credentials were affirmed (Lewes 1879, chaps. 3, 5; Ward 1886, pp. 42-3). Many objective factors were listed for inclusion in psychology's methodology, including physiological observations, comparative psychology, the outward expression of emotions, the development of language, historical records of human actions, and 'natural experiments' afforded by mental and neural pathology (Maudsley 1876, chap. 1; Lewes 1879, chap. 8; Stout 1896, 1:9-16). Among these the focus was on (largely speculative) physiological factors, such as postulated muscle feelings, evolutionary hypotheses, and comparative observations. Spencer (1870-72, pts. 3-5), and his follower the mental pathologist Charles Mercier (1888), appealed to such objective factors in elaborating explanations of behavior, their 'objective' subject matter for psychology. For this subject matter Mercier especially eschewed all reference to consciousness and appealed only to hypothesized internal physiological states adjusted and adapted to the environment. By contrast Ward, who took consciousness to be the sole subject matter of psychology, questioned whether physiological knowledge was sufficiently advanced to be of any help (1886, p. 90). On that score he was not in disagreement with Spencer (1870-72, 1:140-1), who presaged the later assertion by Stout that psychological results must guide any investigation of the physiological conditions of mental processes (1896, 1:26-35).

German Psychology, 1870-1914

Whereas in 1870 Ribot credited British psychology with initiating a 'new epoch' of scientific psychology, (1870 [1874, p. 44]), nine years later he said it was the Germans who created a 'new psychology' (Ribot 1879 [1886, pp. 9-15]). He now characterized British psychology as 'descriptive' next to the

physiological and experimental psychology of the Germans. The crucial factor was the introduction of experimental techniques into psychology from sensory physiology, by figures including Johannes Müller (founder of the experimental tradition according to Ribot 1879 [1886, p. 21]), as well as E. H. Weber, Rudolph Hermann Lotze, G. W. Fechner, Wilhelm Wundt, Hermann Helmholtz, and Ewald Hering (see Hatfield 1990, chaps. 4-5).

In the period 1850-75 Lotze was the foremost German academic philosopher and psychologist (Brentano, Stumpf, and G. E. Müller were among his students). He analyzed spatial perception in his Medicinische Psychologie, oder, Physiologie der Seele (1852), where he introduced the doctrine of 'local signs'. He contended that the merely physical spatial order of the retinal receptors and optic nerve could not itself explain the spatial order of perception. Rather, the sensation from each nerve fiber must receive a qualitative marker peculiar to that fiber, from which the spatial order of retinal stimulation might be reconstructed through a psychological process, whether innate (Lotze's early view, 1852, pp. 330-7, 354-60) or learned (Helmholtz's view, 1867 [1924-25, pp. 185-6], and later Lotze's, 1881 [1886, p. 56]). The problem of deriving spatially-ordered perceptions from discrete nerve fibers was long discussed (James 1890, 2:157).

In 1834 the physiologist Weber published what became known as Weber's Law. This law concerned the just noticeable differences between intensities of a stimulus, that is, the amount by which a stimulus dimension, such as weight, had to be increased in order to produce a noticeable difference. Weber found that within limits this amount varies as a constant fraction of the stimulus value, at least for pressure on the skin, weights lifted by hand, line lengths perceived by sight, and the pitches of tones. The physicist Gustav Fechner developed Weber's result into a fundamental law of

psychophysics (1860 [1966]). Fechner argued that the relation between physical stimuli needed to produce a noticeably different sensation yields an indirect measurement of the sensation itself. His argument explicitly assumed that the just noticeable difference is a constant unit of sensation, that is, that the differences between each pair of just noticeably different sensations are equal; and it treated the threshold of sensation--that is, the smallest perceivable value, e.g., the smallest pressure that can be felt on the skin--as defining the zero point for the scale of sensations, and the unit value for the physical stimulus. Using these assumptions he produced his famous psychophysical law, according to which sensation varies as the log of the stimulus value times a constant (which means that felt intensity goes up arithmetically while the stimulus intensity increases geometrically). (For discussion, see Delboeuf 1883a&b, Fechner 1882, G. E. Müller 1878.) Psychophysical measurements became the pride of the new psychology; Weber and Fechner were widely cited in the German, British, French, and American literatures.

The empirical investigation of mental phenomena blossomed. Wundt (1862), Hering (1861-64, 1868), and Helmholtz (1867) investigated spatial perception, including binocular stereopsis. Careful quantitative observations were made to determine the empirical horopter, that is, the imaginary line along which a point, when viewed with two eyes, appears single, and off of which (by some distance) it appears doubled. Helmholtz, Hering, and their students also investigated color perception, carrying out precise quantitative investigations of color matches for stimuli of known wavelength, color contrast phenomena, and color deficient or 'color blind' individuals (see Turner 1994). In 1879 Wundt established the first regular psychological laboratory. Many students and visitors worked there, on visual, auditory, and

tactile psychophysics, and on reaction time, attention, and feeling. In 1883 he began a journal, Philosophische Studien, which, despite its title, largely served as the house organ of the Leipzig laboratory. In the meantime Georg Elias Müller (1878, 1904) took Lotze's place at Göttingen in 1881, establishing an important and productive laboratory. In 1885 Hermann Ebbinghaus published his epoch-making experimental work on memory (1885 [1913]), gaining him a professorship in Berlin the following year.

Wundt gave new voice to the call for a scientific psychology. In 1863 he published his lectures on human and comparative psychology, and in 1874 his Grundzüge der physiologischen Psychologie. The latter became the herald of the new experimental psychology (French translation, 1886; open emulation by Ladd 1887). Wundt's conception of psychology as a science changed over time (see Hatfield 1997). In 1862-63 he treated psychology as a natural science that would be supplemented by other methods, including historical study of the cultural development of human mentality. He saw human cognition as unified by logical acts of synthesis, exemplified in unconscious inferences that synthesize perceptions out of sensations (1862, pp. 422-45). In 1874 Wundt regarded psychology as intermediate between natural science and the mental or human sciences (Geisteswissenschaften). He rejected unconscious mental processes, saying that any such processes must be conceived physiologically and nonmentally. And while he retained the basic view that the elements of experience are sensations varying only in quality and intensity, he abandoned logical form as the unifying element of cognition, arguing that psychological processes are prior to any mental appreciation of logical structure (1874, chap. 18). These processes of psychical synthesis combine elements to create 'ideas' (Vorstellungen) having new attributes, not found in any element, as when nonspatial sensations are synthesized to create spatial perceptions

(chaps. 11-12). Wundt distinguished passive association from 'apperception', an active mental process, allied to attention, which forms new mental connections. The enlarged second edition (1880, chaps. 15-17) expanded the role of apperception as the central cognitive act.

Wundt increasingly emphasised the variety of influences on apperception. To understand the apperceptive process in an adult human in the nineteenth century, Wundt believed, one would have to consider her cultural context, which would have to be approached through the historical development of the belief system of the culture in question, together with the personal development of the individual. He thus came to think that the processes of higher cognition could best be approached through Völkerpsychologie, or ethnographic psychology, which he regarded on par with the physiological or experimental branch (1887, 1:5-6), or as likely to replace it (1908, p. viii). In one of the few attempts actually to distill 'objective' materials for psychology from history and culture, Wundt (1900-20) sought to reveal the developmental laws of human thought through the history of language, myth, and morals. Many German experimental psychologists rejected Wundt's claim that higher mental processes could not be subjected to experiment, and many regarded psychology as properly a natural science (see Kusch 1999, chap. 1-2).

Wundt (1894) held that his (ontologically agnostic) psychophysical parallelism entailed that mental and physical phenomena form two distinct but parallel causal realms. He advocated a 'pure' psychology according to which psychological states can be caused only by other psychological states. His students Oswald Külpe (1893 [1895, pp. 4-6]) and the British-American Titchener (1909b, pp. 13-15) also endorsed parallelism and avoided positing direct causal relations between mental and physical. But their parallelism did not preclude physiological processes from playing an explanatory role in

psychology (see Danziger 1979). They found it obvious that psychological phenomena are 'dependent on' or 'correlated with' nervous states which have resulted from processes that are unavailable to consciousness. Külpe postulated 'unconscious' purely physiological states (1893 [1895, pp. 291, 450]), while Titchener described his nonconscious physiological states psychologically, as carriers of 'meaning' over time (1909b, p. 369).

The early experimental psychologists knew and discussed Franz Brentano's (1874) descriptive psychology of consciousness. Ribot (1979 [1886, p. 295]) classed it with the 'new psychology' because it was empirically based and left aside metaphysics. Brentano argued that psychological states are characterized by their directedness toward a phenomenally available object. His book did not fulfill the aim of establishing a common theoretical framework for scientific psychology, but it did influence discussions of mental content and judgment in Germany and Austria (see Chapter 12), and it found appreciation in England (Stout 1896, 1:40-2) and America (Titchener 1909a, lec. 2). Brentano's students, including Carl Stumpf and Christian von Ehrenfels, provided fodder for Gestalt psychology.

American Psychology, 1870-1914

In 1870 psychology in America was a school discipline largely under Scottish influence (Upham 1841; McCosh 1886). This 'old psychology' was usually allied with religion and generally taught by the Provost, who also taught moral philosophy (see Evans 1984). The United States was late to develop a 'new psychology', perhaps because it had neither Britain's thriving gentlemen scholars nor Germany's research universities. But once it took hold, the new psychology developed more rapidly in the US than elsewhere, benefiting from late-century foundings of new research universities and graduate schools. By 1900, laboratories had been established at forty-two North American colleges

and universities. Many American psychologists passed through Wundt's laboratory as visitors or students (Hilgard 1987, pp. 31-4, 79). Some took PhDs in the US, including George T. Ladd and James M. Baldwin under James McCosh at Princeton, and G. Stanley Hall under William James at Harvard. During the 1880s Hall founded laboratories at Johns Hopkins and Clark, and started the American Journal of Psychology. Baldwin was a major force in the 1890s, publishing an important handbook (1889, 1891), establishing laboratories, and co-founding the Psychological Review in 1894 (with J. M. Cattell).

The new American psychology gained textual presence through books by Ladd and James. Both authors were advocates of a new psychology, but neither was convinced that experiment would be its defining feature. Ladd 1887 was the first systematic textbook of the new physiological psychology in English. It defended the importance of the physiological and experimental approach, provided considerable coverage of the nervous system, summarized primary results in psychophysics, and devoted a chapter to chronometric studies. It also contained an argument for the reality of the mind as a spiritual being, presented as a scientific hypothesis to explain the unity of consciousness (1887, pp. 668-88). Ladd later elaborated a distinction between a descriptive, explanatory, empirical psychology of consciousness (1894), and a rational or metaphysical psychology (1895). As a framework for psychology he defended a provisional dualism, leaving it to philosophy to establish his preferred Lotzean monism, with Absolute Being underlying both body and mind (Ladd 1895, pp. 409-12).

James' two-volume Principles of Psychology put a phenomenalist and functionalist stamp on theoretical psychology in America. It synthesized and appraised the main theory and findings concerning sensation and perception,

cognition, and will. James defined psychology as 'the Science of Mental Life, both of its phenomena and of their conditions' (1890, 1:1), the latter including nervous processes, behavioral consequences, and environmental conditions. With a hint of irony, he labeled both 'spiritualist' and 'associationist' theories as metaphysical, because each attempts 'to explain our phenomenally given thoughts as products of deeper-lying entities', among which he included not only 'Soul', but also 'Ideas' or 'Elementary Units of Consciousness' (James 1890 1:vi). He was not opposed to explanation in general, but he rejected appeals to mind-stuff or to atomistic sensations (as posited by Hume, Mill, Helmholtz, and Wundt) to explain conscious experience. James' own explanations appealed to physiology, acquired habit, and the function of mind in adjusting the organism to its environment. He considered the main methods of psychology to be introspection, experiment, and the 'comparative method' applied to children and across cultures, to 'madmen, idiots, the deaf and blind, criminals, and eccentrics', and to the history of science, politics, and culture (1:194). James reported the new experimental findings from Germany but was not much impressed by them, proclaiming that in many cases great effort had 'as yet borne little theoretic fruit', while admitting that more work would be done and allowing that it might well yield theory (1:193).

The Englishman Edward Bradford Titchener, who studied philosophy at Oxford, psychology at Leipzig, and then went to Cornell University in 1892, was a leading presence in American experimental psychology. Titchener (1908, 1909a&b) adopted Wundt's elementalism and the Leipzig laboratory's interest in chronometry. But he deviated from Wundt in treating attention not as an independent mental activity but as a property of sensation (1908, lec. 6), and in accepting physiological processes as explanatory in psychology (1909b, pp.

38-41). In pursuing the Wundtian project of resolving mental life into its elements, he adopted the method of analytic introspection. Other American psychologists, including John Dewey (1896) and James Rowland Angell (1907), focused on the function of mental processes, over the search for elements. Titchener (1898) himself divided psychology into 'structuralist' and 'functionalist' camps, initiating the American practice of classifying psychologies into various 'schools' or 'systems' (see Heidbredder 1933).

The experimental tradition grew rapidly in America, soon supplemented by other empirical techniques, including questionnaires and mental testing. Nonetheless, the theoretical and philosophical bent in Ladd, Baldwin, and James continued into the new century (see Murchison 1926, 1930). When Boring wrote his history of experimental psychology in 1929, he wanted to consolidate the identity of American psychology as an emphatically experimental science, divorced from philosophy and speculation (see O'Donnell 1979). Through the efforts of Boring and others this conception held sway through much of the twentieth century.

Psychological Method, Subject Matter, and Theory

Psychological works contained discussions of psychology's subject matter, its methods, its relation to philosophy and metaphysics, the existence of unconscious mental states, and the plausibility of attributing innate faculties or representational capacities to the mind. These philosophical topics were addressed sometimes out of necessity, as in the debates on method or subject matter, sometimes because philosophy and psychology had a shared interest, as in the question of mental faculties, and sometimes to assure that a clear boundary was maintained between fields. Those like Wundt, James, or Ladd, who were both philosophers and psychologists, nonetheless recognized psychology as an independent subject matter or discipline.

Conceptions of psychology's subject matter developed and changed. Early on, some authors held that psychology could settle the metaphysical question of the substantiality of the soul. Although McCosh (1886, p. 7) tried to establish the soul's existence through direct introspection, the most common argument posited an immaterial soul as a scientific hypothesis needed to explain the unity of consciousness (Waitz 1878, pp. 24-36, 119-20). Others used similar arguments to support a monism of causally interacting simple beings, including some dubbed as 'souls' (Lotze 1881 [1886, pp. 91-104]). Increasingly, metaphysical questions about mind-body interaction and substantiality were bracketed. The motivation varied, from positivism and critical idealism to a plain attitude that the sciences cannot answer metaphysical questions, which are left to philosophy. Most authors considered psychology to be a natural science, which meant ceasing to talk of 'the mind' as its subject matter, or perhaps regarding 'mind' as a natural activity of the organism (without necessarily endorsing materialism). The new psychology was, in Lange's oft-repeated phrase, a 'psychology without a soul' (1866 [1925, 3:168]).

With talk of a unitary mental substance banned, new formulations of psychology's subject matter had to be developed. We have seen that Spencer and Mercier took one branch of psychology to focus on explaining behavior. But most authors made mental phenomena the sole subject matter of psychology, and saw behavior merely as an expression of mind. These authors variously described psychology's subject matter as 'phenomena of mind' (Sully 1884, pp. 1-2), 'phenomena of consciousness' (Baldwin 1889, p. 8), or 'immediate experience' (Wundt 1901 [1902, p. 3]). This subject matter was to be studied with both 'subjective' and 'objective' methods, including direct reports of experience, behavioral manifestations, and physiological conditions.

Supposing that the object of description and explanation in psychology is conscious experience, there was further division over the type of entities or states to be admitted into psychological explanations. Some insisted that only conscious mental states be admitted. Others posited unconscious mental states that produce conscious mental states, while still others posited physiological states (not directly correlated with consciousness) as causes or explanatory conditions. Some considered such physiological states to be psychological, others not.

In the days of realism about immaterial mind, theorists readily posited unconscious ideas or representations that were 'below threshold' (in Herbartian terms)--though Ladd, an immaterialist of sorts, later protested on behalf of 'psychological science' (1894, pp. 30, 258). Some anti-metaphysical empiricists viewed such posits as tantamount to the self-contradiction of unconscious conscious states (Mill 1865, chap. 15), though others happily referred to unconscious sensations and mental processes (Helmholtz 1867 [1924-25, 3:4]). By century's end the chief defender of the latter position among German academic psychologists was the panpsychist Theodor Lipps (1903).

In the 1880s and 90s, a majority understood 'subconscious' and 'unconscious' states in relation to attention (see Cesca 1885). On this view, all mental states have some degree of consciousness, but some are least attended and so least salient, and these may be called subconscious or unconscious (Ward 1886, pp. 52-4). A sensory state could be mental only if it had the qualitative character of experienced sensations (Wundt 1880, 2:195). Truly unconscious (as opposed to unnoticed or forgotten) sensations or mental operation were rejected; any mentally-relevant processes and states that fall outside consciousness were assigned to pure physiology and considered nonmental (Brentano 1874 [1973], bk. 2, chap. 2; Stout 1899, pp. 8-9; Wundt

1901 [1902, pp. 227-8]; Ziehen 1891 [1892, pp. 20-36]). From this perspective, some physiological states have psychological concomitants; some physiological states without such concomitants are explanatorily relevant for psychology; but there are no purely physiological, nonconscious mental or psychological processes.

The English mental physiologists and biological psychologists, materialist and anti-materialist, took the opposite stand. Maudsley proposed 'that all the operations which are considered mental and to belong to psychology may be performed as pure functions of the nervous system, without consciousness giving evidence of them' (1876, p. 245). Carpenter offered as examples of possibly unconscious mental activity playing music, reading aloud while thinking about something else, and thinking about writing while also dipping the pen and spelling the words right (1881, p. 526). Lewes wrote extensively on the relations among conscious, subconscious, and unconscious mental states (1877, prob. III, chap. 4; 1879, pp. 19-25, 91-9; 1880, prob. II, chap. 10). Subconscious states are merely conscious states not under attention, whose existence he took for granted. He was keen to gain recognition for genuinely unconscious states and operations, including the process of assimilating present experience to the 'residua' or 'traces' of previous experience (1880, p. 54). Lewes posited a great number of unconscious factors, some cognitive, such as habits arising from repeated excitation, and some visceral, such as emotional episodes:

Besides the residual effect of multiple excitations through the senses, there is the influence of some recurrent stimulation from the viscera, or from some emotional shock which has left behind its persistent tremors. Deep down in the recesses of the organism there are thus influences at work, which only emerge into consciousness at

intervals, but which are always modulating the mental state. (1880, p. 112)

Lewes was a dual-aspect monist (1877, prob. III, chap. 3) who held that organic processes can be at once physiological and psychological (1880, p. 149). Those organismic states having a mental aspect need not be conscious. A state is mental because it enters into the organism's overall mental functioning, not because it is accessible to consciousness. Around the turn of the century many psychologists endorsed the notion that physiological states could be psychological without being accompanied by consciousness (Müller and Pilzecker 1900, pp. 78-82, 271; Titchener 1909b, pp. 38-41, 369). The functionalist Angell defended regular appeal to physiological processes in psychology on the grounds that psychological activity is a form of biological adjustment; he decried the usual parallelism as 'insipid, pale, and passionless' (1907, p. 81) and invoked an instrumentalist attitude toward the mind-body distinction itself, suggesting that mind be seen as an activity of organisms.

Of all the theoretical and methodological issues attending the new psychology, the place of introspection is most notorious. Despite widespread acknowledgment of 'objective' methods, the main experimental and observational methods of the new psychology relied on introspection, loosely defined. Introspection as defended by Brentano (1874 [1973, pp. 29-30]) involved retrospective verbal reports of one's recent mental phenomena. Introspective analysis might include attempts by trained observers to discern the elements of mental life, such as the dimensions of feeling or emotion. In psychophysical experiments subjects reported their phenomenal responses to physical stimuli. Stout, describing successful cases of introspection, observed that in such experiments subjects are not asked 'What process do you,

by introspection, find to be going on in your mind?' but rather 'What do you see?' (1896, 1:12). But even as Stout wrote, psychologists interested in mental functions or acts (as opposed to static contents) were using retrospective reports in an attempt to discern process, instigating the controversy between Wundt and the Würzburg school over proper experimental method (Kusch 1999, chaps. 1-2). Introspection got a bad name, since even trained observers as preferred by Wundt disagreed among themselves, a result Titchener (1909a, pp. 6-7) suggested might partly reflect individual differences. Leaving aside behaviorism (see Chapter 53), when after 1914 'introspective methods' were rejected in psychological research into mental phenomena, as in Gestalt work on perception and cognition (see Chapter 54), reports of experience were not abandoned, but rather the analytic introspective search for psychological elements.

By 1900 psychology as an experimental natural science had been born, though scientific psychology was not as yet equated with experimental psychology. At this time Freud was developing his own theory of the unconscious (see Chapter 9), which influenced personality theory but was never strongly integrated into academic psychology. Already in 1900 advocates of a comparative approach were questioning the scientific acceptability of mentalistic theory in general (Loeb 1900, pp. 10-14), foreshadowing the behavioristic revolution that soon swept over psychology and achieved dominance at mid century.

References

- Angell, J. R. (1907). 'The Province of Functional Psychology', Psychological Review 14:61-91.
- Bain, A. (1855). The Senses and the Intellect, London: Parker & Son.
- Baldwin, J. M. (1889). Handbook of Psychology, Vol. 1, Senses and Intellect, New York: Henry Holt.
- Baldwin, J. M. (1891). Handbook of Psychology, Vol. 2, Feeling and Will, New York: Henry Holt.
- Beneke, F. E. (1833). Lehrbuch der Psychologie, Berlin: Ernst Siegfried Mittler.
- Beneke, F. E. (1845). Lehrbuch der Psychologie als Naturwissenschaft, 2nd edn, Berlin: Bosen und Bromberg.
- Bonnet, C. (1755). Essai de psychologie, London: [publisher not given].
- Boring, E. G. (1929). A History of Experimental Psychology, New York: Century.
- Brentano, F. (1874). Psychologie vom empirischen Standpunkt, Leipzig: Duncker & Humblot. Trans. 1973 A. C. Rancurello, D. B. Terrell, and L. L. McAlister, Psychology from an Empirical Standpoint, London: Routledge & Kegan Paul.
- Carpenter, W. B. (1837). 'On the Voluntary and Instinctive Actions of Living Beings', Edinburgh Medical and Surgical Journal, 48:22-44.
- Carpenter, W. B. (1874). Principles of Mental Physiology, London: Kegan Paul & Co.
- Carpenter, W. B. (1881). Principles of Mental Physiology, 6th ed., London: Kegan Paul & Co.
- Cesca, G. (1885). 'Ueber die Existenz von unbewussten psychischen Zuständen', Vierteljahrsschrift für wissenschaftliche Philosophie 9:288-301.
- Comte, A. (1830-42). Cours de philosophie positive, 6 vols., Paris: Bachelier. Trans. 1855 H. Martineau, The Positive Philosophy, New York: Blanchard.
- Danziger, K. (1979). 'The Positivist Repudiation of Wundt', Journal of the History of the Behavioral Sciences 15:205-30.
- Darwin, C. (1859). On the Origin of Species, London: J. Murray.
- Darwin, C. (1872). The Expression of the Emotions in Man and Animals, London: J. Murray.
- Delboeuf, J. (1883a). Eléments de psychophysique générale & spéciale, Paris:

Baillière.

Delboeuf, J. (1883b). Examen critique de la loi psychophysique: sa base et sa signification, Paris: Baillière.

Dewey, J. (1896). 'The Reflex Arc Concept in Psychology', Psychological Review 3:357-70.

Dunn, R. (1858). 'On Mental Physiology: or, the Correlations of Physiology and Psychology', Journal of Mental Science 4:343-60.

Ebbinghaus, H. (1885). Ueber das Gedächtnis: Untersuchungen zur experimentellen Psychologie, Leipzig: Duncker & Humblot. Trans. 1913 H. A. Ruger and C. E. Bussenius, Memory: A Contribution to Experimental Psychology, New York: Teachers college, Columbia university.

Evans, R. (1984). 'The Origins of American Academic Psychology', in J. Brozek (ed.) Explorations in the History of Psychology in the United States, Lewisburg: Bucknell University Press, 17-60.

Fechner, G. T. (1860). Elemente der Psychophysik, 2 vols., Leipzig: Breitkopf & Härtel. Vol. 1 trans. 1966 H. E. Adler, Elements of Psychophysics, New York: Holt, Rinehart and Winston.

Fechner, G. T. (1882). Revision der Hauptpunkte der Psychophysik, Leipzig: Breitkopf & Härtel.

Hatfield, G. (1990). The Natural and the Normative: Theories of Spatial Perception from Kant to Helmholtz, Cambridge: MIT Press.

Hatfield, G. (1997). 'Wundt and Psychology as Science: Disciplinary Transformations', Perspectives on Science 5:349-82.

Hearnshaw, L. S. (1964). A Short History of British Psychology, 1840-1940, London: Methuen & Co.

Heidbredder, E. (1933). Seven Psychologies, New York: Appleton-Century.

Helmholtz, H. (1867). Handbuch der physiologischen Optik, Leipzig: Voss. Trans. 1924-25 J. P. C. Southall, Treatise on Physiological Optics, 3 vols., Milwaukee: Optical Society of America.

Herbart, J. F. (1816). Lehrbuch zur Psychologie, Königsberg and Leipzig: Unzer. Trans. 1891 M. K. Smith, A Text-Book in Psychology, New York: Appleton.

Herbart, J. F. (1824-25). Psychologie als Wissenschaft neu gegründet auf Erfahrung, Metaphysik und Mathematik, Königsberg: Unzer.

Hering, E. (1861-64). Beiträge zur Physiologie, Leipzig: Engelmann.

Hering, E. (1868). Die Lehre vom binocularen Sehen, Leipzig: Engelmann.

Hilgard, E. R. (1987). Psychology in America: A Historical Survey, San

Diego: Harcourt Brace Jovanovich.

James, W. (1890). Principles of Psychology, 2 vols., New York: Holt and Co.

Krüger, J. G. (1756). Versuch einer Experimental-Seelenlehre, Halle: C. H. Hemmerde.

Külpe, O. (1893). Grundriss der Psychologie, auf experimenteller Grundlage dargestellt, Leipzig: Engelmann. Trans. 1895 E. B. Titchener, Outlines of Psychology, Based upon the Results of Experimental Investigation, New York: Macmillan.

Kusch, M. (1999). Psychological Knowledge: A Social History and Philosophy, London: Routledge.

Ladd, George Trumbull. (1887). Elements of Physiological Psychology, New York: Charles Scribner's Sons.

Ladd, George Trumbull. (1894). Psychology, Descriptive and Explanatory, New York: Charles Scribner's Sons.

Ladd, George Trumbull. (1895). Philosophy of Mind: An Essay in the Metaphysics of Psychology, New York: Charles Scribner's Sons.

Lange, F. A. (1866). Geschichte des Materialismus und Kritik seiner Bedeutung in der Gegenwart, 2 vols., Iserlohn: J. Baedeker. Trans. 1925 E. C. Thomas, The History of Materialism and Criticism of its Present Importance, 3rd edn, 3 vols., London: Routledge & Kegan Paul.

Lewes, G. H. (1857). Biographical History of Philosophy, rev. edn, London: Parker & Son.

Lewes, G. H. (1874). Problems of Life and Mind, First Series, Foundations of a Creed, 2 vols., Boston: Osgood.

Lewes, G. H. (1877). Problems of Life and Mind, Second Series, The Physical Basis of Mind, Boston: Osgood.

Lewes, G. H. (1879). Problems of Life and Mind, Third Series, The Study of Psychology, Boston: Houghton, Osgood, and Co.

Lewes, G. H. (1880). Problems of Life and Mind, Third Series, Continued, Boston: Osgood.

Lipps, T. (1903). Leitfaden der Psychologie, Leipzig: Engelmann.

Loeb, J. (1900). Comparative Physiology of the Brain and Comparative Psychology, New York: G. P. Putnam's Sons.

Lotze, H. (1852). Medicinische Psychologie, oder Physiologie der Seele, Leipzig: Weidmann.

Lotze, H. (1881). Grundzüge der Psychologie: Dictate aus den Vorlesungen, Leipzig: S. Hirzel. Trans. 1886 G. T. Ladd, Outlines of Psychology: Dictated

Portions of the Lectures of Hermann Lotze, Boston: Ginn.

Maudsley, H. (1867). Physiology and Pathology of the Mind, London: Macmillan.

Maudsley, H. (1876). The Physiology of Mind, London: Macmillan.

McCosh, J. (1886). Psychology: The Cognitive Powers, New York: Charles Scribner's Sons.

Mercier, C. (1888). The Nervous System and the Mind: A Treatise on the Dynamics of the Human Organism, London: Macmillan.

Mill, J. (1869). Analysis of the Phenomena of the Human Mind, new edn, 2 vols., London: Longmans, Green, Reader & Dyer.

Mill, J. S. (1846). System of Logic, Ratiocinative and Inductive, New York: Harper & Brothers.

Mill, J. S. (1865). An Examination of Sir William Hamilton's Philosophy, London: Longman, Green, Longman, Roberts & Green.

Morgan, C. L. (1891). Animal Life and Intelligence, Boston: Ginn.

Müller, G. E. (1878). Zur grundlegung der psychophysik, Berlin: Grieben.

Müller, G. E. (1904). Die Gesichtspunkte und die Tatsachen der psychophysischen Methodik, Wiesbaden: Bergmann.

Müller, G. E. and Pilzecker, A. (1900). Experimentelle Beiträge zur Lehre vom Gedächtniss. Zeitschrift für Psychologie und Physiologie der Sinnesorgane, Ergänzungsband 1, Leipzig: Barth.

Murchison, C. (ed.). (1926). Psychologies of 1925: Powell Lectures in Psychological Theory, Worcester, Mass.: Clark University Press.

Murchison, C. (ed.). (1930). Psychologies of 1930, Worcester, Mass.: Clark University Press.

O'Donnell, J. M. (1979). 'The Crisis in Experimentalism in the 1920s: E. G. Boring and His Uses of History', American Psychologist 34:289-95.

Ribot, T. (1870). La psychologie anglaise contemporaine: Ecole expérimentale, Paris: Ladrance. Trans. 1874, English Psychology, New York: Appleton.

Ribot, T. (1879). La psychologie allemande contemporaine: Ecole expérimentale, Paris: Baillière. Trans. 1886 J. M. Baldwin, German Psychology of To-Day: The Empirical School, New York: Charles Scribner's Sons.

Romanes, G. J. (1883). Mental Evolution in Animals, with a Posthumous Essay on Instinct by Charles Darwin, London: Kegan Paul, Trench.

Romanes, G. J. (1888). Mental Evolution in Man, Origin of Human Faculty,

London: Kegan Paul, Trench.

Scripture, E. W. (1897). The New Psychology, London: Charles Scribner's Sons.

Spencer, H. (1855). Principles of Psychology, London: Longman, Brown, Green, and Longmans.

Spencer, H. (1870-72). The Principles of Psychology, 2nd edn, London: Williams and Norgate.

Stout, G. F. (1896). Analytic Psychology, London: S. Sonnenschein & Co.

Stout, G. F. (1899). A Manual of Psychology, London and New York: University Correspondence College Press.

Sully, J. (1884). Outlines of Psychology with Special Reference to the Theory of Education, London: Longmans, Green & Co.

Sully, J. (1892). The Human Mind: A Text-Book of Psychology, London: Longmans, Green & Co.

Taine, H. (1870). De l'intelligence, 2 vols., Paris: Hachette. Trans. 1871 T. D. Haye, On intelligence, New York: Holt and Williams.

Titchener, E. B. (1898). 'The Postulates of a Structural Psychology', Philosophical Review 7:449-65.

Titchener, E. B. (1908). Lectures on the Elementary Psychology of Feeling and Attention, New York: Macmillan.

Titchener, E. B. (1909a). Lectures on the Experimental Psychology of the Thought-Processes, New York: Macmillan.

Titchener, E. B. (1909b). A Text-Book of Psychology, New York: Macmillan.

Turner, R. S. (1994). In the Eye's Mind: Vision and the Helmholtz-Hering Controversy, Princeton, N.J.: Princeton University Press.

Upham, T. C. (1841). Elements of Mental Philosophy, Embracing the Two Departments of the Intellect and the Sensibilities, 2nd edn., 2 vols., New York: Harper & Brothers.

Waitz, T. (1878). Grundlegung der Psychologie, 2nd edn, Leipzig: Siegismund & Volkening.

Ward, J. (1886). 'Psychology', in Encyclopaedia Britannica, 9th ed., Philadelphia: Stoddart, 20:42-90.

Weber, E. H. (1834). De pulsu, resorptione, auditu et tactu: annotationes anatomicae et physiologicae, Leipzig: Köhler. Trans. 1996 H. E. Ross and D. J. Murray, E. H. Weber on the Tactile Senses, 2nd edn, Hove: Taylor & Francis.

Wundt, W. M. (1862). Beiträge zur Theorie der Sinneswahrnehmung, Leipzig:

Winter.

Wundt, W. M. (1863). Vorlesungen ueber Menschen- und Thierseele, 2 vols., Leipzig: Voss.

Wundt, W. M. (1874). Grundzüge der physiologischen Psychologie, Leipzig: Engelmann.

Wundt, W. M. (1880). Grundzüge der physiologischen Psychologie, 2nd edn, 2 vols., Leipzig: Engelmann.

Wundt, W. M. (1883). 'Schlusswort zum ersten Band', Philosophische Studien 1:615-17.

Wundt, W. M. (1886). Elements de psychologie physiologique, 2 vols., Paris: Alcan.

Wundt, W. M. (1887). Grundzüge der physiologischen Psychologie, 3rd edn, 2 vols., Leipzig: Engelmann.

Wundt, W. M. (1894). 'Ueber psychische Causalität und das Princip des psychophysischen Parallelismus', Philosophische Studien 10:1-124.

Wundt, W. M. (1901). Grundriss der Psychologie, 4th edn, Leipzig: Engelmann. Trans. 1902 C. H. Judd, Outlines of Psychology, 2nd edn, Leipzig: Engelmann.

Wundt, W. M. (1908). Logik: III.Band, Logik der Geisteswissenschaften, 3rd edn, Stuttgart: Ferdinand Enke.

Wundt, W. M. (1900-20). Völkerpsychologie. Eine Untersuchung der Entwicklungsgesetze von Sprache, Mythos und Sitte, 10 vols., Leipzig: Engelmann, Kröner.

Ziehen, T. (1891). Leitfaden der physiologischen Psychologie, Jena: G. Fischer. Trans. 1892 C. C. van Liew and O. W. Beyer, Introduction to Physiological Psychology, London: Swan Sonnenschein & Co.