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WILHELM WUNDT'S CONTRIBUTION TO JOHN DEWEY'S FUNCTIONAL PSYCHOLOGY

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John Dewey's functionalism and instrumentalism arose from his defense of a teleological understanding of human activity and intelligence. E. B. Titchener's counter-defense of structuralism in the late 1890s placed Wundt's psychological methodology in opposition to functionalism. However, investigations that convincingly re-interpret Wundt instead permit the disclosure of much fundamental agreement. Examination of Dewey's earliest work shows that his commitment to teleology, with its attendant organicist and voluntarist orientation, arose from an early allegiance to G. S. Morris's Aristotelianized neo-Hegelianism and an inspirational debt to Wundt's psychology and philosophy. William James's influence on Dewey's development toward instrumentalism must be accordingly de-emphasized.

The impact of Wilhelm Wundt's philosophical and psychological theories upon John Dewey's thought has been recognized to only a limited degree. If an account of Dewey's intellectual influences mentions Wundt at all, a rare occasion in itself, it is deemed sufficient to mention that during his graduate education at The Johns Hopkins University from 1882–1884 Dewey received instruction in experimental psychology under a former student of Wundt, G. Stanley Hall. A very few additionally assert that Dewey then struggled in a couple of early papers to find common ground between Hegelian idealism and some experimental results in the emerging field of physiological psychology, but find no other compatibilities between Wundt's principles and the progress of Dewey's thought toward instrumentalism.[1] Only a handful of writers discover in Wundt's philosophical outlook any fundamental connection (the notion of organism) with the version of idealism dominating the earliest years of Dewey's career.[2] The present paper builds upon this insight to argue that the inspiration from Wundt not only guided Dewey towards organicism (with its accompanying teleological orientation to functionalism and voluntarism), but also towards the principle of continuity (with its rejection of dualistic chasms making for miraculous interactions). Together these permitted in the following decade the emergence of Dewey's functional psychology and his instrumentalist version of pragmatism.

His 1896 paper, "The Reflex Arc Concept in Psychology," is rightly identified as one of the founding documents for these two developments.[3] The manifesto of the Chicago functionalists, the "Reflex Arc Concept" remains one of the most significant and influential works in the history of psychology. For Dewey, it served as the springboard to his functional and pragmatic analyses of human learning, scientific inquiry, logic, ethics, and knowledge. Attention should be given to his article, not only as a starting point, but also as the outcome, of Dewey's own progress towards psychological functionalism. The specific contribution made here is to argue that while its views were never so well expressed, they existed long before its writing; Dewey had adhered to them closely ever since he became acquainted with both idealism and experimental psychology at Johns Hopkins in 1883. Researchers who have looked into this matter have typically

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found James's 1890 *Principles of Psychology* to be the primary source of inspiration for Dewey's work on the reflex arc.[4] This matter deserves a closer examination, because while James reinforced Dewey's views, as the many schemas and examples drawn from James and used by Dewey in his own works easily reveal, and James aided Dewey's progress in the direction of a naturalistic and biological psychology, James does not deserve the amount of credit typically granted for the inspiration behind the "Reflex Arc Concept." The basic ideas in this paper can be dated back to much earlier articles written from 1884 to 1886 which Dewey conceived partly through a contribution of Wundtian principles.

I

The story of Wundt's influence on Dewey begins with the observation that Dewey, having reached a thorough understanding of German idealism during his graduate studies under the tutelage of George S. Morris, was in an excellent position to appreciate and find persuasive Wundt's philosophical framework and psychological methodology. Such understanding and appreciation eluded most of Dewey's contemporaries.[5] This trend unfortunately persisted for a long time. Recent investigations into Wundt's thought convincingly argue that Anglo-American philosophers, psychologists, and historians of psychology have promulgated an interpretation of Wundt which profoundly differs from his actual principles and doctrines.[6] This difference is attributed to Wundt's membership in the German idealist tradition, which was not properly understood or ignored by those sympathetic to the English psychology of associationism. Specifically, it is claimed that both E. B. Titchener and G. Stanley Hall selectively read into and/or distorted portions of Wundt's texts to find support for their quite different theories of the mind. Wundt became known to most American scholars largely through Titchener and his translations of portions of Wundt's works. Subsequent writers followed Titchener's eminence, culminating in Boring's account of Wundt in his highly influential history of psychology.[7]

If Dewey's mature thought is compared with the older interpretation of Wundt as paradigmatically represented by Boring's essay there is little resemblance, but a comparison with the revised interpretation of Wundt reveals the exact opposite. The extent of the resemblance can be given preliminary expression here, with a closer comparison in subsequent sections below. Dewey's and Wundt's psychologies viewed the mental as process instead of substance, emphasized the need to take into account purposive and voluntary activity in order to understand intelligence, dramatized the mind as a realm of constructive activities and functions, regarded feeling and aesthetic sense as central to the formation of judgement, and saw in lived experience not atomistic sensations but rather a continuous flow. They held some basic tenets in common. Experience is the common starting point for all of the sciences, from physics to psychology, and each science must be permitted to use those explanatory principles which permit the best understanding of the phenomena pertaining to that field. Psychology as a science should use teleological concepts and causality in its methodology, and cannot be forced to reduce mental processes to physiological mechanistic causality in order to understand them. Philosophy should neither attempt to legislate a priori to the sciences, nor should it permit the abandonment of its problems over to the sciences; philosophy can only aid the attempt to gain internal coherence within each science, and search for a unified world-view providing coherence among not only the sciences but the other realms of human thought

as well. Furthermore, ontology should be the result of successful methodology, and not the reverse; any commitment to existences (other than the granted existence of our conscious experience) should only proceed from successful theoretical explanation.

Of course, Dewey and Wundt were not alone in espousing such principles; many of them are central to one or another of the prominent psychologists and philosophers of the late nineteenth- and early twentieth-centuries. Also, Dewey and Wundt disagreed concerning many other issues. The determination of a closer connection will require a careful examination of Dewey's studies and early writings. To this end, a consideration of the unusual nature of Dewey's graduate education is followed by a discussion of his publications in psychology from 1884 to 1886.

II

During the two years in which Dewey pursued his doctorate at The Johns Hopkins University, the philosophy department consisted of three instructors: George Sylvester Morris, George Stanley Hall, and Charles Sanders Peirce. Peirce had little effect on the young Dewey,[8] but Morris and Hall were a profound, if often contradictory, influence. Their teachings were extremely novel in this country. Morris was one of only a handful of American academics who taught neo-Kantian and neo-Hegelian doctrines. Hall's experimental psychology was an even greater rarity, as only William James of Harvard and George T. Ladd of Yale were also extensively familiar with the new psychology at that time. The presence of these two philosophies at John Hopkins is quite remarkable in itself, and it also proved to be very fortunate, as they collided with great force in the absorbing mind of one graduate student who found both philosophies powerful and impressive.

Dewey was first converted to Morris's version of neo-Heglian idealism.[9] The term "Hegelian" is for any practical purpose nearly non-informative due to its ability to cover under one umbrella numerous principles; when applied to Dewey's early philosophy it only creates more confusion than clarity. Morris's idealism was partly shaped by T. H. Green's neo-Kantian criticisms of older British and Kantian systems, which argued that these philosophies had unsatisfactory descriptions of experience and poor psychological theories of the origin and extent of knowledge. The notions of the bare sensation prior to knowledge and the thing-in-itself beyond any knowledge were rejected as impossible existences. Accordingly, all of reality must be contained within knowing experiences, which together constitute a mental self. This all-encompassing mind, the Hegelian Absolute, contains as parts the finite human minds.[10] Morris's idealism was also shaped by the concept of the "*organic*," which dictated that the real nature of anything must be conceived only through an explication of the function it serves as a part of a greater whole. Dewey described his favorable encounter with this concept as an undergraduate of the University of Vermont.[11] Morris reinforced it with a vision of knowledge as the comprehension of the complete interdependence of all portions of reality, by way of Trendelenburg's organic Aristotelianism.[12] For Morris, Trendelenburg had convincingly proven that the Hegelian dialectic of thesis, antithesis, and synthesis, producing and controlling finite minds and all other entities in a logical process, was a hopelessly confused effort. As a replacement, Morris found persuasive the idea that the individual mind is an organ with its own teleology, actively functioning within the Absolute organism. This would obviate any need for a dualistic system of physical and mental reality, and could provide for a monism without determinism.

Morris, as many other thinkers of his day, desiring to retain free-will and morality in the face of scientific materialism, wanted a compromise between the two. Some, like the British idealists whom Morris closely studied, took refuge in some sort of idealism. Morris was attracted to Hegel's views, but he was worried about an implication of the Hegelian view of God and the world in which the Absolute process of the dialectic took away all personal responsibility. Morris was wary of an Absolute Spirit which controlled all things, including the realm of the human spirit. A dead, mechanical dialectical progress of the Absolute would kill free-will and hence the life of the person. Even on an Aristotelian interpretation which Morris attempted in the manner of Trendelenburg, the teleology of the organic living Absolute could suppress or completely wipe out the teleology of the individual. How could a human being retain its personal inner-directed activities while also having some firm relationship with the greater whole which must encompass everything? Morris attempted a compromise. He drew upon the fact that an organ of the body can retain its own proper function and purpose, exercising it through the development of its potential into actual activity, while being at the same time part of a larger organism without which it could not exist. The organism has distinct purposes of its own, yet in turn cannot achieve them without the complete cooperation of all its organs. Applying this to humanity, Morris declares that "by his self-conscious personality . . . man finds himself, not cut off from, but indissolubly bound up with, all the rest of existence, including the Absolute (God) itself. It is thus precisely by his personality that man finds himself taking hold upon the infinite, joined to it, and capable of becoming organically one with it. . . ."[13] This position might allow the complete absorption of human initiative and free-will into the Absolute, but Morris continually stressed that the notion of personality must be irrevocably linked with our conception of ourselves and of God. Since Morris's notion of "personality" includes the permanence of individual potential, the individual retains that potential despite any relationship with the larger whole of the Absolute, and insofar as he actively and willingly develops that potential, can also participate in the development of the Absolute.[14] This sort of idealism has thereby received the label "voluntarism" since it focuses on the human exercise of the will in order that human potential can be actualized into proper participation with the ongoing process of the greater reality.

For Dewey, the idealistic orientation received from Morris first played a role in his own idealism, and then later would manifest itself in Dewey's attacks on all dualisms. Throughout his career, he would regard any philosophical dualism as defective and requiring repair. The doctrine that the mind is inherently functional stems ultimately from the organic portrait of mind drawn by Morris; the essence of any portion of consciousness is determined by the purpose it serves for a larger whole. This philosophy, for lack of a better term, can be best described as an organic absolute idealism. Its central drawbacks sprang from its complete lack of specificity: Morris all too easily used the terms "activity," "will," "function," "organ," and the like, without any clear psychological theory. Dewey perceived these unsolved problems and was receptive to a detailed theory of the mind which could supplement, while remaining compatible with, the organic idealism inherited from Morris. This theory was to be the experimental psychology of Wundt, acquired by way of G. Stanley Hall.

Hall was the first recipient of a Harvard Ph.D. in philosophy, in 1873. As his philosophy doctorate was awarded (by William James) in the area of psychology, he received the first American Ph.D. in psychology as well. Dewey was the first of Hall's students to graduate, and as Dewey's dissertation was nominally in the area of psychology

("The Psychology of Kant"), he was the second recipient of an American Ph.D. in psychology.[15] Hall regarded Morris's philosophy with deep antipathy, seeing in idealism everything which his own philosophy was fighting against. He was brought to Johns Hopkins for one purpose: to promote the "new" psychology and its practical applications. This psychology was largely the work of one man, Wilhelm Wundt, and was principally taught from one text: the second (1880) edition of his *Principles of Physiological Psychology*. In Hall's words, "the psychology I taught was almost entirely experimental and covered for the most part the material that Wundt had set forth in the later and larger edition of his *Physiological Psychology*."[16] While Hall never closely agreed with Wundt's psychological orientation and theories, his own independent psychology was still slowly developing out of many influences during his stay at Johns Hopkins, and did not significantly affect his teachings while Dewey took his courses.[17] Dewey's own attitude towards Wundt is revealed in the three articles written during the years 1884–1886 that deal directly with the new experimental psychology, to which we now turn.

III

In "The New Psychology,"[18] written during Dewey's second year of graduate study, he expounds the methods, discoveries, and principles belonging to what Wundt called "physiological psychology," and it is to him that Dewey credits the psychological information presented in this article.[19] The article begins by drawing a sharp distinction between the British and Scottish psychology on the one hand, and the German new psychology on the other. The former was responsible for reducing "that rich and colored experience, never the same" to a completely finished analyzed and schematized display of mental phenomena. The latter refuses to treat human life as an individualized machine. Human life cannot be individualized, because "we know that his life is bound up with the life of society, of the nation in the *ethos* and *nomos*; we know that he is closely connected with all the past by the lines of education, tradition, and heredity." It is far from mechanical, because "our mental life is not a syllogistic *sorites*, but an enthymeme most of whose members are suppressed," and "psychical life is a continuance, having no breaks into 'distinct ideas which are separate existences'."[20]

As Dewey lists these and many more differences between the two psychologies along the same lines, we can see how this new psychology would have been instantly appealing to someone who has an appreciation for the German idealist heritage. Each of the virtues of the new psychology which Dewey identifies correspond to common ideas in neo-Hegelian idealism: the notion that the human mind is primarily a social entity and only secondarily an individual entity; that the individual mind and conscious experience cannot be equated, since there are in addition mental operations responsible for creating that experience; that the old faculty and associationalistic psychologies used arbitrary distinctions to create unwarranted divisions and breaks into the continuity of the process which is mental life. The virtues that Dewey identifies can be classified according to their inspirational origins. There are two fundamental kinds of psychology involved with the new psychology, proceeding from the characteristically German distinction between *Naturwissenschaften* and *Geisteswissenschaften*. There is the physiological and experimental psychology, and the social or ethno-psychology. With respect to the latter, Wundt believed that due to the extreme complexity involved in the higher socio-historical nature of humanity, which includes morality, language, and in general any portion of human life which essentially requires participation in the larger social sphere, experimentation

is simply impossible. The social sciences here have their proper domain. However, experimentation has its place when the lower functions of the mind are to be investigated, creating the experimental and physiological psychology.[21]

Dewey goes on to say that while the results of these experiments are coming to be widely recognized, there is one serious misconception regarding the new psychology. Despite widespread opinion to the contrary, the new psychology does *not* mean to assert that its methodology and discoveries permit us to *explain* the psychical life through the physical life. While reference to physical and physiological conditions is used in the experiments, that does not imply that the mental realm can be completely known in terms of, or can be reduced to, the neurological events which undoubtably accompany them. Dewey asserts that there can be no grounds for such an implication: "Physiology can no more, of itself, give us the what, why, and how of psychical life, than the physical geography of a country can enable us to construct or explain the history of the nation that has dwelt within that country." [*EW* 1: 52][22] Dewey tries to further justify this position by arguing that since the realms of the physical and psychical are distinct, explanations of psychical events can only be made in similarly psychical terms. Of course, this sort of justification relies on the very division between the mental and the physical, which is precisely what can, and often did, come under attack by many psychologists and philosophers as the extensive dependencies and correlations between them were revealed by the new psychology. Dewey postpones any mention of further argument on this topic to the very end of the article, when he introduces teleological considerations. He then discusses some of the experimental results provided by the new psychology. With regards to sensation, it has been discovered that there is nothing in our experience which should rightfully be termed "immediate" but it is all instead a product of mediating processes. Even the simplest states of consciousness appreciable by introspection, e.g. colors or tones, are really complex, since they can be decomposable through the new experimental method, and thus all experiences are the result of unexperienced sensations. Dewey explains that

> the most complex landscape which we can have before our eyes, is, psychologically speaking, not a simple ultimate fact, nor an impression stamped upon us from without, but is built up from color and muscular sensations, with, perhaps, unlocalized feelings of extension, by means of the psychological laws of interest, attention, and interpretation. It is, in short, a complex judgement involving within itself emotional, volitional, and intellectual elements.[23]

Dewey here has stated an all-important theoretical standpoint. To declare that our experience is the product of the emotional, volitional, and intellectual elements is to leave behind the entrenched notion that these three activities are separately functioning and merely mechanically interacting mental processes. This step marks a tremendous leap for psychology, and throughout Dewey's career it will play a central role; the key idea behind his later "Reflex Arc Concept" article has been already adopted here. It also marks Dewey's first intellectual intersection with the leading psychologist who helped to establish this stage of psychology. Wundt had arrived at this stage after a long and difficult struggle, first, to establish the new experimental psychology, and second, to create a theory which could explain the experimental findings.

Wundian Psychology

In the introductory statement to his *Physiological Psychology*, 2nd edition, on "The Task of Physiological Psychology"[24] Wundt uses a distinction between the starting points

of the natural sciences and psychology. All of the sciences start from observations of experience. If the natural sciences (like physiology) begin from observing the external world, and psychology starts from observing the internal mental processes in experience, then "physiological psychology" can be the science which attempts to discovers the relations holding between them. Ideally, it could attempt to comprehensively understand life by merging the results of external and internal perception[25] into one theory of the mind. This attempt would rely on the discovery that the stimuli and movements of the subject can be controllably measured, which, if a parallel correspondence is postulated, could permit the indirect control and measurement of psychical events and processes.[26] Wundt's own primary research interests concerned sensation and volitional movement. On these two subjects, or more properly, their unification, Wundt from very early on in his career based his theory of the mind. Wundt's first book bore Leibniz's motto, *nihil est in intellectu quod non fuerit in sensu, excipi nisi ispe intellectus*, which indicated his early allegiance to the view of the mind as active and creative, and his rejection of British empiricism. His use of the concept of *apperception* throughout his career is the result. In Wundt's psychology, experience is the result of apperception: an internal constructive *and* attentive volitional process, which provides a mental life different in quality from whatever hypothetical sensations originated from external stimuli. This emergence of new qualities prevents us from being able to ever experience any of the supposed original sensations.[27]

Wundt rejected as contrary to scientific psychology the notion of a Cartesian mental substance, instead preferring to speak of the mind as an activity or process. Most importantly, Wundt goes beyond this familiar Leibnitzian and Kantian theme by including muscular sensations of the body's activities in the apperceptive process, producing directed and controlled movements. The activity of the mind is a unified whole, coordinating sensory input and bodily movements into structures for dynamic purposive responses.[28] Any mechanical theory of the activity of mind is rejected, since it would require distinct mental entities interacting in some realm of mind, and hence would lack an appreciation for the mind's creative and purposive powers. The processes which are mind do not permit a hard and fast distinction between representation, feeling, and willing; accordingly, the "faculty psychology" should be discarded. The mind may seem to resolve itself into discrete portions, each having different responsibilities, but Wundt regarded such a separation as artificial; the mind was an interrelated whole, performing many connected functions at once, which can only be distinguished and recognized in an advanced stage of psychological development. However, although we can so distinguish them, that does not imply that they have thereby achieved a new state of relative independence. By taking them too independently, other psychologies have fallen into grave errors; erecting them into separate entities or functions creates the need to postulate even more elaborate mental activities to explain how they can cooperatively operate.[29]

The crucial role of volition in the mind's processes for Wundt's psychology aligns him with those philosophers who give the will a central importance for human experience. Wundt accordingly took the label of voluntarism for his psychology, and acknowledged his debt to Leibniz, Fichte, and Schopenhauer regularly in his works.[30] This voluntarism proceeds from the conviction that volitional action, broadly construed, is the paradigmatic mental event.[31] Wundt combined this with the traditional German notion of apperception to form a hybrid which distinguished his psychology. The fundamental volitional activity was characterized by Wundt as a drive or impulse ("Trieb") which was the central apperceptive whole having among its components the ability to synthesize

sensational content and motor control and feedback. This apperceptive whole was capable of growth, as the assimilation of experience, broadly construed, created newer and higher abilities and functions.

The Organic Metaphor

After the discussion of the example of visual perception, Dewey explains the results of other kinds of work in empirical psychology. They are possible because of the increasingly detailed understanding of the components of the nervous system, their functions, and their interrelations. Inferences are then made from an existing physiological process to a perhaps hitherto unknown mental process. The required principle to make meaningful inferences possible is that ". . . if a certain nervous arrangement can be made out to exist, there always is a strong presumption that there is a psychical process corresponding to it . . ."[32] In this way physiology can lead to psychical discoveries. Dewey mentions some examples. After the discovery that nervous impulses take an appreciable time for travel, researchers (principally Wundt himself, though Dewey does not mention any by name) investigated whether the same was true for various mental activities, and succeeded. An even more significant example involves the discovery that

> The brain cells which form the physical basis of memory do not in any way store up past impressions or their traces, but have, by these impressions, their structure so modified as to give rise to a certain functional mode of activity.[33]

This discovery radically transformed older metaphysical views on the nature and purpose of the memory. More importantly, generalizations from this work on memory will proceed to pervade the entire mental realm quickly. Dewey gives little sign he is even aware of these possibilities, though they will later in his career profoundly transform his views on mind. Dewey goes on to identify his choice for the fundamental concept underlying the new psychology: organism. The entrance of this explanatory conception into psychology has affected the understanding of mind at both the individual and the social level. At the individual level, Dewey views it as responsible for leading to

> The recognition of mental life as an organic unitary process developing according to the laws of all life, and not a theatre for the exhibition of independent autonomous faculties, or a *rendezvous* in which isolated, atomic sensations and ideas may gather, hold external converse, and then forever part.[34]

Dewey here has his focus on the use of the metaphor of organism to characterize the mind, which allows stress to be placed on the essential unity of the mind. Such stress will not permit the faculty or the associationist theory to gain a foothold in the new psychology. We can note here that neither Wundt nor his commentators use the organic metaphor in this manner.[35] The "laws of all life" reference draws attention to the independent methodology of the new psychology. It has freed itself from the lawful strictures of older metaphysical views, allied itself with biology, developed the proper investigating procedures, and in so doing has become truly scientific. Also, by making regular use of the term "process" to indicate activity as basic to the mental, Dewey has joined in with a major point of agreement between Wundt and Morris. These two usually disparate thinkers display their common German idealist heritage, well expressed by Morris in speaking of the self-consciousness: "Here we have an *ideal activity* which (paradoxical as this may sound) constitutes the *agent*: the agent *is* only through its *activity*." For Morris this is true for anything: "Existence, *as such*, or

absolutely and truly considered, is in no sense whatever *passive*, but is absolutely and only *active*."[36]

At the social level, Dewey uses the organic metaphor to place the individual mind as a part of the greater social realm forming the whole. From biology we learn that the idea of the organism requires the idea of environment. The same also is true for mind. The concept of the individual mind requires the concept of the organized social life. As a result, we must recognize the "impossibility of considering psychical life as an individual, isolated thing developing in a vacuum." Now, Dewey would have to admit that no one would really disagree with this statement. Even a Lockeian empiricist requires that the mind grow in an environment which provides sensory inputs. Dewey is here revealing his bias towards the view that the truly mental life can only flourish in an environment which includes other developed minds, which together permit growth and achievement. The correct understanding of the mind requires the "idea of the organic relation of the individual to the organized social life into which he is born, from which he draws his mental and spiritual sustenance, and in which he must perform his proper function or become a mental and moral wreck."[37] Dewey would later explore the ramifications of this position with George H. Mead at the University of Chicago in the 1890s.

Organism and Voluntarism

The organic relation, the internal relation, holding between part and whole, is the only way to conceptualize mind for Dewey. He has read into Wundt what he is capable of associating with his idealistic outlook, producing a novel commentary. The use of the metaphor, however, does not result in a caricature of Wundt's theory. As Dewey understands the metaphor, Wundt's stress on the unity of an interrelated whole which encompasses all of the mind's activities is quite amenable to this sort of characterization.

The use of the term "development" points to another aspect of Dewey's use of the organic metaphor. Life is fundamentally characterized by both growth and purpose; indeed, the truly organic must display purposive growth. Dewey says that the new psychology "emphasized the teleological element, not in any mechanical or external sense, but regarding life as an organism in which immanent ideas or purposes are realizing themselves through the development of experience."[38] For Dewey the concepts "mechanical" and "external" are opposed to the organic and the internal, though this would not have been clear to his readers. The term 'immanent' is used to convey the notion of potentiality, where the potential of an organism exists, in some manner, in the actual organism. These notions reflect the Aristotelian framework inherited indirectly from Trendelenburg. What fails to cohere with this otherwise recognizable portrait is Dewey's statement that experience is the medium of expression for the realization of the organism's purposes. Aristotle held that the organism is the medium of expression, and not the organism's experience. The way to see Dewey's intent here is to recall that through the Hegelian viewpoint, the organism has lost its biological orientation: the organism is the mind, not the body. The body is but a portion of experience and experience is the whole of the organic mind. Life and organism are here being treated as primarily mental, and only secondarily biological. Dewey has in effect reversed the order of concept-metaphor. At first the concept was the biological organism and the metaphor was the organic mind; now the organic mind is the concept. Since for Dewey experience and mind are interchangeable terms, we get the result that the organic mind has as immanent within it a teleological element, which in the course of life expresses that potentiality in the actual developing organic experience. Dewey is not departing from Wundt's voluntaristic

psychology, which also depended on a distinction between the physically mechanical and the mentally teleological. Wundt never thought that the discovery of a physiological structure to which a mental process can be correlated thereby served as an *explanation* of that mental process. This position relied on the principle that the mental realm operates only according to 'mental' or 'psychical' or 'psychological' causality.[39] The psychological concepts of purpose and volition are too essential to the understanding of mental events to be replaced with physical causality, which discards purpose in favor of mechanical causes.

Dewey's use of the organic metaphor and his voluntaristic approach has a profound impact on the way knowledge and action are to be related. For Dewey, the modern view of the origin of knowledge has found no role for the will in the process of acquiring knowledge. Dewey is referring to psychologies which assume the passivity of the mind during the acquisition of knowledge. Locke's and Hume's empiricism is the paradigm here, but even Kant is guilty of holding to such passivity, for while the synthesizing process is active, there is no engagement of the will. Dewey offers two ways to express the close relationship between knowledge and will: "We have forgotten that every fact known demands something of us; we have forgotten that there is no knowledge except as our desires, our interests, our purposes, in short, the whole bent of our moral nature is concerned."[40]

First, knowledge demands something of us: "knowledge does not become real knowledge until the commands which it lays upon the will have been executed." Here true knowledge is portrayed as something which directs and orders human action in the social and moral spheres. Failure to act on known facts, even those of science, results in excessive intellectualism and leads to their decay into worthlessness. Any knowledge about the world, and even the world itself, is nothing for human beings "save where it is brought into relation with man's nature and activities." This view is a sign of Dewey's refusal to grant any existence or meaning to a non-participator in the human realm. He applies this general point by adding that since all human activity strives for God, then all knowledge must ultimately aid in our "approach to God." Second, knowledge will not even come into existence except through the participation of human desires: "there is no knowledge of anything except as our interests are alive to the matter, and our will actively directed toward the end desired."[41] The acquisition of knowledge requires a goal and a desire to attain that goal, which permits an active seeking for knowledge. Dewey is here expressing a *teleological* conception of knowledge to replace a mechanical conception in which knowledge is the result of processes needing little or no volitional activity. We can recall how the ideas of Locke, the impressions of Hume, and the phenomena of Kant will come into existence with little more effort required of us than the uncovering and orienting of our sense organs. Dewey wants to require much greater effort and activity than that, and is searching for an improved psychology to detail the workings of the process of the acquisition of knowledge. He is at this early stage sure of only two necessary components of such a psychology: knowledge will only result from the organism's activity, and this activity must take place within a larger social realm. The foundations of his later mature psychology and instrumental pragmatism began from these principles.

IV

In Dewey's April 1886 article "Soul and Body"[42] he continues to use Wundt's principle that any sufficient explanation of mental processes must include a reference to teleology. Dewey explains this in great detail, relying primarily on Wundt's work, and

in so doing expands on the subjects broached in "The New Psychology." Dewey is less concerned with the general principles of physiological psychology here than he is with Wundt's principle that mind must be understood as possessing purposes. Research in physiological psychology, especially on animals, seems to support the existence of such purposes in the organism by finding series of reactions to stimuli which could not be explained by purely mechanical means. Dewey uses these findings principally to defend the new psychology against the religious fear of any mechanistic explanation of life, by arguing that if psychological research is properly done, its resulting findings will not be susceptible to materialistic interpretations.

Explanatory Principles

Dewey finds in the required psychological category of purpose evidence that spirit is at work in the live organism, not as a separate Cartesian substance, but as "immanent in the body." This immanence is the expression typically used by Morris and Dewey to refer to Aristotelian teleological potentials invested in the organism. Dewey wants to preserve a distinction between soul and body, but it could not result in a substance dualism; as we have stated, this position accorded exactly with Wundt's own intentions. Therefore it would be a severe error to see in Dewey's use of the term "soul" an unfortunate Cartesian reversal of Wundt's psychology. If by "soul" one intends the older psychological notion, then Dewey rejected the soul. But Dewey has adopted the word to stand for his conception of mind most likely because he wanted to preserve its religious overtones for his intended audience: the readers of *Bibliotheca Sacra*.

This is the significance of Dewey's warning at the outset of the essay against any attempt to understand the relation between mind and body by trying to see "into the bowels of the molecules constituting the brain, and behold from their mutual attractions and repulsions, a sensation and a thought engendered" or by being able to "contemplate the soul, seated as on a throne in the body, thence sending forth her messengers to lay hold of the nerves and cause them to bring her reports of what is going on in the outlying regions of her domain, or to execute her orders among refractory subjects."[43] Dewey is repeating Wundt's own Leibnizian objection that a mechanistic model is poorly suited to the adequate comprehension of the soul's activities.[44] Instead of trying to visually imagine the relation between a metaphysically manufactured substantial soul and body, we ought to depend upon our ability to scientifically explain the facts: "The sole question is, what principles, conceptions, shall we use in order to explain these facts, i.e., in order to render a consistent, intelligible account of them?"[45] Dewey is telling the reader that the envisioning of a mechanical model to understand something, which may work in the purely physical sciences, will not function in psychology. The paradigm must change to one congenial to understanding life; it will therefore operate on different principles. Not surprisingly, the paradigm offered by Dewey will be that of the organism.

Dewey proceeds to give interpretations to the discoveries of physiology and experimental psychology. Dewey reasons from the physiology of the nervous system; since it is homogenous in activity (it is composed entirely, from the brain to the sense organ, of nerve cells and fibers, which both transmit the nervous energy), spirit/soul/mind cannot be limited to activity in only some portions of the nervous system. The soul must then be somehow vitally connected with the entire material nervous system or not all all. Thus the search for that part of the brain which shall be "the seat of the soul," which was occupying many prominent psychologists of the time, must be in vain. Dewey explains the reason for this:

> Either there is absolutely no connection between the body and soul at any point whatever, or else the soul is, through the nerves, present to all the body. This means that the psychical is immanent in the physical. To deny this is to go back to the Cartesian position, and make a miracle of the whole matter – to call in some utterly foreign power to make the transition which is actually found. This may cater to our love of pictures, but it is out of the line which we have laid down for ourselves. The nineteenth century substitute of a double-face substance is only another excursion into the land of fancy sketches.[46]

If neither dualism nor a revived Spinozism is the answer, then Dewey has but one alternative to offer: the principle of immanence. With the bare mention of this term Dewey sets to defending it, thus requiring the reader to proceed through the defense in order to learn just what Dewey means by it. Dewey explains that the nervous system is not merely reactive to a stimulus, but alters and impedes the transmission of nervous energy towards a response. The energy released by an initial stimulus flows through a nerve into and through the nerve's cell, both of which can change the amount of energy being transmitted. There is resistance, just as there is resistance to electricity through a wire. There can also be complete impedance on the part of the cell, or the cell can add to the energy, using a continually replenished store or even taking some of the energy from stimuli. This state of affairs prevents an uncontrollable chain reaction of completely released energy.

> Every nervous action is, therefore, a reciprocal function of stimulation, excitation, and inhibition; control through repression. Every nervous activity is essentially an adjustment. It is called forth through the stimulus, but the stimulus is not the sole factor; it does not wander at its own sweet will, but is checked and directed by the reacting activity, the inhibiting.[47]

Teleological Psychology

Dewey then makes an enormous assumption in order to bring his discussion in line with a leading concept in psychology, the reflex action. He takes it that the nervous system as a whole is analogous "in a general way" to an individual part. "Since the fibres correspond, in a general way, to the peripheral nerve system and the cells to the central, it may be truly said that the stimulating or exciting is the peripheral, and the reacting and controlling is the central or ganglionic."[48] But it seems that Dewey has forgotten his allegiance to the homogenous character of the nervous system. The reflex action or arc had been widely accepted by Dewey's time as the basic unit of nervous activity. Dewey himself would have been acquainted with the theory early in his education; one of the most influential accounts of the reflex action was contained in T. H. Huxley's *Lessons in Elementary Physiology*. There Huxley offered the theory that while many stimuli from the senses automatically went to the spine and then out to the motor nerves, perhaps the same occurs with the brain involved as intermediary as well. With the interaction of a complex and flexible brain, there could arise innumerable acquired reflex actions.[49] The reflex action could then be conceived as a series; senses transmit to a controlling and directing central nervous center which in turn sends out a motor response.

Dewey is recommending that the brain, since it corresponds to the cell's adjusting activity, is analogously responsible for the adjusting activity for the nervous system. Dewey sees in this the result of the soul's work, since such adjusting is teleological: "there is a fundamental mode of nervous activity; in this the psychical is immanent. This mode of activity is the adjusting activity; therefore the psychical is immanent in the physical

as directing it to a given end." Dewey seems to be lending credence to the notion that it is the brain alone which displays the soul's activity. This is entirely contrary to the intent of Dewey's first argument that the psychical activity must be distributed (though perhaps not evenly) throughout the nervous system. Perhaps Dewey is bending to the pressure of common opinion on this matter. However, it is far more likely that Dewey found attractive the theory that the undoubted complexity of the brain provides it with the ability to coordinate an unlimited number of reflex actions. Dewey's uncritical acceptance of the reflex action, with its divisions into separate functions, led him into creating an association between the soul and the brain. A critical examination would take place later on, leading to "The Reflex Arc Concept in Psychology."

Dewey next takes on the task of showing how the reflex action requires the notion of the teleological. Here the experimental evidence revolves around the study of the stimulation of the bodies of decapitated frogs. Such a frog will succeed in touching a stimulated spot on its body with a leg despite a series of obstacles involving the loss of the use of one or another leg. Dewey quotes Wundt's conclusions: "These observations . . . show that the animal can adapt its movements to its changed conditions." The ability to adapt under diverse conditions is the crucial finding to support the existence of goal-directed behaviors. The frogs' nervous systems are capable of altering the response to a stimulus until the goal is attained. This implies, so goes the argument, the insufficiency of materialistic mechanism, since it seems impossible to understand how such a mechanism could be able to adapt to altered conditions. The final conclusion is that the entire nervous system is permeated with goal-directed activity, or the activity of the soul, directing the activities of the nervous system.

Dewey sums up by stating that "the psychical is immanent in the physical; immanent as directing it toward an end, and for the sake of the end selecting some activities, and adjusting and co-ordinating the complex whole, so as, in the simplest and least wasteful way, to reach the chosen end." Physical causality cannot explain the experimental results, but final causality can. The materialist accordingly cannot help but admit the existence of irreducibly teleological behavior, and such behavior cannot be reasonably attributed to matter without admitting into matter an immanent psychical element. The same goes for the Darwinian-inspired "attempts to make the teleological an accidental product of the mechanical" which use notions like "selection" and "survival of the fittest" and so on. But the terminology used here simply takes teleology from the organism and places it in nature instead. And there can be no "cause and effect" interaction between body and soul for Dewey since the soul is "transcendent," although the soul is "awakened" by the physical body. The two are so constituted as to present a unified whole: the organism. For Dewey, a complete understanding of the organism must in addition to mechanistic physiology also use teleological concepts. In the study of the soul or mind, teleological concepts alone are necessary for understanding the activity there.

Of great importance is Dewey's final argument for the more sophisticated view that there is a differentiation within the soul, corresponding to differences between nervous structures, and that the soul performs its direction of nervous activity by creating changes and developments in these nerve structures over time. Dewey notes that physiological psychology supports the principle that "the lower the function, the more perfectly and narrowly it is localized." This would indicate that a simple reflex is specific to an area of the spine, while the complex thought or idea would have a broader location. Here Dewey uses the then-controversial physiological theory that it is the connections between the cells, and not the cells themselves, which are responsible for nervous structures.

Dewey easily draws an analogy: the more complex the spiritual purpose, the more sizeable, complicated, and interconnected the nervous tissue dedicated to that purpose. "If the idea be very complex, it may possibly have relations to all the cells in the brain." [*EW* 1:110] Dewey then states with approval two of Wundt's principles regarding these matters. The first says that each purpose or function has a developed structure of the nervous system from which to manifest itself. The second says that the development of such a structure will proceed towards greater effectiveness as the organism has the need to use it. Dewey then sums them up by referring to the entire process of development as the formation of habit, and distinguishes between those most necessary for an organism's survival and those which may be needed only as circumstances warrant. The former can take form in unconscious reflexes and instincts, passed on by heredity. The latter cannot; higher activities must be flexible: "There must be a constant growth, adjustment to new relations, intellectual and moral, and this requires plasticity, variability." Dewey concludes the article by recalling Aristotle's dictum that "the body is the organ of the soul" and declares, "organ presupposes function, and soul and body are related indeed as function and organ, activity and instrument."[50]

VI

The final statement of "The Soul and Body" must be regarded as singularly important. Written around the same time when Dewey was exploring and defending the territory of absolute idealism in his "The Psychological Standpoint," "Psychology and Philosophic Method," and the textbook *Psychology*, it must stand as a much-needed corrective to the typical view that in 1886 Dewey was just another orthodox Hegelian idealist. He was in fact, as we have seen, a highly unusual idealist who had a very difficult problem: given that the retention of a metaphysical dualism is highly undesirable, how should psychologists and physiologists attempt to understand human life? Specifically, while it has been all too easy since Descartes to merely say that "soul is soul, body is body, and please don't ask how the twain could meet," couldn't there be a different metaphysical approach to unify explanatory principles? Attempted resolutions have typically tried to simply reduce one realm to the other, and the basic idealist vs. materialist debate proceeds.[51] Dewey is trying to help the situation by eliminating, not one system of ontology in favor of another, but rather the notion that only one can be correct and true. Methodology comes first, and ontology is a secondary result. The nature of psychology as a field of science should no longer be pre-determined by a decision at the metaphysical level: "The sole question is, what principles, conceptions, shall we use in order to explain these facts, i.e., in order to render a consistent, intelligible account of them?"[52] The facts are not to be pre-judged: in the terminology of a later period, only the results of inquiry have the right to tell us what exists. And the results of psychology and physiological inquiry support the theory that the organism displays both teleological *and* mechanistic activity, although in Dewey's opinion the teleological view provides the better explanation.

This is the meaning of the term "immanence." We are not to suppose that we must somehow imagine two disparate substances, the physical and the psychical, distributed and encased together to create an organism. Rather, since what requires explanation is the organism's activity, the two theoretical standpoints which turn out to be needed each give rise to talk of a "body" and a "mind". Do both of them exist? Yes, according to Dewey, since they are just ways of expressing the mechanistic and the teleological

aspects of the organism's existence. The common objection to this attempt, which declares that the soul must be the metaphysically suspect addition to an obviously existing physical body, presupposes that we know the physical (the mechanical) in some prior and fundamental way and that a heavy burden of proof should be placed upon any theorist who wants to add anything to this body. Dewey believes that the burden of proof should be upon both, and to the degree that these or other potential theories prove satisfactory then they should be admitted. Since teleology provides an explanation, then "souls" exist, in the original Aristotelian sense. Souls are not to be ontologically immanent, but rather *methodologically* immanent. Dewey's position is that the organism's existence and activity is to be somehow pre-theoretical, and the physiological analysis of the nervous system and the psychical analysis of mental activity can provide two separate theories.

However, while mechanistic physiology is an option, there is a far better alternative, and that is what could be termed a "teleological physiology." The fundamental concept for this theory would be the "function," and this term would perform a double duty. It could at once refer to a component of the nervous system and to a component of the mental processes. Now, to phrase the meaning of "function" like this is to risk a great deal of confusion, since it is being defined using terms which are impregnated with the old dualistic thinking: the nervous system is of the physical realm, and the mental process is of the spirit realm. But the possibility that it could overcome dualism drove Dewey to explore its possibilities. One of these possibilities included its ability to overcome the dualism inherent in the current conception of the reflex action, and the "Reflex Arc Concept" was the result. A brief discussion of this paper is followed by the concluding evaluation of the lines of influence leading Dewey toward functional psychology.

The Reflex Arc

Dewey's 1896 "The Reflex Arc Concept in Psychology" presents a reconstruction of psychology's understanding of the nature of the fundamental unit of mental activity, the reflex arc. This understanding incorporates the older trichotomy of all mental activity, that of feeling, judging, and willing, into the three portions of the reflex arc: sensation, thought, and act. Dewey argues that such a transfer only serves to bring along all of the problems faced by the older scheme, since it was formulated in the post-Cartesian period during which dualism dominated the metaphysical landscape. This resulted in a strict division between the nature of sensation and thought. Sensation was conceived nominalistically, while thought was considered to be universal; thought was given the responsibility to organize chaotic and atomic sensations according to associations, principles, or laws. In this way the two were separate entities, able to interact without joining together. The relationship that the will, or volition, bore to human activity was similar, as the concern to preserve free will kept volition apart from its effects, the latter being subject to laws of the physical realm.

Hence a means of interaction, without providing unification, was typically desired, and such interaction was passed on to the psychological notion of the reflex arc. Dewey criticizes such interaction: "As a result, the reflex arc is not a comprehensive, or organic unity, but a patchwork of disjointed parts, a mechanical conjunction of unallied processes." Dewey argues that from the point of view of physiological psychology such absolute distinctions and divisions between psychological states or events are unwarranted and undesirable. "More specifically, what is wanted is that sensory stimulus, central connections and motor responses shall be viewed, not as separate and complete entities in themselves, but as divisions of labor, functioning factors, within a single concrete whole,

now designated the reflex arc."[53] This sort of criticism of the reflex arc concept repeats itself throughout the article, but by itself seems to lack strength. Dewey's predilection for the organic over the mechanical could on its own win few converts to his theory. A much more effective strategy also used by Dewey was precisely the reason why this article was so influential. Dewey held that the purpose of the reflex arc concept is to explain the twin phenomena of the biological organism aiming and succeeding at goals, and the organism learning from experience. The favored example is the child-candle instance, taken from James's *Principles of Psychology*.[54] The child sees the bright light and, reaching for it, is burned. How can the reaching be successful? And how is it that after the experience, the child is less likely to immediately reach for such a light again upon seeing it? The real failure of the reflex arc concept is that the mechanical relations within the reflex arc fail to explain the phenomena, and hence there is a need for a different conception of the relationships between perception, judgement, and willing. The article's enormous achievement was due to the plausibility of Dewey's organically-inspired model of the reflex arc, but this plausibility was not based upon a predilection for the organic model *per se*, but the greater degree of success with which it explained the phenomena.

The mechanical model of the reflex arc fails to account for the phenomena basically because it is too simple. On its premises, perception can be a contributing cause of an action, through judgement and willing, but the reverse cannot be true: action cannot be a contributing cause of a perception. Thus the cause of a perception must then be exclusively "sought outside the process of experience itself . . . in an external pressure of 'environment'."[55] Yet the specific qualities of the perception of the candle light would not exist without the contribution of the act of looking: the motion of the head, the focusing of the eyes, the continued attention fixed upon the light, and so forth. The character of any perception is, Dewey argues, at least in part due to the activity of the organism which brings it to the perception. Since action can contribute to perception, as well as the reverse, Dewey then conceives of a reciprocal movement of causes. This movement goes from action to perception and back again, which may account for the first phenomenon mentioned above, the reaching for the bright object. Since the reaching is out to the bright object, and not just to anywhere, we must suppose that in this reciprocal chain of causes there is the successful co-ordination of the process of reaching. There must be error-control: the perception of the reaching hand and the perception of the bright light must together guide the hand to an intersection with the light. This guidance process, with perception and action causally working together towards the goal, is referred to as the sensori-motor "circuit."

> If the sight did not inhibit as well as excite the reaching, the latter would be purely indeterminate, it would be for anything or nothing, not for the particular object seen. The reaching, in turn, must both stimulate and control the seeing. The eye must be kept upon the candle if the arm is to do its work; let it wander and the arm takes up another task. In other words, we now have an enlarged and transformed co-ordination; the act is seeing no less than before, but it is now seeing-for-reaching purposes. There is still a sensori-motor circuit, one with more content or value, not a substitution of a motor response for a sensory stimulus.[56]

The next event is the stimulus of the burn the child receives upon touching the flame of the candle; in keeping with Dewey's analysis we must say that the quality of the burn sensation is partially due to the previous activity of seeing-and-reaching. Here Dewey brings out the explanation of the second phenomenon, that of learning, although he

just as naturally could have discussed the learning process inherent in reaching out to seen objects. At this point Dewey reveals the essential contribution the organic theory makes to the discussion.

> Only because the heat-pain quale enters into the same circuit of experience with the optical-ocular and muscular quales, does the child learn from the experience and get the ability to avoid the experience in the future.
>
> More technically stated, the so-called response is not merely *to* the stimulus; it is *into* it. The burn is the original seeing, the original optical-ocular experience enlarged and transformed in its value. It is no longer mere seeing; it is seeing-of a light-that-means-pain-when-contact-occurs. The ordinary reflex arc theory proceeds upon the more or less tacit assumption that the outcome of the response is a totally new experience; that it is, say, the substitution of a burn sensation for a light sensation through the intervention of motion.[57]

Mental continuity

Experience itself is organic: experience cannot be disconnected, it cannot have any complete discontinuities. Everything which is in experience is "colored" by some preceding experience, or put differently, experiences come in wide complex stretches and long durations rather than in quick pulses of momentary and completely distinct atomic events. Given this, learning can then be explained in a very similar manner to the way a strictly associationistic explanation would proceed. The needed principle is stated quite well by James himself. If cerebral processes have once been aroused together or in immediate succession, any subsequent arousal of any one of them will tend to arouse the others in the original order.[58] If "cerebral process" is replaced by "idea" the associationist theory is expressed. James himself rejected the older atomistic and mechanical view of experience in favor of one very like Dewey's. The change to "cerebral process" permits associationism to adapt itself nicely to a different view of experience, and James used it extensively in his account of learning. Dewey does not expressly state this principle, but he must have it in mind and takes it for granted as he proceeds. So long as the processes are understood to be continuous together, this principle brings in the preservation of the experience required for learning. Dewey would have no difficulty referring to this preservation as memory so long as it is not regarded as a storehouse for ideas. Rather, the preservation is one of habit, ingrained into the functional organization of the nervous structure. We can see that Dewey has completely replaced Wundtian apperception with the Jamesian reflex arc. Apperception now seemed to Dewey to be too restrictive, an abstraction from the real organic whole which is responsible for mental activity.[59] The precise cause of this change lies in Dewey's realization that it is not necessary for psychology to postulate the existence of pre-conscious atomistic sensations, as Wundt assumed. If the continuity which prevails at the level of our present conscious experience also prevails at any prior stage, then synthetic principles have a very different role than that presumed by both Wundt and the neo-Hegelians (e.g., T. H. Green), and thus apperception as Wundt used it would be no longer needed.[60] Synthesis would still occur, but not somewhere below the level of our consciousness where the atomic sensations had to be. Rather, the synthesizers were active right in the middle of ordinary experience. Here Dewey came to agree with James that relations were part of an individual's conscious experience.[61] Dewey had long believed, going back to his earliest idealism, that they were part of conscious experience—the consciousness of the Absolute Mind. But there is no need to refer to such a Mind if all of one's mental activity is in the realm of one's experience.

The knowledge that physiology provides about the activity of the nervous structure provides Dewey with another way of arguing for the thesis that continuity prevails over all mental activity. The field of physiological psychology has as one of its guiding theses the legitimacy of drawing inferences from physiological discoveries about the nervous system to the nature of the mind's operations and abilities. Dewey accepts this thesis in this article, and infers from the continuity exhibited by the material structure and chemical activity of the nervous system that continuity must also reign over the mental life. The brevity of this argument indicates that Dewey did not intend to place great weight upon it. We can understand this by remembering that the nature of such an inference was (and still is) extremely controversial: only materialists, parallelists, or monists could have much sympathy for it. Dewey seems to express the inference in a monistic way by describing the sensori-motor process from both a physical and psychical side; he explicitly rejects the notion of a soul-substance throughout. Therefore, when Dewey refers to the psychical he is not talking about something in a purely mental realm. Echoes of the "immanence" theory of the "Soul and Body" article are very loud here.

The significant conclusion Dewey draws from his theory has to do with the nature of mental entities as he answers the question, how are we to understand the relationships between undoubtably different mental events and activities? Due to the reciprocal nature of the sensori-motor process, neither stimulus nor action can be considered to be prior to the other. For every stimulus there was action conditioning it, and for every action there was sensation exciting it. Therefore in any given situation (like the child-candle instance), the question as to what the stimulus was is determined only with reference to the goal involved in the situation. This led Dewey to say that there is no absolute classification of mental entities into stimulus, response, etc.; rather, a mental event's label is relative to some situation, and more specifically, relative to the goal or purpose the organism has in that situation. Without some purpose to its activity an organism's mental activity cannot be distinguished into kinds. Therefore such distinctions are purely *teleological*. "The fact is that stimulus and response are not distinctions of existence, but telelogical distinctions, that is, distinctions of function, or part played, with reference to reaching or maintaining an end."[62]

In the "Reflex Arc Concept" all the promise portended by the insights of the "Soul and Body" has come to fruition: the anti-dualistic organicism, the continuity of the physiological with the psychical, the functional distinctions for the parts, and the teleology of the whole. When Dewey goes even farther in later work to extend these principles beyond stimulus and response to the mediating control of judgment and ideas, Dewey will arrive at a full expression of instrumentalism. In that theory, the intellectual elements of mental activity (the concepts, judgements, etc.) exist solely in reference to practical goals, and their adequacy will be determined soley upon whether they aid in the attainment of those goals.

VII

Due to the combination of Wundt's voluntaristic psychology and Morris's idealist organicism, Dewey upheld the indissoluble integration of cognitive and volitional processes independently of James's and others' efforts in that direction. This claim must not be misunderstood. We are considering only one aspect of relationship between Dewey and James; the undoubtable impact of James cannot be underestimated, as Dewey himself has declared.[63] This impact came mostly from James's *Principles of Psychology*,

though Dewey was well aware of James's positions on the theory of local signs, the innervation theory, and associationism by 1886 (Dewey references James frequently on these topics throughout the *Psychology* and in the notes). Dewey was then also aware of one of James's more philosophical articles which presaged his pragmatism, the 1879 "The Sentiment of Rationality."[64] James there states that concepts are "teleological instruments" which serve diverse ends. A close connection with Dewey's thinking might be found, but we should be very cautious. James himself provides good ground for caution: in a note (335) he mentions that the Hegelian John Watson agrees on this point. We are reminded that Morris and Dewey both were teleological mentalists as well, and so no conclusions can be drawn here. James was already far along the road to pragmatism, but there is insufficient evidence that Dewey found anything but corroboration in James's writings before 1890.

That changed dramatically with the publication of James's *Principles of Psychology*. But what portions of the *Principles* influenced Dewey right after its publication? Dewey revised his own *Psychology* for a 1891 edition, and there tells us that "the only change involving an alteration of standpoint is in the general treatment of sensation" and credits James among others for the better theory of sensation.[65] Dewey abandoned the notion that psychology must postulate atomistic sensations in the primeval consciousness and replaced it with a conception more like James's and Hodgson's stream of consciousness theory. "There is a certain original continuous substratum of sensation out of which the various apparently distinct sensations have been slowly differentiated."[66] Dewey had no trouble accepting the "stream" on the level of ordinary experience, but hadn't thought to postulate a version of it at the sensational level, due to neo-Kantian psychology.

Despite Dewey's claim, some other important changes were made due to James's *Principles*, as outlined by Reck in his "The Influence of William James on John Dewey."[67] The most significant is the overhaul which the section on conception receives. Conceptions become explicitly functional, and this clears up the matter as to how concepts can be universal. Before, Dewey was content to say that a concept was the meaningful universality which captured relations. Now, "the concept is the power, capacity, or function of the image or train of images to stand for some mode of mental action, and it is *the mode of action which is general*."[68] How should we interpret this alteration? It is not a radically new element in Dewey's thinking and involves no fundamental "alteration in standpoint." We can recognize the notion of conceptual functionality as the mode of mental activity long before 1891. Dewey was stimulated to more carefully define concepts as he read his own theory in James's *Principles of Psychology*. Let us look at what Dewey says about the influence of the *Principles of Psychology*..

> The psychological tendencies which have exerted an influence on instrumentalism are of a biological rather than a physiological nature. . . . Briefly, the point of departure of this theory is the conception of the brain as an organ for the coordination of sense stimuli . . . for the purpose of effecting appropriate motor responses.[69]

The theory does not really look so revolutionary, as it replaces what Dewey would say about the mind with the "brain". However, it should be noted here that Dewey's 1887 *Psychology* differed in one central respect from all other psychology textbooks of that time period: Dewey rarely mentions the nervous system. It was considered practically obligatory to follow the scheme inaugurated by Wundt by beginning one's psychology text with a chapter or two on the results of physiological explorations into the nervous system, but Dewey found little place for it (save during the discussion of

sensation) even while discussion the reflex arc, which was closely related to nervous tissues in his "Soul and Body." In that article, Dewey was prepared to draw numerous conclusions from biology, but that field of study was suppressed in the *Psychology* until Dewey read James's *Principles of Psychology*. James should also be credited with convincing Dewey that evolutionary theory can shed light on the origin, purpose, and functions of the brain, as it has evolved in the way it has in order to best aid the survival of the organism. This view, when combined with physiological psychology, can draw conclusions about the psychology of belief and knowledge. This introduction to the principles of evolutionary and naturalized epistemology was certainly revolutionary for Dewey's psychology. Dewey was only prepared to bring evolutionary biology into psychological explanation after it had been stripped of lingering connections with the notion of an ultimate purpose guiding all evolution. While in earlier years such a connection made evolution palatable for a philosopher who needed such an ultimate purpose-giver for all of existence, by 1894, and perhaps earlier, Dewey had rejected such all-encompassing teleological absolutism.[70]

Why didn't Dewey ever mention Wundt in his later reminiscences about his influences? It may well be that it was far easier for Dewey to give all the credit to James, a close friend and fellow pragmatist, then to dredge up recollections of a German philosopher whose psychology inspired only temporary attention. Wundt's reputation in America went into a steep decline in the early twentieth century; furthermore, according to Titchener's influential definitions of the opposing psychological viewpoints of functionalism and structuralism, Wundt was a structuralist.[71] Indeed, James himself owes a great deal to Wundt.[72] It may well be one of the great ironies in the history of ideas that the psychology of Wilhelm Wundt, which has inspired so many functionalist rebellions, should actually be responsible for major contributions to functional psychology.

Appendix: Dewey's References to Wundt

Dewey, John. "The Revival of the Soul." (1885) *LW* 17: 10–14 (Wundt, p. 11).

_____. "Soul and Body." (1886) *EW* 1: 93–115 (Wundt, pp. 99–100, 110–111).

_____. "Review of G. T. Ladd's *Elements of Physiological Psychology*." (1887) *EW* 194–204 (Wundt, pp. 195, 201–203).

_____. "Knowledge as Idealization." (1887) *EW* 1: 176–193 (Wundt, pp. 184–185).

_____. *Psychology*. (1887) *EW* 2 (Wundt, pp. 306–307).

_____. "The Theory of Emotion." (1894) *EW* 4: 152–188 (Wundt, p. 153n).

_____. "The Reflex Arc Concept in Psychology." (1896) *EW* 5: 96-109 (Wundt, pp. 99n–100n).

_____. "Notes Upon Logical Topics." (1904) *MW* 3:62–72 (Wundt, p. 64).

_____. "Modern Psychologists." Review of G. S. Hall's *Founders of Modern Psychology*. (1912) *MW* 7: 137–141 (Wundt, pp. 140–141).

_____. "Anthropology and Ethics." (1927) *LW* 3: 11–24 (Wundt, pp. 16–17, 24).

_____. "Conduct and Experience." (1930) *LW* 5: 218–235 (Wundt, p. 225).

Notes

1. See for example Robert Westbrook, *John Dewey and American Democracy* (Ithaca: Cornell University Press, 1991), pp. 23–25; Neil Coughlan, *Young John Dewey* (Chicago: University of Chicago Press, 1975), p. 48; Robert Richards, "Materialism and Natural Events in Dewey's Developing Thought," *Journal of the History of Philosophy* 10 (1972): 56.

2. Morton G. White, *The Origin of Dewey's Instrumentalism* (NY: Columbia University Press, 1943), pp. 35–41; Lewis Hahn, "Dewey's Philosophy and Philosophic Method," in the *Guide To The Works of John Dewey*, Jo Ann Boydston, Ed. (Carbondale: Southern Illinois University Press, 1970), pp. 19–20; Thomas Alexander, *John Dewey's Theory of Art, Experience, and Nature: The Horizons of Feeling* (Albany: SUNY Press, 1987), pp. 18, 25; James Collins, "How Dewey Became a Naturalist," in his *Three Paths in Philosophy* (Chicago: Henry Regnery, 1962), p. 190. The importance of organism and function in one of Dewey's articles prior to 1890 is noticed, without mentioning Wundt, by Claude Buxton, "American Functionalism," in *Points of View in the Modern History of Psychology*, Claude Buxton, Ed. (NY: Harcourt Brace Jovanovich, 1985), p. 461, Andrew Reck, "The Influence of William James on John Dewey in Psychology" *Transactions of the Charles S. Peirce Society* 20 (1984): 89. On organicism in general, see D. C. Phillips, "Organicism in the Late Nineteenth and Early Twentieth Centuries," *Journal of the History of Ideas* 31 (1970): 413–432.

3. Alexander, pp. 41–42; Hahn, pp. 6–7; Allen Smith, "Dewey's Transition Piece: the *Reflex Arc* Paper," *Tulane Studies in Philosophy* 22 (1973): 122–141; D. C. Phillips, "James, Dewey, and the Reflex Arc," *Journal of the History of Ideas* 32 (1971): 565–6; Buxton, "American Functionalism," pp. 129–131; David Hothersall, *History of Psychology* (Philadelphia: Temple University Press, 1984), p. 275.

4. Phillips, "James, Dewey, and the Reflex Arc"; also Reck, "The Influence of William James on John Dewey in Psychology"; also J. E. Tiles, *Dewey* (NY: Routledge, 1988). Michael Buxton recognizes Dewey's early functionalism, Wundt's influence, and the need for de-emphasizing James's influence, but disagrees with the position defended here that idealism was also an essential ingredient for his later functional psychology. See his "The Influence of William James on John Dewey's Early Work," *Journal of the History of Ideas* 45 (1984): 451–463.

5. Kurt Danzinger, "Wundt and Two Traditions of Psychology" in *Wilhelm Wundt and the Making of a Scientific Psychology*, Robert Reiber, Ed. (NY: Plenum Press, 1980), p. 85.

6. Theodore Mischel first raised this issue in his "Wundt and the Conceptual Foundations of Psychology," *Philosophy and Phenomenological Research* 31 (1970): 1–26. Subsequent investigations in this line include Arthur Blumenthal, "A Reappraisal of Wilhelm Wundt," *American Psychologist* 30 (1975): 1081–1088 and his "Wilhelm Wundt and Early American Psychology: A Clash of Cultures," in *Wilhelm Wundt and the Making of a Scientific Psychology*, pp. 117–135; Thomas Leahey, "The Mistaken Mirror: On Wundt's and Titchener's Psychologies," *Journal of the History of the Behavioral Sciences* 17 (1981): 273–282.

7. Edwin Boring, "Wilhelm Wundt," in *A History of Experimental Psychology*, 2nd edition (NY: Appleton-Century-Crofts, 1957), pp. 316–347.

8. George Dykhuizen, *The Life and Mind of John Dewey* (Carbondale: Southern Illinois University Press, 1973), pp. 30–31.

9. Ibid., pp. 33–34.

10. Dewey's 1883 "Knowledge and the Relativity of Feeling" and his 1884 "Kant and Philosophic Method" present his understanding of these issues. They are published in the *Early Works of John Dewey, 1882–1898* (Carbondale: Southern Illinois University Press, 1967–1972), Volume 1, pp. 19–33 and pp. 34–47. Quotes from the *Early Works* or the *Later Works of John Dewey, 1925–1953* (Carbondale: Southern Illinois University Press, 1981–1990) in this paper are hereafter referenced in the standard way by *EW* or *LW*, volume number, and page(s).

11. "From Absolutism to Experimentalism," *LW* 5: 147–148.

12. Marc Edmund Jones, *George Sylvester Morris: His Philosophic Career and Theistic Idealism* (Philadelphia: David McKay, 1948), pp. 153–154; Alexander, pp. 22–24; Neil Coughlan, *Young John Dewey: An Essay in American Intellectual History* (Chicago: University of Chicago Press, 1975), pp. 21–22.

13. George S. Morris, *Philosophy and Christianity* (NY: Robert Carter and Brothers, 1883), p. 87.

14. Jones, pp. 323–324.

15. Robert Harper, "Tables of American Doctorates in Psychology," *American Journal of Psychology* 62 (1949): 579–587.

16. G. Stanley Hall, *Life and Confessions of a Psychologist* (NY: Appleton, 1927), p. 234.

17. Dorothy Ross, *G. Stanley Hall: The Psychologist as Prophet* (Chicago Press, 1972), pp. 150–157. See also Robert Rieber, "Wundt and the Americans: From Flirtation to Abandonment," in *Wilhelm Wundt and the Making of a Scientific Psychology*, p. 137n.

18. *EW* 1: 48–60.

19. Dewey refers to Wundt's *Physiologischen Psychologie*, 2nd edition (1880), and *Untersuchungen zur Nerven und Nervecentren* (1876).

20. *EW* 1: 49.

21. See David Leary, "Wundt and After," *Journal of the History of the Behavioral Sciences* 15 (1979): 234–235.

22. Hall makes the same point, using Dewey's analogy, in his identically-named article (published five months after Dewey's) "The New Psychology," *Andover Review* 3 (1885): 128.

23. *EW* 1: 54–55.

24. "Selected Texts from Wundt," in *Wilhelm Wundt and the Making of a Scientific Psychology*, pp. 157–169.

25. See Kurt Danzinger, "The History of Introspection Reconsidered," *Journal of the History of the Behavioral Sciences* 16 (1980): 244–245.

26. See M. L. Zupan, "The Conceptual Development of Quantification in Experimental Psychology," *Journal of the History of the Behavioral Sciences* 12 (1976): 145–158; David Leary, "The Philosophical Development of the Conception of Psychology in Germany, 1780–1850," *Journal of the History of the Behavioral Sciences* 14 (1978): 113–121; Mischel, "Wundt and the Conceptual Foundations of Psychology," 13–14; also Mischel's "Kant and the Possibility of a Science of Psychology," *Monist* 51 (1967): 599–622.

27. Edmund Hollands, "Wundt's Doctrine of Psychical Analysis and the Psychical Elements, and Some Recent Criticisms: I. The Criteria of the Elements and Attributes." *American Journal of Psychology* 16 (1905): 507–510; Kurt Danzinger, "The Positivist Repudiation of Wundt," *Journal of the History of the Behavioral Sciences* 15 (1979): 216; also Thomas Leahey, "Something Old, Something New: Attention in Wundt and Modern Cognitive Psychology," *Journal of the History of the Behavioral Sciences* 15 (1979): 242–243.

28. Kurt Danzinger, "Wundt's Theory of Behavior and Volition," in *Wilhelm Wundt and the Making of a Scientific Psychology*, pp. 104–108.

29. Ibid., pp. 96–98.

30. Blumenthal, "Wilhelm Wundt and Early American Psychology," pp. 125–126.

31. Mischel, "Wundt and the Conceptual Foundations of Psychology," p. 7; Hans Rappard, "Wundt's Voluntarism," in *Psychology as Self-Knowledge*, Trans. Liane Faili (Assen, Netherlands: Van Gorcum, 1979), pp. 91–94.

32. *EW* 1: 55.

33. *EW* 1: 56.

34. Ibid.

35. This writer's examination of Wundt's translated works and commentaries on the untranslated works has not revealed any use of the term "organic" by Wundt beyond its original biological and physiological meaning.

36. George S. Morris, *Philosophy and Christianity* (NY: Robert Carter and Brothers, 1883), p. 73; see also p. 34.

37. *EW* 1: 56.

38. *EW* 1: 60.

39. See Mischel, "Wundt and the Conceptual Foundations of Psychology," pp. 6–7; also Danzinger's "The Positivist Repudiation of Wundt," pp. 207–208; also Hoorn and Verhave, "Wundt's Changing Conceptions of a General and Theoretical Psychology," p. 72. It is Coughlan's theory that it was Newman Smyth who revealed to Dewey that the new psychology was voluntaristic, but while the commanalities between them are persuasive the principal education in this matter is clear enough in Wundt, to whom Dewey does refer. See Coughlan, pp. 42–53.

40. From the 1884 "The Obligation to Knowledge of God," *EW* 1: 61.

41. *EW* 1: 61–62.

42. *EW* 1: 93–115.

43. *EW* 1: 93.

44. See Daniel Robinson, *Toward a Science of Human Nature: Essays on the Psychology of Mill, Hegel, Wundt, and James* (NY: Columbia University Press, 1982), pp. 135–137. The reader can by now see that Buxton's statement that "Wundt's separation of body and mind had no appeal for Dewey," is profoundly misleading. See his "The Influence of William James on John Dewey's Early Work," p. 455.

45. *EW* 1: 94.

46. *EW* 1: 96.

47. *EW* 1: 95, 97–98.

48. *EW* 1: 98.

49. D. C. Phillips, "James, Dewey and the Reflex Arc." *Journal of the History of Ideas* 32 (1971): 557. See also Robert Gault, "A Sketch of the History of Reflex Action in the Latter Half of the Nineteenth Century," *American Journal of Psychology* 15 (1904): 526–568.

50. *EW* 1: 98–112.

51. Dewey was fully aware of the nature of this debate; his first publication (1882) was an attempt at idealistic reductionism: "The Metaphysical Assumptions of Materialism," *EW* 1: 3–8.

52. *EW* 1: 94.

53. *EW* 5: 97.

54. James, *Principles of Psychology*, p. 37.

55. *EW* 5: 99.

56. *EW* 5: 98.

57. *EW* 5: 98–99.

58. James, *Principles of Psychology*, p. 36.

59., *EW* 5: 99n–100n.

60. The widespread notion that it was James who led Dewey to reject atomistic sensationalism in favor of the continuity view of experience must be radically revised. Dewey had all along realized that experience displayed continuity; he apparently had not been convinced until reading James's *Principles of Psychology* that in psychological explanation this continuity should prevail at all stages of mental process.

61. On James's theory of relations see Gerald Myers, *William James: His Life and Thought* (New Haven: Yale University Press, 1986), pp. 257–261.

62. *EW* 5: 103–104.

63. "From Absolutism to Experimentalism," *LW* 5: 157.

64. Dewey references it in the Notes to Chapter 14 of the *Psychology*, *EW* 2: 266.

65. *EW* 2: 5.

66. *EW* 2: 35.

67. Andrew Reck, "The Influence of William James on John Dewey," *Transactions of the Charles S. Peirce Society* 20 (1984): 87–118.

68. *EW* 2: 179–180.

69. "The Development of American Pragamatism," *LW* 2: 14–15.

70. See Jennifer Welchman, *The Development of John Dewey's Moral Epistemology* (Ph.D. dissertation, The Johns Hopkins University Press, 1991), pp. 160–161.

71. E. B. Titchener, "The Postulates of a Structural Psychology," *Philosophical Review* 7 (1898): 449–465.

72. On James and Wundt see Charles Judd, "Radical Empiricism and Wundt's Philosophy," *Journal of Philosophy* 2 (1905): 169–176; Charlene Seigfried, *William James's Radical Reconstruction of Philosophy* (Albany: SUNY Press, 1990), p. 153; Daniel Bjork, *The Compromised Scientist: William James in the Development of American Psychology* (NY: Columbia University Press, 1983), pp. 40–43, 80–81.