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A WITTGENSTEINIAN STUDY OF EXPERIMENTAL PSYCHOLOGY

BY

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THESIS

Submitted as partial fulfillment of the requirements  
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## Abbreviations of Works by Ludwig Wittgenstein

(including compilations of notes of his lectures and  
conversations recorded by others)

- BB     *The Blue and Brown Books*. New York: Harper Torchbooks, 1958.
- CV     *Culture and Value*. Translated by Peter Winch, eds., G.H. von Wright. Chicago: The University of Chicago Press, 1980. (From *Vermischte Bemerkungen*. Frankfurt: Suhrkamp Verlag, 1977.)
- LPP    *Wittgenstein's Lectures on the Philosophy of Psychology, 1946-47*. The Notes of P.T. Geach, K.J. Shah, and A.C. Jackson. Ed., P.T. Geach. Chicago: The University of Chicago Press, 1988.
- LC     *Lectures and Conversations on Aesthetics, Psychology, and Religious Beliefs*, from the notes of Yorick Smythies, Rush Rhees, and James Taylor. Ed., Rush Rhees. Oxford: Basil Blackwell: 1966.
- LW1    *Last Writings on the Philosophy of Psychology, vol. 1*. Translated by C.G. Luckhardt and M.A.E. Aue, eds., G.H. von Wright and Heikki Nyman. Chicago: University of Chicago Press, 1982.
- LW2    *Last Writings on the Philosophy of Psychology, vol. 2*. Translated by C.G. Luckhardt and M.A.E. Aue, eds., G.H. von Wright and Heikki Nyman. Cambridge, MA: Basil Blackwell, 1992.
- NLPE    "Notes for Lectures on Private Experience and Sense Data." In *Philosophical Occasions; 1912-1951*. Eds., James Klagge and Alfred Nordmann. Indianapolis, IN: Hackett Publishing, 1993. (Notes from approximately 1934-1936.)
- PH     "Philosophy." In *Philosophical Occasions; 1912-1951*. Eds., James Klagge and Alfred Nordmann. Indianapolis, IN: Hackett Publishing, 1993.
- OC     *On Certainty*. Translated by Denis Paul and G.E.M. Anscombe, eds., G.E.M. Anscombe and G.H. von Wright. New York: Harper Torchbooks, 1969.
- PI     *Philosophical Investigations*, translated by G.E.M. Anscombe. Oxford: Basil Blackwell, 1953.

- PR *Philosophical Remarks*. Ed., Rush Rhees. Oxford: Basil Blackwell, 1964.
- RC *Remarks on Color*. Translated by Linda L. McAlister and Margarete Schättle, ed., G.E.M. Anscombe. Berkeley: University of California Press, 1977.
- RPP1 *Remarks on the Philosophy of Psychology*, vol. 1. Translated by G.E.M. Anscombe and G.H. von Wright. Chicago: The University of Chicago Press, 1980.
- RPP2 *Remarks on the Philosophy of Psychology*, vol. 2, trans., C.G. Luckhardt and M.A.E. Aue, eds., G.H. von Wright and Heikki Nyman. Chicago: The University of Chicago Press, 1980.
- T *Tractatus Logico-Philosophicus*. Translated by D.F. Pears and B.F. McGuinness. London: Routledge & Kegan Paul, 1961. (from 1921 German original)
- WL *Wittgenstein's Lectures; Cambridge, 1932-1935*. From the notes of Alice Ambrose and Margaret Macdonald. Ed., Alice Ambrose. Totowa, New Jersey: Rowman and Littlefield, 1979.
- Z *Zettel*. Translated by G.E.M. Anscombe. Eds., G.E.M. Anscombe and G.H. von Wright. Berkeley: University of California Press, 1967.

## Summary

The history of experimental psychology from approximately 1850 to 1950 is traced via a study of several prominent, mutually influential authors. Attention is sharply focussed on the epistemological issues addressed by the authors, and on the background assumptions and ideas which define the epistemological bearing of their work.

Wittgenstein's critical view of experimental psychology is simultaneously discussed, and brought to bear on the psychological subjects considered. It is demonstrated that Wittgenstein's philosophical ideas repeatedly cast doubt on psychologists' claims to have answered philosophical questions via their scientific theories and research.

It is further argued that scientific psychology is constitutionally unsuited to answer genuinely philosophical questions, and that the psychologists discussed have labored under false ideas about the natures of mind and knowledge that blind them to the actual significance of their own work. Following Wittgenstein's lead, it is argued that confused ideas about the nature of mind and knowledge lie at that historical roots of experimental psychology, and that they are woven into the fabric of the subject quite broadly.

## Introduction

Experimental psychology is an exceptionally diverse field, with fingers reaching into medicine, physiology, psychotherapy, and numerous other disciplines. However, its thickest historical roots go back to philosophy. During the mid nineteenth century, a coterie of German physiologists undertook the project of resolving certain fundamental epistemological questions via scientific theory and research. Out of their efforts grew the nascent field of experimental psychology, which under the influence of several forces, evolved into the modern discipline. America's foremost historian of psychology, Edwin Boring, writes that experimental psychology emerged out of the convergence of phenomenological problems concerning the description of immediate experience deriving from Husserl, with problems and methods of biology.<sup>1</sup> The result, says Boring, can be generally regarded as a scientific account of consciousness<sup>2</sup>, and as a science of the relation between stimuli and subjective ideas more particularly.

The founders of experimental psychology explicitly aimed to resolve epistemological questions, first raised in philosophy, via science. Hermann von Helmholtz, one of the principal figures of early psychology, writes:

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<sup>1</sup> Boring, *A History*, pp. 18-21.

<sup>2</sup> Boring, *A History*, pp. 18-21.

Epistemology was [in the early 19C] the fundamental problem posited at the start of all science: "What is the truth in our intuitions and thought? and in what sense do our ideas correspond to reality?" Philosophy and natural science approached this problem from two opposite sides; it is a common task of both.<sup>3</sup>

The physiological and psychological treatment of epistemological problems was, in fact, one facet of a larger movement. Nineteenth century Germany was the seat of modern positivism in many of its guises, and experimental psychology was one branch of a widespread movement to supplant philosophy with science. The historian Gerlof Verwey writes:

The radical change in the relationship between philosophy and science which took place after 1850 can best be described, in the light of later developments, as a shift away from philosophy towards science. The pre-eminence of philosophy, which had been taken for granted for centuries, was gradually lost, and theory of knowledge became the business of the various branches of science, which now considered themselves autonomous.<sup>4</sup>

The transition from philosophy to scientific psychology was hardly smooth. At least through the 1950's, psychologists repeatedly charged that earlier programs were ill-founded and not truly scientific. New foundations were laid, and the promise that psychology would soon achieve the status of a true natural science was made many times. Thus, Boring notes how often

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<sup>3</sup> Helmholtz, "The Facts of Perception," p. 344.

<sup>4</sup> Verwey. *Psychiatry*, p. 43

psychology is called "a young science."<sup>5</sup> In an essay dated approximately 1860, Wundt argues that psychology was only just then transcending the confused ideas of Spiritualistic and Materialistic psychological theories.<sup>6</sup> In an 1892 essay, William James writes, "Psychology, indeed, is to-day hardly more than what physics was before Galileo, what chemistry was before Lavoisier. ...[but, one may hope that] its study may be so organized even now as to become worthy of the name of natural science at no very distant day."<sup>7</sup> In a 1929 publication, Köhler claims that psychology lacks the objective results of physics only because "physics is an old science and psychology is still in its infancy."<sup>8</sup> And in a book published that same year, Watson writes that behaviorism was born when "the objective psychologists or behaviorists...decided either to give up psychology or else make it into a natural science. They saw their brother-scientists making progress in medicine, in chemistry, in physics" and determined to emulate their work.<sup>9</sup>

The foundations laid by each new generation of psychologists were essentially philosophical. For example, Gustav Fechner, who

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<sup>5</sup> Boring notes the frequency of this expression; *A History*, p. 18.

<sup>6</sup> Wundt, *Lectures*, pp. 7-8

<sup>7</sup> James, "A Plea for Psychology," p. 270.

<sup>8</sup> Köhler, *Gestalt Psychology*, p. 40.

<sup>9</sup> Watson, *Behaviorism*, p. 5.

is credited with achieving the first method for quantifying mental phenomena<sup>10</sup>, builds upon his dual-aspect theory of the mind-body relation. Fechner holds that mental phenomena are the subjective correlate of changes taking place in the brain, and it is by quantifying brain states that Fechner presumes to quantify mental states.<sup>11</sup> Fechner was succeeded by Wundt, who abandoned dual-aspect theory in favor of a brand of transcendental phenomenism derived from Kant, and his new ideas gave birth to a research program in which the quantification of brain states plays only a secondary role.<sup>12</sup> Later developments in psychological theory were founded on still other philosophical ideas.

Each development of a new philosophical foundation had dramatic implications for psychology. In the name of constructing a system within which psychological problems can be treated scientifically, psychologists have willingly redefined not only their methods and principles, but the very problems and data that they acknowledge. For example, prior to the advent of Behaviorism, the vast majority of experimental psychology was directed towards the analysis of consciousness. Indeed, for William James or the Wundtians, it would be meaningless to conceive of psychology as having any other subject. Yet

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<sup>10</sup> Boring, "Fechner."

<sup>11</sup> see Fechner, *Elements of Psychophysics*, p. 31.

<sup>12</sup> See Wundt, *Principles*, pp. 12-13.



principally on the grounds that consciousness is inherently unsuited to the objective methods of science, the Behaviorists insist that consciousness has no place in psychological science whatsoever. Instead, as their title implies, they maintain that all psychology be restricted to the science of behavior itself.

It is troublesome that experimental psychologists have repeatedly redefined the problems and data of their field, and not merely the methods and theories. It gives the impression that the tail of method has been wagging the dog of subject matter. The basic problems and data of chemistry, by contrast, would appear to remain fixed independently of theory; the reactions that a chemist observes in a test tube can be identified and described--even if not explained --in fairly generic terms. It is important to consider why, historically speaking, psychologists have been in the business of continuously reconstructing their own subject.

One very important answer is that via their epistemological arguments, experimental psychologists have developed widely divergent theories of science itself. Indeed, it is in the light of new ideas about the nature of science that older theories of psychology appear fundamentally unscientific. Let us briefly contrast Helmholtz's definition of knowledge with B.F. Skinner's to demonstrate the point. The nineteenth century German study of perception, which laid the primary foundation for experimental psychology, was rooted in the philosophical idea that scientific

knowledge is essentially constituted by causal explanation.

Helmholtz writes:

The process of our comprehension with respect to natural phenomena is that we try to find *generic notions* and *laws of nature*. Laws of nature are merely generic notions for changes in nature. But since we have to assume that laws of nature as being valid and as acting independently of our observation and thinking... we call them *causes* and *forces*. Hence, when we cannot trace natural phenomena to a law, and therefore cannot make the law objectively responsible as being the cause of the phenomena, the very possibility of comprehending the phenomena ceases.<sup>13</sup>

Helmholtz's own psychological research and theory is intended to accord with his view of knowledge and science. He treats the mind as a causal system within the world described by physical science. Gary Hatfield writes:

...[Helmholtz's] own theory of perceptual and scientific cognition was itself (at least by his own lights) an instance of the lawful in the flux of phenomena, for it brought unity to the phenomena of mind by an appeal to general laws; in this case, the laws of association.<sup>14</sup>

On the other hand, the seminal proponents of Behaviorism argue that knowledge is essentially defined in practical and behavioral terms. B.F. Skinner writes, for example:

The scientific "system," like the law, is designed to enable us handle a subject matter more efficiently. ...When we have discovered the laws which organize and govern a part of the world about us, and when we have

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<sup>13</sup> Helmholtz, *Treatise*, vol. 3, p. 34

<sup>14</sup> Hatfield, *The Natural and the Normative*, p. 226.

organized these laws into a system, we are then ready to deal effectively with that part of the world.<sup>15</sup>

Thus, if experimental psychology is to yield knowledge of its subject, say the Behaviorists, it must provide the scientist with a practical guide to the behavior of people and animals. Given such a view, the only truly valuable psychology is one that helps the scientist to behave effectively in his environment. Hence many behaviorists speak of psychology as a tool for predicting and controlling human behavior.<sup>16</sup>

Of course, other factors have also influenced the evolution of experimental psychology. In the second edition of *A History of Experimental Psychology*, Boring promotes the idea that psychology has been simultaneously shaped by an impersonal *ZeitGeist* (spirit of the times) and by great individuals who promoted their own ideas.<sup>17</sup> Kurt Danziger has more recently argued that the social framework of scientific academia has played a greater role than Boring's view suggests,<sup>18</sup> and John M. O'Donnell has similarly argued that the advent of Behaviorism was motivated largely by social and economic forces independent of intellectual concerns.<sup>19</sup>

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<sup>15</sup> Skinner, *Science and Human Behavior*, p. 14.

<sup>16</sup> E.g., Watson, *Behaviorism*, p. 11.

<sup>17</sup> Boring, *A History*, p. xiii.

<sup>18</sup> Danziger, *Constructing the Subject*.

<sup>19</sup> O'Donnell, *Origins of Behaviorism*.

However, the fact that changing epistemological ideas gave birth to new scientific goals amongst psychologists goes a long way toward explaining why generation after generation doubts the scientific credibility of its forebears.

While the trend towards naturalized epistemology is still strong in philosophy today, doubts about the movement are not uncommon. Ludwig Wittgenstein is almost certainly the most famous and influential philosopher of the twentieth century to argue that philosophical problems, in general, are not amenable to scientific solution. "Philosophers constantly see the method of science before their eyes," Wittgenstein writes, "and are irresistibly tempted to ask and answer questions in the way science does. This tendency is the real source of metaphysics, and leads the philosopher into complete darkness."<sup>20</sup> Philosophical problems are the product of conceptual confusion, according to Wittgenstein, and they are properly resolved through careful reflection on our concepts, chiefly through the study of their linguistic embodiments.

Wittgenstein believes that philosophical problems arise when we misunderstand the real meanings of our own linguistic expressions. Confusions about the nature of *thinking*, says Wittgenstein, arise "when a man has the King's English use of

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<sup>20</sup> BB, p. 18.

'thinking' but describes it wrongly."<sup>21</sup> The common pattern of confusion, according to Wittgenstein, is that we observe the complex and varied use of term or expression, but mistake it for the complex and elusive nature of the term's supposed referent. That leads to the hypostatization of fictional entities, says Wittgenstein, which usually appear to have a peculiar metaphysical nature. In the *Blue Book*, Wittgenstein writes:

This kind of mistake recurs again and again in philosophy; e.g., when we are puzzled about the nature of time, when time seems to us a *queer thing*. We are most strongly tempted to think that here are things hidden [sic], something we can see from the outside but which we can't look into. And yet nothing of the sort is the case. It is not new facts about time which we want to know. All the facts that concern us lie open before us. But it is the use of the substantive "time" which mystifies us.<sup>22</sup>

Philosophical problems arising from such grammatical confusion are resolved by carefully reflecting on the actual use of language, whereby we see the fictional nature of the metaphysical objects we have posited. In general, such reflection requires us to look anew at familiar facts, such as ordinary situations in which we speak of "time," or when we say that a person is "thinking." Philosophical "problems are solved, not by giving new information, but by arranging what we have always

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<sup>21</sup> LPP, p. 7.

<sup>22</sup> BB, p. 6.

known,"<sup>23</sup> Wittgenstein writes. When we achieve a proper view of things, "philosophical problems should *completely* disappear."<sup>24</sup>

According to Wittgenstein, experimental psychology is riddled with philosophical confusions that it, as a science, does not have the means to resolve. Thus, in 1946, he writes that experimental psychology is not a "young science" on the verge of finding its feet:

The confusion and barrenness of psychology is not to be explained by calling it a "young science"; its state is not comparable with that of physics for instance, in its beginnings. ... For in psychology there are experimental methods and *conceptual confusion*. ... The existence of the experimental method makes us think we have the means of solving the problems which trouble us; though problem and method pass one another by.<sup>25</sup>

If Wittgenstein is right, then the many reformulations of psychology, and each redefinition of the goals of psychological science are, at least in large part, so many attempts to patch up a doomed ship. If "thinking" does not denote an inner process at all, then a materialistic definition of thinking as an interior bodily process is no better than an introspectionistic definition of "thinking" as an affection of the soul or consciousness. To clarify our ideas once and for all, says Wittgenstein, we must

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<sup>23</sup> PI, §109.

<sup>24</sup> PI, §133.

<sup>25</sup> PI, p. 232.

make fundamental changes in the way we think about *thinking*, and other subjects about which we are conceptually confused:

Getting hold of the difficulty *deep down* is what is hard. Because if it is grasped near the surface it simply remains the difficulty it was. It has to be pulled out by the roots; and that involves beginning to think about these things in a whole new way. The change is as decisive as, for example, that from the alchemical to the chemical way of thinking. The new way of thinking is what is so hard to establish.<sup>26</sup>

In his copious writings on psychology, Wittgenstein continuously battles the hypostatization of mental phenomena, or the idea that mental phenomena are peculiar hidden things which we know only via the "outer" evidence of the body. He writes:

At first sight it may appear (but why it should can only become clear later) that here we have two kinds of worlds, worlds built of different materials; a mental world and a physical world. The mental world is liable to be imagined as gaseous, or rather, ethereal. But let me remind you here of the queer role which the gaseous and the ethereal play in philosophy, --when we perceive that a substantive is not used as what in general we should call the name of an object, and when therefore we can't help saying to ourselves that it is the name of an ethereal object. I mean, we already know the idea of 'ethereal objects' as a subterfuge, when we are embarrassed about the grammar of certain words, and when all we know is that they are not used as names for material objects. This is a hint as to how the problem of the two materials, mind and matter, is going to dissolve.<sup>27</sup>

Wittgenstein's view on this matter might be familiar to philosophers. It is somewhat akin to the view that Ryle advances

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<sup>26</sup> CV, p. 48 (1946).

<sup>27</sup> BB, p. 47.

in *The Concept of Mind*, wherein he specifically attacks what he calls "the dogma of the ghost in the machine,"<sup>28</sup> or the view that mental phenomena are subjective occurrences happening in the metaphorical interior of a person, while bodily activities are another sort of phenomenon altogether. According to the dogma of the ghost in the machine, says Ryle, the subject has exclusive access to his own mental phenomena, the contents his own consciousness, while each of us can see only the bodily states and activities of others.<sup>29</sup> Ryle's primary ambition in *The Concept of Mind* is to prove that the dogma of the ghost in the machine is false:

...and false not in detail but in principle. It is not merely an assemblage of particular mistakes. It is one big mistake and a mistake of a special kind. It is, namely a category mistake. It represents the facts of mental life as if they belonged to one logical type or category (or range of types or categories), when they actually belong to another.<sup>30</sup>

Ryle wisely chooses not to define the notion of "category mistake" rigidly, but instead elucidates it through analogies. To think of mental phenomena in the manner targeted, Ryle argues, is comparable to thinking that Oxford University is another structure in addition to its plant, or that team spirit is an

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<sup>28</sup> Ryle, *The Concept of Mind*, p. 15.

<sup>29</sup> Ryle, *The Concept of Mind*, p. 13.

<sup>30</sup> Ryle, *The Concept of Mind*, p. 16.



activity comparable to bowling, batting, or wicket-keeping.<sup>31</sup> In each of these cases, one mistakenly conceives of categorically different things as on a par. To conceive of mental phenomena as events or processes going on inside the body, says Ryle, rather than as facts of a categorically distinct kind, is a common confusion infecting both philosophy and psychology.

Ryle's ideas provide a good preliminary explanation of how Wittgenstein eliminates the fiction that mind and body are two worlds related to each other causally or metaphysically. Much like Ryle, Wittgenstein holds that our psychological predicates and descriptions apply to a different category or dimension of facts than do our material predicates and descriptions, rather than to a different domain of items. And like Ryle, Wittgenstein believes that the misinterpretation of our psychological predicates is a common source of deep confusion in both philosophy and psychology.

Wittgenstein's critique of psychology developed out of a lifelong interest in the subject. While the record of Wittgenstein's background in psychology is spotty, what is available demonstrates his sustained engagement of the subject. He certainly read William James, Wolfgang Köhler, and Sigmund Freud with care,<sup>32</sup> and he apparently read Koffka's *Principles*.<sup>33</sup>

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<sup>31</sup> Ryle, *The Concept of Mind*, pp. 16-17.

<sup>32</sup> Monk, *Duty of Genius*, pp. 477-8, 508-9, 512-15, 405-07.

In 1912, he worked in Charles S. Myers' psychological laboratory on the perception of musical rhythm,<sup>34</sup> and during the second World War, he studied wound shock in Newcastle.<sup>35</sup> Furthermore, Rush Rhees reports that Wittgenstein at least once described the Weber-Fechner law (which provided the basis of much or even most experimental psychology in the late nineteenth century) in sufficient detail to indicate that he had first-hand understanding of it.<sup>36</sup>

Like the complaints leveled by psychologists against their predecessors, Wittgenstein's charges must not be interpreted too bluntly. Experimental psychology was not wholly barren in 1946 when Wittgenstein wrote that it was infected with conceptual confusion, and psychologists have since continued to produce valid and interesting results. Even if it were true that experimental psychology is riddled with conceptual confusions right down to its foundations, it would be wrong to deny its copious achievements. To cite just two examples, in the early twentieth century Pavlov conducted his famous and revealing experiments on conditioned reflexes in animals, and Franz and

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<sup>33</sup> Pastore, "Wittgenstein on Köhler," p. 345.

<sup>34</sup> Pastore, "Wittgenstein on Köhler," p. 50.

<sup>35</sup> Hacker, *Wittgenstein*, p. 555n.

<sup>36</sup> LC, p. 41.

Lashley fruitfully investigated the role of the brain and the effects of brain damage in learning.<sup>37</sup>

On the other hand, there are at least two issues suggested by Wittgenstein's arguments that are worth serious consideration. First, there is the question of whether or not the ambition to define the problems of psychology in scientific terms has, somehow, sacrificed the subject. In their eagerness to scientifically define and explain such mental phenomena as thinking, psychologists may well have committed themselves to a conceptually confused view of many of the very matters that they claim to explain. Secondly, we should consider whether or not experimental psychology can, or already has, solved epistemological problems. The latter concern speaks to project of naturalized epistemology more broadly, and so is of great philosophical importance.

In the chapters that follow, we will approach the aforementioned issues via an analysis of prominent psychological theories and ideas advanced between approximately 1850 and 1950, while bringing Wittgenstein's ideas to bear wherever possible. The investigation will roughly follow the historical progression from German physiological psychology to American neobehaviorism, in order to highlight the internal dialectic that shaped the discipline, as one generation after another reacted against its

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<sup>37</sup> Garrett, *Great Experiments in Psychology*, pp. 125-6.

predecessors and established new projects and principles for scientific psychology. By bringing so many different psychological theories and approaches into a single discussion, we hope to shed light on those fundamental issues with which Wittgenstein is concerned.

## Nineteenth Century Science of Perception

### *Introduction: Foundations in Kant*

Experimental psychology is sometimes said to have been born in 1879, when Wilhelm Wundt established the first laboratory devoted exclusively to psychological research at Leipzig. However, significant proto-psychological work was underway in Germany at least forty years prior, mostly as a branch of physiology. During that earlier period, a coterie of outstanding scientists began investigating the physiological processes implied by philosophical theories of perception.

Immanuel Kant had an especially profound influence on the founders of psychology, both directly and via several post-Kantian philosophers (e.g., Schelling, Hegel, and Husserl). D. W. Hamlyn's reading of Kant emphasizes his idealism, and so adequately represents that interpretation implicit in the German physiologists' work. Hamlyn writes:

Kant took over, lock stock and barrel, the representative theory of perception, and maintained that all knowledge is founded on subjective experiences produced by entities outside the mind. But, as against the Rationalist tradition, he maintained that, as a consequence, there could be no knowledge of those entities or "things-in-themselves." The mind is acquainted with appearances only...<sup>38</sup>

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<sup>38</sup> Hamlyn, *Sensation and Perception*, p. 133.

Given his assumption that the mind is acquainted only with appearances, Kant is obliged to offer some explanation of why the things that we perceive seem to lie in space and extend beyond the limits of our own minds. That he does, in the form of his theory that it is a native faculty of mind to represent all appearances in a spatial manifold. Hamlyn summarizes Kant's view as follows: "Space is nothing but the form of outer sense. It is the subjective condition of sensibility, under which alone outer intuition is possible for us."<sup>39</sup> In other words, whenever we perceive appearances, we necessarily perceive them as objects having depth, and as existing outside of our own minds.

The implication of Kant's theory is that certain native faculties of mind are set to work constructing the notion of an external world when the sensory organs are stimulated. In fact, the first paragraph of the *Critique of Pure Reason* makes reference to such faculties being "awakened" by sensation:

There can be no doubt that all our knowledge begins with experience. For how should our faculty of knowledge be awakened into action did not objects affecting our senses partly of themselves produce representations, partly arouse the activity of our understanding to compare these representations, and, by combining and or separating them, work up the raw material of the sensible impressions into that knowledge of objects which is entitled experience?<sup>40</sup>

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<sup>39</sup> Hamlyn, *Sensation and Perception*, p. 46.

<sup>40</sup> Kant, *Critique of Pure Reason*, p. 25.

The founders of experimental psychology treat the mental mechanism implied by Kant's ideas in biological terms, thus marking a break with Hegel and quite possibly with Kant himself. Yet that interpretation is essential to their attempted scientific solution of epistemological problems. Their investigation of the mind is largely an attempt to understand the principles whereby the body produces three-dimensional images within the mind/brain.

### ***Müller and the notion of the sensorium***

Johannes Müller was particularly influential in the founding of experimental psychology. His students include such great figures as Hermann von Helmholtz, Emil DuBois-Reymond, and Virchow, who pioneered numerous modern biological theories.<sup>41</sup> Müller's magnum opus, the *Handbuch der Physiologie des Menschen für Vorlesungen*, (1833-40; translated as the *Elements of Physiology*, 1843), was widely read, and often referred to as a kind of text book.

The majority of Müller's psychologically relevant work is focused in his theory of perception, wherein he tries to explain how the idea of the external world arises within the mind from stimulation of the sensory organs. Müller maintains that the idea of the external world is actually an image produced within the

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<sup>41</sup> Fancher, *Pioneers of Psychology*, p. 93.

*sensorium*, which he regards as a portion or function of the brain:

That which through the medium of our senses is actually perceived by the *sensorium* is indeed merely a property of change of condition of our nerves; but the imagination and reason are ready to interpret the modifications in the state of the nerves produced by external influences as properties of the external bodies themselves.<sup>42</sup>

In explaining the action of the *sensorium*, Müller relies on his own theory of specific nerve energies and the vitalistic theory of life. According to the theory of specific nerve energies, each of the five types of sensory organs produces a unique type of sensation. The eyes produce sensations of light, the nose of smell, etc.<sup>43</sup> and each type of sensory organ is responsive only to a corresponding, unique brand of stimulus.<sup>44</sup> Vitalism, on Müller's view, amounts to the idea that living tissues are moved by super-sensible causes that cannot be accounted for scientifically. "Everything which evidences an action that cannot be explained by the laws of inorganic matter," Müller writes, "is said to have an organic, or, what is that same thing, a vital property."<sup>45</sup> Organic matter, says Müller, is under the influence *vital force* ("creative vital principle," "life

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<sup>42</sup> Müller, *Elements of Physiology*, p. 707.

<sup>43</sup> See Boring, *Sensation and Perception*, pp. 71-2.

<sup>44</sup> Boring, *Sensation and Perception*, p. 71

<sup>45</sup> Müller, *Elements of Physiology*, p. 167.



force," "organic force," "primum movens," "organic principle," "formative principle," etc.<sup>46</sup>), a super-physical cause that can make matter behave in ways it would not if governed only by material forces.

Müller maintains, for example, that matter will form only unary and binary compounds so long as it is governed only by comprehensible, physical forces. Organic matter, however, forms tertiary compounds, according to Müller, that are caused by the incomprehensible action of vital force upon living matter.<sup>47</sup> The "mode in which the ultimate elements are combined in organic bodies," he writes, "as well as the energies by which the combination is effected, are very peculiar; for, although they may be reduced by analysis to their ultimate elements, they cannot be regenerated by any chemical process."<sup>48</sup>

Along with epigenesis, respiration, and a few other select bodily functions, Müller maintains that the mental functions of sensation, cognition, reason, and perception are all vitally caused. According to Müller, all mental functions are activities of a brain under the causal influence of *mental principle*, a cousin or version of vital force. Müller writes that a brain

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<sup>46</sup> I have borrowed this accumulation of epithets from Hall, *Ideas of Life and Matter*, vol. 2, p. 260.

<sup>47</sup> Müller, *Elements of Physiology*, p. 15.

<sup>48</sup> Müller, *Elements of Physiology*, p. 15.

under the influence of physical forces alone cannot be the seat of "perception, will, ideas, or thought,"<sup>49</sup> while a brain under the influence of mental principle is. In short, consciousness is an inexplicable function of living matter that exists only because of super-physical causes affecting the body.

Müller combines the theories of vitalism and specific nerve energies in his theory of spatial perception. He claims that it is a vital function of the sensory organs to transmit sensations imbued with spatial characteristics, amongst other qualities.

Regarding the retina, for example, Müller writes:

There are a great number of other phenomena...which are the results of vital properties of the retina, and of the co-operation of the sensorium in the act of vision. To these belong not merely the act of sensation itself, and the perception of changes produced in the retina, as light and colours, but also the conversion of the mere images depicted in the retina into ideas of an extended field of vision,--of proximity and distance,--of the solidity (in the geometrical sense) and size of objects.<sup>50</sup>

In other words, a scientifically inexplicable property of the retina imbues visual sensations with spatial qualities that allow the sensorium to "interpret" those sensations as three-dimensional images.

### ***The Fall of Vitalism, and the new Theory of Local Signs***

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<sup>49</sup> Müller, *Elements of Physiology*, p. 789.

<sup>50</sup> Müller, *Elements of Physiology*, p. 738.

Müller's own students vigorously and successfully challenged the thesis of vitalism, which has come in and out of fashion since the time of the ancient Greeks. In 1845, Carl Ludwig, Emil du Bois-Reymond, Ernst Brücke, and Helmholtz formed a pact against vitalism, and their own later work essentially assured the theory's downfall.<sup>51</sup> Helmholtz struck the heaviest blow against vitalism when he introduced the law of the conservation of energy in 1847.<sup>52</sup> Because the law states that the quantity of physical energy in the universe is constant, it immediately rules out the possibility of vital force; if extra-physical energy affected matter as Müller holds, then it would add to the universal total of physical energy. Following the public statement of Helmholtz's law, a wave of experimentalists began working out theories of organic action which do not rely on super-physical causes. Du Bois-Reymond soon established the electro-chemical theory of nervous energy, for example, and Virchow pioneered the cellular theory of pathology.<sup>53</sup>

In hindsight, we can recognize that Helmholtz's law marks a shift in scientific presumption, and not merely of known facts. Helmholtz himself acknowledges a lack of proof that all organic functions are subject to the law of the conservation of energy,

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<sup>51</sup> Boring, *A History*, p. 709.

<sup>52</sup> Boring, *A History*, p. 299.

<sup>53</sup> Fancher, *Pioneers of Psychology*, p. 93.

though he considered it "extremely likely" that the law holds over all organic functions.<sup>54</sup> If we imagine that vital and physical forces can be transformed one into the other, then we might devise a plan according to which their transformations maintain the constant quantity of energy in the universe. In fact, William Carpenter advanced such a theory of life.<sup>55</sup> However, Helmholtz's law is intended to rule out such a scheme, precisely because all energy is presumed to be physical and quantifiable. Helmholtz specifically argues that the mechanical work done by the muscles is fueled by energy released when food is oxidized, for example, not by vital energy traveling along the nerves.<sup>56</sup> The fact that Helmholtz's law was received with little objection and assiduously applied to an extraordinary range of subjects indicates that his thinking was part of an established trend that would inevitably have forced the rethinking of biological and psychological theories, even had it not been canonized in Helmholtz's principle.

One important consequence of the fall of vitalism for psychology (we will discuss a second below) was that scientists began to develop wholly naturalistic theories of the mechanism by which sensations emanating from the retinas and skin are

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<sup>54</sup> Helmholtz, "Application"

<sup>55</sup> See Hall, *Ideas of Life and Matter*, vol. 2. pp. 273-4

<sup>56</sup> See Hall, *Ideas of Life and Matter*, vol. 2. pp. 273-4

transformed into three-dimensional images. The most important was devised by Hermann Lotze, the theory of *local signs*. According to Lotze, every sensation is imbued with a unique characteristic, a local sign, defined by its aggregate qualities, which defines from what point on the sensory organ it emanates. The local sign is not itself a spatial characteristic, on Lotze's view, as Müller suggests. Rather, Lotze maintains that when a stimulus excites numerous consecutive points along the surface of a sensory organ, we experience a series of similar sensations that we recognize, through the quality of their local signs, as arising from spatially separate regions of our body. Via subsequent mental processes, he believes, we arrive upon the idea of an external stimulus exciting the different points on the sensory surface. "If we are equipped with a large number of local signs and we know which signs are adjacent," Boring summarizes, "we can solve out, as it were, a kind of solid space."<sup>57</sup> That is, the sensorium interprets the spatial differential between sensations as a spatial quality of the things perceived.

As the theory of local signs evolved, so did a difference of opinion regarding the faculty whereby sensations are thought to be located in a spatial manifold. On the one side of that debate were the Nativists, who maintain that the mechanism in question is inborn and invariable. On the other side were the Empirists

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<sup>57</sup> Boring, *A History*, p. 269.

(so titled in order to mark independence from the British Empiricists with whom they shared some but not all ideas related to the matter of spatial perception), who hold that the sensations and local signs are interpreted by an unconscious, psychological process of inference. Helmholtz is the foremost advocate of the Empirist theory of perception, and we turn to his theory of perception next.

### ***Helmholtz's theory of perception***

According to Helmholtz, the mind unconsciously calculates that the most sensible interpretation of sensations and local signs is a spatially extended image of the world. A three dimensional manifold, says Helmholtz, is the only conceptual scheme that can make adequate sense of the sensations you receive when running your hand or eye over the objects around you.<sup>58</sup> Hence, through the act of unconscious inference (*unbewußter Schluß*), the mind arrives upon the constructed idea of the world.

The basic principles of Helmholtz's theory of perception are the following: First, the retina may be regarded as a functionally two-dimensional surface. Second, when stimulated, each retina produces a correlate, two-dimensional mosaic of sensations. Von Kries writes in an appendix to Helmholtz's *Treatise*, "It may be surmised that there is some intuitional

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<sup>58</sup> Helmholtz, "The Facts of Perception," pp. 376-7.

basis for the distribution of the visual impressions side by side in the visual field of view in the same collocation as that of the retinal points..."<sup>59</sup> Helmholtz himself makes the unlikely claim that a person can actually see the two plane mosaics present in ordinary binocular perception if only she pays attention to her sensations rather than to her apperceptions.<sup>60</sup> Helmholtz writes, "When a person's attention is directed for the first time to the double images in binocular vision, he is usually greatly astonished to think that he had never noticed them before..."<sup>61</sup> Finally, the visual system within the brain renders an *Anschauung*, or a three-dimensional *apperception* within the sensorium, based on the sensations given in the twin two-dimensional manifolds of sensation. It is the *Anschauung* which appears, to the subject, to be an object in the world.<sup>62</sup>

In most instances, according to Helmholtz, the *Anschauung* is comprised of sensations deriving from memory as well as from immediate stimulation of the retinas. Through a combination of inborn mechanism and unconscious inference, the mind/brain produces an amalgam of memorial and current sensations that is

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<sup>59</sup> Helmholtz, *Treatise*, vol. III, p. 615

<sup>60</sup> The visual field is commonly described as a mosaic of very fine color spots in nineteenth century texts.

<sup>61</sup> Helmholtz, *Treatise*, vol. III, p. 7.

<sup>62</sup> Helmholtz, *Treatise*, vol. III, p. 10.

the *Anschauung*. Helmholtz illuminates the sense of his theory by example: we commonly can "see" the furniture in a familiar room that is actually too dimly lit to produce a proper apperception given only the evidence of present sensation. Helmholtz hypothesizes that memorial sensations are interpolated into the *Anschauung*, along with immediate sensations, thereby rendering an image of the room.<sup>63</sup> (Helmholtz reserves the term "immediate perception" (*Perzeption*) for apperceptions that are derived strictly from present sensation without the introduction of elements from memory.<sup>64</sup>)

Helmholtz's scheme apparently answers the question of how our ideas of a three-dimensional world (i.e., objects in space) are rendered from the data of sensations. The following diagram (which is my own design) illustrates Helmholtz's theory:

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<sup>63</sup> Helmholtz, *Treatise*, vol. III, p. 11.

<sup>64</sup> Helmholtz, *Treatise*, vol. III, p. 11.



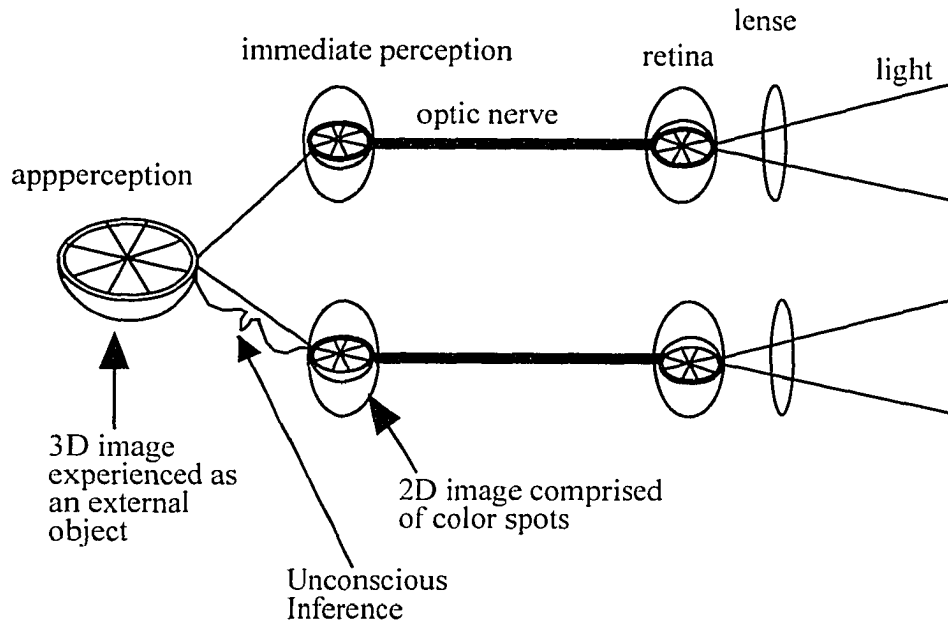


Figure 1 - Representing Helmholtz's Theory of Perception

### ***Helmholtz's epistemology***

Helmholtz's theory of perception is continuous with his epistemological theory, for he holds that in all cases, our ideas and knowledge of the world are derived from the same sensory data. Thus, Gary Hatfield writes, "There was indeed a thoroughgoing continuity between Helmholtz's epistemology and psychology of perception: the uninterpreted signs of epistemology are identical with psychologically primitive sensations, and the formation of spatial representations ascribes a 'meaning' to or 'interprets' those sensations."<sup>65</sup> Whether our task is to make

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<sup>65</sup> See Hatfield, *The Natural and the Normative*, p. 208.

sense of the sensations of heat on our faces or the readout on a laboratory instrument, Helmholtz believes, the fundamental task of the knowing mind is to formulate a system of interpretation that makes sense of sensations. On his view, the psychological act of unconscious inference whereby we derive the idea of a spatially extended world, is essentially the same as the complex, conscious acts of inference whereby we understand all phenomena. Hatfield writes:

Fundamental to his [Helmholtz's] picture of the relationship between psychology and epistemology was the idea that the process of experimental investigation in science and the resulting scientific inferences are simply an extension of the most ordinary psychological processes, such as those underlying the perception of size, shape, and distance of objects in the field of view. As he enjoined on more than one occasion, scientific inference is the psychology of perception writ large.<sup>66</sup>

Because he believes that all knowledge of the world is derived from the analysis of changes in our sensory perceptions, Helmholtz maintains that all knowledge ultimately concerns causes. As noted in the introduction, according to Helmholtz, the fundamental task of the knowing mind is to find causal laws that account for the changes given in the realm of sensations. Equating the law of universal causation with the law of sufficient reason,<sup>67</sup> Helmholtz writes:

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<sup>66</sup> Hatfield, *The Natural and the Normative*, p. 167.

<sup>67</sup> Hatfield, *The Natural and the Normative*, p.214.

The law of sufficient basis [reason] amounts simply to the requirement of wishing to understand. The process of our comprehension with respect to natural phenomena is that we try to find *generic notions* and *laws of nature*. ... Hence, when we cannot trace natural phenomena to a law...the very possibility of comprehending such phenomena ceases... Just as it is the characteristic function of the eye to have light sensations...so likewise it is the characteristic function of the intellect to form general conceptions, that is, to search for causes; and hence it can only *conceive* [begreifen] of the world as being causal connection. ...Accordingly, the law of sufficient reason is nothing more than the urge of our intellect to bring all our perceptions under its own control.<sup>68</sup>

Thus, like dozens of philosophers before and since him, Helmholtz elevates science and the study of causal laws to a special place amongst the forms of understanding. By defining all understanding as causal interpretation of sensory phenomena, Helmholtz tacitly equates scientific explanation with knowledge itself. Hatfield writes, "According to [Helmholtz's] analysis of the psychology of inference, the mind of the scientist is a filter for the lawlike..."<sup>69</sup>

### ***Wittgenstein on Spatial Perception***

While the physiological study of perception can reveal many important facts, it is unclear that it is suited to the epistemological problems to which Helmholtz applies it. Helmholtz's whole approach rests on the presumption that "what is perceived" is actually an internal image created in the

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<sup>68</sup> Helmholtz, *Treatise*, vol. III, pp. 34-5.

mind/brain in response to stimulation of the sensory organs.

Wittgenstein characterizes such theories of perception as follows:

"What I really see must surely be what is produced in me by the influence of the object"--Then what is produced in me is a sort of copy, something that in its turn can be looked at, can be before one; almost something like a *materialization*.<sup>70</sup>

Contrary to Helmholtz, according to Wittgenstein the concept of "what is seen" does not simply denote anything like an inner materialization. If someone is looking at a black-and-white photograph, Wittgenstein notes, there is a sense in which "what she sees" must be a patchwork of shades. Yet, we can also accurately say that "what she sees" is the scene depicted (including, quite possibly, that someone in it has blond hair). The different descriptions of "what she sees" will have different applications; the first might indeed be most appropriate if we are studying the woman's physiological capacities of perception. The latter, on the other hand, would be more appropriate in a court of law, say, were a witness asked to testify about the content of a photograph.

Wittgenstein suggests that whether or not we describe what a person sees in two or three dimensions is similarly variable, and determined by the application of the description rather than by

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<sup>69</sup> Hatfield, *The Natural and the Normative*, p. 226.

<sup>70</sup> PI, p. 199.

private mental facts. Like a photograph, a landscape can be described in terms of colors or shades on a plane. Though such descriptions are unusual and cumbersome, they are possible. (Artists sometimes describe scenes two-dimensionally when they are drawing or painting). Both descriptions are "accurate," though they do not correspond to different mental images within the mind. "The point," says Wittgenstein, "is that there are many ways of describing 'what a man sees'."71

Contrary to Helmholtz, the biological processes of binocular vision might account for my ability to judge depth, but my ability to describe the things that I see in terms of spatial concepts is not rooted in any particular experiential state. As Wittgenstein points out, it is quite possible for someone to describe the world in spatial terms despite never having recognized even that she sees with two eyes, let alone that her visual impression is derived from two plane mosaics of sensation:

Must I know that I see with two eyes? Certainly not. Do I perhaps have two visual impressions in ordinary seeing, so that I notice that my three-dimensional visual impression is compounded of two visual pictures? Certainly not.--So I can't separate three-dimensionality from seeing.<sup>72</sup>

Even if we accept the truth of Helmholtz's unlikely claim that he could actually see the two planes that he describes, that only

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71 LPP, p. 107.

72 RPP1, 420.

goes to show that he found that description of what he saw to be apt in one case or another. "It is unhelpful to remark that the arrangement in the dimension of depth is, like any other, a property of the 'seen',"<sup>73</sup> Wittgenstein writes, for the characteristic of depth is imbued by the concepts we employ in our descriptions of what is seen. Depth is not an intrinsic characteristic of mental phenomena as Helmholtz imagines.

In an effort to dispel the myth of the inner materialization, Wittgenstein points out that there are behavioral criteria for saying that another person sees three dimensions. He writes:

How does one tell that human beings see three-dimensionally?--I ask someone about the lie of the land (over there) of which he has a view. "Is it like this?" (I shew him with my hand)--"Yes."--"How do you know?"--"It's not misty, I see it quite clear."--He does not give reasons for the surmise. The only thing that is natural to us is to represent what we see three-dimensionally...<sup>74</sup>

Wittgenstein's point is not precisely behavioristic, as we will discuss later in this dissertation; he does not mean to imply that "seeing" or "seeing three dimensions" denotes certain kinds of behavior. Rather, the point is that the concept of "seeing three dimensions" is used to describe "what is seen" in a certain light, and is appropriately applied under certain circumstances

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<sup>73</sup> RPP1, §86.

<sup>74</sup> PI, p. 198.

that are largely defined by the behavior of the percipient. When we say that another "sees in three dimensions," we are describing her interaction with the world under a particular aspect.<sup>75</sup>

If it is true that the "things that we see" are not identical with the end products of a causal process starting with the physical stimulation of the retinas, then it follows that the science of vision cannot wholly determine the form of our ideas about the world. Thus, Wittgenstein objects to Helmholtz's claim that the refractory properties of the eye determine that the world appears blurry towards the edges of the visual field--"like a drawing which is carefully executed to delineate the most important central part of the picture," Helmholtz writes, "while the surroundings are simply sketched in, more and more lightly towards the borders."<sup>76</sup> In his notes from 1933, Wittgenstein writes:

That we don't notice anything when we look around, look around in space... shows how natural these very things are to us. We don't perceive that we see space perspectivally or that the visual image is in some sense blurred near its edge. We don't notice this, and can never notice it [not 'because we are so used to it,' but<sup>77</sup>] because it is the mode of perception. We never think about it, and it is impossible, because

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<sup>75</sup> We will return to the discussion of aspect perception in the chapter devoted to Gestalt psychology.

<sup>76</sup> Helmholtz, *Treatise*, vol. I, p. 93.

<sup>77</sup> PH, p. 189.

the form of our world has no contrary.<sup>78</sup>

In other words, the form of the world is determined by the concepts we apply in describing the things that we perceive, and not by our physiology. While it might be true that we cannot focus on the things in the periphery of our visual field, that does not imply that all the world appears blurry to us towards the edges of the visual field. What we perceive when we look out upon the world can be described in countless ways, and whether or not it makes sense to say that something appears "blurry" will depend on the application we make of the expression.

By driving a wedge between the concept of perception and the concept of a physiological process, Wittgenstein casts doubt on Müller's influential idea that perception, along with other psychological phenomena, can legitimately be seen as a bodily process. Wittgenstein writes:

Comparison of bodily processes and states, like digestion, breathing, etc. with mental ones, like thinking, feeling, wanting, etc. What I want to stress is precisely the incomparability. Rather, I should like to say, the comparable bodily states would be *quickness* of breath, *irregularity* of heart-beat, *soundness* of digestion and the like. And of course all these things could be said to characterize the body.<sup>79</sup>

Wittgenstein's remark brings us into contact with the mind-body problem, to which we turn in the next chapter. There we will

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<sup>78</sup> PH, p. 191.

<sup>79</sup> RPP1, §661.



discuss the work of Gustav Fechner, who crafted the branch of psychology known as psychophysics out of his metaphysical theory of the mind-body relation. While it is fair to say that our analysis of Helmholtz's work is less than thorough, we can more effectively explain the ideas introduced above if we first tackle the mind-body problem directly.

## Gustav Fechner and the mind/body problem

### *The Metaphysical Foundations of Psychophysics*

The fall of vitalism in the mid nineteenth century led to a resurgence of eliminative materialism, the ancient view that all organic processes can be understood in the terms of physical science without reference to mental entities.<sup>80</sup> Thus, a growing population of experimentalists was opposed to the inclusion of images, ideas, and other conscious phenomena in the theory of perception in particular, and in the life sciences generally. That trend might well have quashed the development of experimental psychology as we know it if not for Gustav Fechner, the founder of psychophysics. Through his metaphysical theory of the relation of body and mind, Fechner simultaneously carved out a place for consciousness within the reigning scientific view of life and achieved what is widely regarded as the first metric of mental phenomena.

Fechner was a respected and important figure in physiology before inventing psychophysics, but he was also a spiritual man of an unusual bent committed to the reality of the *Seele* (mind/soul). He was a panpsychic, and he wrote a book called *Nanna*, on the mental life of plants, as well as *The Little Book on Life after Death* and *Zend-Avesta*, both of which concern heaven

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<sup>80</sup> See, Boring, "Fechner."

and the afterlife. He was not willing to dismiss the *Seele* as a extra-scientific concept or a non-entity, and he famously conceived of his dual-aspect theory of the mind/body relation on the morning of October 22, 1850, as a means of reconciling his scientific and religious ideas.<sup>81</sup>

Fechner salvages a scientifically tenable conception of the *Seele* via the metaphysical theory of dual-aspects. Fechner argues that mind and body are really one thing seen from two different points of view; the mental and the material sides of man are related like the concave and convex curves of a circle.<sup>82</sup> From an exterior, objective point of view, we see changing states of the brain in purely material terms, says Fechner, while if we experience those same changes from an interior, subjective point of view, they appear to be changing states of consciousness itself. Fechner writes, "What will appear to you as your mind from the internal standpoint, where you yourself are this mind, will, on the other hand, appear from the outside point of view as the material basis [viz., the brain state] of this mind."<sup>83</sup>

Fechner's science of psychophysics (a term that he coined himself) is an attempt to map the correlative states of brain and consciousness. "Psychophysics should be understood here as an

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<sup>81</sup> Boring, "Fechner," p. 127.

<sup>82</sup> Fechner, *Elements of Psychophysics*, p. 2.

<sup>83</sup> Fechner, *Elements of Psychophysics*, p. 3.

exact theory of the functionally dependent relations of body and soul," he writes, "or, more generally, of the material and the mental, of the physical and the psychological worlds."<sup>84</sup> Each brain state, Fechner believes, is the functional equivalent of a state of consciousness, and the relation between the two can be defined mathematically.

Under ideal circumstances, says Fechner, we could precisely control brain states under experimental conditions and see what states of consciousness obtain. However, in practice the brain is too fragile and inaccessible for such work, and we must settle for indirect methods of affecting it. He argues that the most practical means of affecting the brain is by stimulating the sensory organs under controlled conditions. Fechner assumes that the amount of energy in the stimulus precisely determines the magnitude of the effect produced within the brain,<sup>85</sup> and thus provides a mediate method of controlling states of the brain itself.

Fechner titles the ideal science in which brain states are controlled directly "inner psychophysics," and the practical science of stimulus-sensation relations "outer psychophysics," but the reader should not confuse the term "inner" used in this context with that used to denote the subjective point of view. In

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<sup>84</sup> Fechner, *Elements of Psychophysics*, p. 7.

<sup>85</sup> Fechner, *Elements of Psychophysics*, p. 31.

this case, Fechner is referring to the location of the brain within the body's interior. Given that Fechner is primarily remembered for his studies of sensation, it is worth pointing out that he saw that work as a compromise. He cautions us to keep his real purpose in mind; "...there can be no development of outer psychophysics without constant regard to inner psychophysics," Fechner writes, "in view of the fact that the body's external world is functionally related to the mind only by the mediation of the body's internal world."<sup>86</sup>

Fechner's metaphysical theory provides an apparent basis for the scientific study of consciousness. First, as already noted, Fechner assumes that we can quantify changes in the brain and its correlate consciousness by quantifying the stimuli that cause those changes. Secondly, Fechner argues that cerebral processes, which are the material substrate of thought, use the same energies that fuel the material activities of the rest of the body. Hence, he explains the causal connection of bodily and mental states without recourse to the notion of vital force. The latter achievement explains why Fechner offers several ridiculous examples of the commonalty of mental and corporeal energy, including the following:

An unusually striking thought occupies your mind;  
immediately your arms fall to your sides and stay  
there as long as the thought, and with it the

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<sup>86</sup> Fechner, *Elements of Psychophysics*, p. 9.

corresponding psychophysical processes, are active within, only to resume their work anew when this inner activity lessens. Whither did the kinetic energy of the arm movements go? It served to kindle the activities in the head.<sup>87</sup>

### ***Roots in Weber, and the causal theory of ideas***

Fechner's research program is a theoretical and practical extension of sensory research pioneered by Ernst Weber, who is most famous for his studies in tactile perception. Weber was amongst that group of physiologists discussed in the last chapter, who were particularly concerned with the formation of spatial ideas from the evidence of sensation. Weber holds a causal theory of ideas, according to which we deduce that our sensory experiences must be caused by objects outside our own bodies and minds, and thereby we derive the idea of an external world. He argues that by subtracting the effect of our own voluntary motions from the changes in sensory experience, we arrive upon the idea of an external stimulus; "or to put it another way, to recognize the organs mediating sensations as being entities spatially separated from the objects affecting the organs."<sup>88</sup> For example, turning your head before a fire will render sensations of heat upon different parts of your face, and when you subtract the influence of your voluntary movements from the series of varied sensations, you arrive at the idea of an

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<sup>87</sup> Fechner, *Elements of Psychophysics*, p. 32.

external heat source. Similarly, Weber writes of visual perception:

We learn to distinguish between the case where images on the retina move because our eyes move and that in which the visible objects are moving, our eyes remaining stationary. From the light-contour on the retina of the eye we can infer the contour of the light-emitting body.<sup>89</sup>

It is largely because Weber believes that the sense of space is deduced from *differences* in sensory experience that his experiments are meant to determine the exact measures of minimal stimulation needed to produce *just noticeable differences* (jnd's) between two distinct stimuli. Weber is best remembered for the general principle he discovered while experimenting on differential sensitivity. He found that when "noting a difference between things that have been compared, we do not perceive the difference between the things, but the ratio of difference between them."<sup>90</sup> Put otherwise, the sensation of difference between two stimuli (which are alike in all respects but intensity) is determined by the ratio of difference between them, not by the absolute magnitude of difference between them.

Fechner was the first to put Weber's law formally, and so it is known today as the Weber-Fechner Law. Its simplest expression

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<sup>88</sup> Weber, *The Sense of Touch*, p. 150.

<sup>89</sup> Weber, *The Sense of Touch*, p. 152.

<sup>90</sup> Weber, *The Sense of Touch*, p. 131.

" $S = k \log R$ ", where "S" stands for sensation, "R" for stimulus, and "k" for a constant. The law is more easily expressed in terms of stimulus change: "when we pass from one sensation to a stronger one of the same kind, the sensations increase proportionally to the logarithms of their outward causes."<sup>91</sup> When lifting weights, for example, you will experience the same *sensation of difference* between 1 gram and 3, as between 100 and 300. When comparing pairs of lines in length, the disparity between 100mm and 101mm is distinguished no more easily than that between 50mm and 50.5mm.<sup>92</sup> In both cases, the ratio of difference between the stimuli is the same, and so the experienced sensations of difference are identical.

By applying any of at least three experimental methods<sup>93</sup>, according to Fechner, one can determine the minimal ratio of stimulus change necessarily to effect differential sensitivity in particular situations. Weber, Fechner, and others working within the context of their ideas experiment on the differential sensations of weight, pressure, color, pitch, time, length, size, and more. Wilhelm Wundt summarizes the results of several larger

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<sup>91</sup> James, *Principles of Psychology*, p. 348.

<sup>92</sup> Weber, *The Sense of Touch*, p. 131.

<sup>93</sup> 1. the method of just noticeable differences, 2. the method of right and wrong cases, and 3. the method of average error. Fechner, *Elements of Psychophysics*, pp. 59-111.



categories; the following table represents stimulus differentials necessary to produce sensory discrimination:

Light sensation	1/100
Muscle [lifting weights]	1/17
Pressure	1/3
Sound	1/3 <sup>94</sup>

Table 1 - Ratio's of stimulus change yielding jnd's

Fechner conceives of the jnd as a unit of experience, and the formulas by which jnd's are fixed relative to physical magnitudes as a means of quantifying subjective experience. At the absolute threshold, or the point where a stimulus is sufficient to be just distinguishable from none, there is a single jnd in experience, to which further jnd's are added as the stimulus strength increases by sufficient ratio relative to its predecessor. "Therefore, the intensity of a single stimulus itself can be looked upon mathematically as the sum of positive increments starting with zero, with each increment imagined as added to previous sums until the total stimulus intensity is reached."<sup>95</sup> It follows that by quantifying the stimulus geometrically, we supposedly gain an arithmetic measure of sensation. Thus, mathematical psychology was born. Between 1840

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<sup>94</sup> Wundt, *Lectures*, p. 32.

<sup>95</sup> Fechner, *Elements of Psychophysics*, p. 49.

and 1910, literally thousands of jnd experiments were conducted in Europe and America.

### ***Wittgenstein on Sensations and their Measurement***

As noted in the introduction, Rush Rhees reports that Wittgenstein almost certainly had first-hand understanding of the Weber-Fechner Law.<sup>96</sup> Whether or not that is true, he certainly regards the quantification of sensations as an unsound enterprise, and in at least two passages he makes an uncharacteristically pointed attack on it. The more detailed of those remarks is the following:

When we are studying psychology we may feel there is something unsatisfactory, some difficulty about the whole subject or study--because we are taking physics as our ideal science. We think of formulating laws as in physics. And then we find we cannot use the same sort of 'metric', the same ideas of measurement as in physics. This is especially clear when we try to describe appearances: the least noticeable differences of colours; the least noticeable differences of length, and so on. Here it seems that we cannot say: 'If  $A = B$ , and  $B = C$ , then  $A = C$ ', for instance. And this sort of trouble goes all through the subject.<sup>97</sup>

Wittgenstein's argument against the transitivity of a judgement of sensation is simple. Let A stand for the stimulation of 1 gram lifted, B of 1.2, and C of 1.4. In that case, according Weber's results, A is indistinguishable from B, and so is B from C, yet A

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<sup>96</sup> LC, p. 41.

<sup>97</sup> LC, p. 42.

is distinguishable from C. If the jnd were really a unit, this result should not obtain; twice zero is not one.

At first sight, Wittgenstein seems to miss his mark. Wherever we apply an imprecise measure to a continuum, intransitivity will obtain. On an ordinary balance scale, 1 gram might be indistinguishable from 1.01, and 1.01 from 1.02, but not 1 from 1.02. However, a sound measure is accurate within a certain degree of error; our imagined balance is accurate within .02 grams. The same holds true for the physical measures of stimuli, of course, such as light, weight, heat, etc. However, the subjective "measures" of sensation cannot be said to be accurate within any specific range. There is no sense in saying that two sensations that seem to be equal may or may not actually be equal, though they are at least nearly equal. A sensation has no existence other than its subjective manifestation, and there is no sense in saying that a sensation might be stronger or weaker than it feels.

### *The Private Language Argument*

Wittgenstein's pointed attack on the measurement of sensation segways into a more general attack on the idea that sensations can be treated as items at all. He argues that the idea of treating judgements of sensation as reports of interior items is fundamentally misguided:

Now when one uses the word "sense datum", one should be clear about the peculiarity of its grammar. For the

idea in introducing this expression was to model expressions referring to 'appearance' after expressions referring to 'reality'. It was said, e.g., that if two things *seem* to be equal, there must be two somethings which are equal. Which of course means nothing else but that we have decided to use such an expression as "the appearance of two things are equal" synonymously with "these two things seem to be equal". Queerly enough, the introduction of this new phraseology has deluded people into thinking that they had discovered new entities...<sup>98</sup>

Wittgenstein's primary ammunition against the hypostatization of sensations and other mental phenomena is his famous private language argument. The argument is fairly in its basic outline: If we imagine a language, or a term, that refers to phenomenal items that can be witnessed only by the subject, we see that the language is incapable of communicating even to the subject. One version of the argument which is particularly well-suited to the present discussion is the following:

Let us imagine the following case. I want to keep a diary about the recurrence of a certain sensation. To this end I associate it with the sign "S" and write this sign in a calendar for every day on which I have the sensation.--I will remark first of all that a definition of the sign cannot be formulated.--But still I can give myself a kind of ostensive definition.--How? Can I point to the sensation? Not in the ordinary sense. But I speak, or write the sign down, and at the same time I concentrate my attention on the sensation--and so, as it were, point inwardly.- -But what is this ceremony for? for that is all it seems to be! A definition surely serves to establish the meaning of a sign.--Well, that is done precisely by the concentration of my attention; for in this way I impress on myself the connexion between the sign and the sensation.--But "I impress it on myself" can only

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<sup>98</sup> BB, p. 70.

mean; this process brings it about that I remember the connexion *right* in the future. But in the present case I have no criterion of correctness. One would like to say: whatever is going to seem right to me is right. And that only means that here we can't talk about 'right'.<sup>99</sup>

Roughly put, the so-called "report" is really only a kind of self-expression, more akin to "that feels good" than to "these two items are identical."

It is common to interpret Wittgenstein's private language argument only in semantic terms, and so to conclude little beyond the fact that our psychological expressions are rightly interpreted according to their public use. However, Wittgenstein is explicit about the fact that his argument is meant to destroy the idea of the private mental object altogether:

If we go through with this idea of a private experience which we don't know, we can't talk of a certain private experience either, because this expression is taken from the case in which it alludes to a certain class of experiences which we know-- though we don't know which one of its members he has. Rather, the private experiences which we imagined as an unknown x, y, z etc. behind our actions dissolve into a mist and into nothing.<sup>100</sup>

The view that sensations, thoughts, feelings, etc., are objects given within the privacy of the mind categorically misrepresents the nature of mental phenomena. "The content of experience," Wittgenstein writes, "One would like to say 'I see red ', 'I

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<sup>99</sup> PI, §258.

<sup>100</sup> NLPE, p. 243.

hear the note that you strike *thus*', "I feel pleasure *thus*', 'I feel sorrow *thus*', or even '*This* is what one feels when one is sad, *this* when one is glad', etc. One would like to people a world, analogous to the physical one, with these *thuses* and *thises*."<sup>101</sup>

Wittgenstein's argument against the hypostatization of mental entities is somewhat akin to Gilbert Ryle's, and very different than most behaviorist arguments. Ryle, too, argues that the mind is not a realm of inner processes which accompany outer behavior, but neither do our mental predicates denote behavioral facts. Rather, says Ryle, we use mental predicates to describe a person's behavior with attention to certain nuances and contextual facts. Ryle puts the matter exceptionally well in *The Concept of Mind*:

But when a person talks sense aloud, ties knots, feints or sculpts, the actions which we witness are themselves the things which he is intelligently doing, though the concepts in terms of which the physicist or physiologist would describe his actions do not exhaust those which would be used by his pupils in appraising their logic, style or technique. He is bodily active and he is mentally active, but he is not being synchronously active in two different 'places', or with two different 'engines'. There is one activity, but it is one susceptible of and requiring more than one kind of explanatory description.<sup>102</sup>

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<sup>101</sup> RPP1, §896

<sup>102</sup> Ryle, *The Concept of Mind*, pp. 50-51

The remark captures the nature of the mental that we are setting against Fechner's psychophysical research program; to speak of a person's mind, thoughts, feelings, etc., is--roughly speaking--to describe his behavior from a psychological vantage. The conception of the mental as a realm of processes represents mental phenomena as belonging to another category altogether. Thinking is not an activity going on inside the head. Wittgenstein writes, "The idea of thinking as a process in the head, in a completely enclosed space, gives [the philosopher] something occult."<sup>103</sup>

In an attempt to reveal the real nature of thinking, Wittgenstein considers the case of man who is constructing an appliance from a pile of parts; "Bits are tentatively put together, then dismantled; he looks for one that fits etc., etc."<sup>104</sup> From one aspect, we can describe the behavior in purely physical terms; neurons fire, the hand moves, etc. From the psychological aspect, however, we recognize the man's activity as thinking--or, as Ryle might put it, we can say that the construction is done "thinkingly." "Of course we cannot separate his 'thinking' from his activity," Wittgenstein writes. "For the thinking is not an accompaniment of the work...."<sup>105</sup> To say that

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<sup>103</sup> Z, §606.

<sup>104</sup> Z, §100.

<sup>105</sup> Z, §101.

the man is thinking is to see him, his activities, and the surrounding context under a psychological light. "If he has made some combination in play or by accident and he now uses it as a method of doing this and that, we shall say that he thinks."<sup>106</sup> Similarly, "It could also be said that a man thinks when he learns in a particular way."<sup>107</sup>

While we might say that Wittgenstein's arguments amount to the idea that mind and body are two aspects of a single thing, his view has little in common with Fechner's. The two aspects of man that Fechner posits are metaphysical, whereas the aspects that Wittgenstein speaks of are conceptual. If Wittgenstein is right, then Fechner's metaphysical interpretation of the mind-body relation deeply misunderstands the real use of our psychological predicates. Insofar as we may speak of a "mind-body relation", we should say that mind and body are related through the various ways that the two categories of expression overlap--as team spirit and vigorous play are different aspects of the same events. What is more to the point at hand, the concept of "sensation" does not designate an interior mental item that can be quantified via Fechner's methods.

The mind-body problem is an illusion arising, in part, from the misinterpretation of our psychological concepts. Thus, his

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<sup>106</sup> Z, §104.

<sup>107</sup> Z, §105.



metaphysical theory can be seen a symptom of a deeper problem. In the next chapter, we will pursue the same brand of confusion in Wilhelm Wundt's psychology in an attempt to get a clearer view of its foundations.

## Wilhelm Wundt and the Psychology of Experience

### *Wundt's pseudo-Kantian phenomenalism*

Wundt is often titled the father of experimental psychology, partly because his laboratory, which opened at Leipzig in 1879, was the first devoted exclusively to psychological experimentation.<sup>108</sup> More importantly, his system provided the framework within which most experimental research was conducted in Europe and America for approximately thirty-five years. His *Principles of Physiological Psychology* was a widely used research handbook, and at first sight it indeed appears thoroughly experimental. Yet the book's real value lies in the system of psychology that it describes, not in its experimental results.

Edwin Boring writes:

The appeal of Wundt's argument is constantly to experiment, and the uncertain points within the argument constantly led to the setting of problems within the Leipzig laboratory. However, all of these matters are details within the system and not the system itself. The general truth is that the system in its broad outlines is of the order of a classificatory scheme, incapable of experimental proof or disproof.<sup>109</sup>

In turn, Wundt's system of psychology is a product of his epistemological theory. Indeed, Wundt's contribution to psychology rests so heavily on his philosophical ideas that

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<sup>108</sup> Boring, *A History*, p. 323.

<sup>109</sup> Boring, *A History*, p. 328.

Boring believes it is difficult to say whether he was even "an experimentalist as well as a philosopher."<sup>110</sup>

Wundt attempts an expressly pseudo-Kantian reduction of the physical world and the world of consciousness to the single medium of subjective experience. Near the beginning of the *Principles of Physiological Psychology*, he writes, "[We cannot] mark off an outer experience, mediated by sense perceptions, and oppose it, as something wholly separate and apart, to what we call 'inner experience,' the events of our consciousness."<sup>111</sup> On Wundt's view, the distinction between psychical and physical phenomena lies merely in the manner with which we consider experience. Imagine that you are now looking at a tree while moving your head side to side. In one sense, the object of your experience is an enduring physical object, the tree. In another sense, your experience is in constant flux, as the configuration of your visual field changes with the motions of your head. These two descriptions, according to Wundt, correspond with the two fundamental ways of regarding experience: Your *immediate* experience (i.e., experience as such) is the constant flux of sensory images, while your idea of a physical object (the tree) is actually a *hypothetical* which you superimpose on immediate experience.

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<sup>110</sup> Boring, *A History*, p. 327.

<sup>111</sup> Wundt, *Principles of Psychology*, p. 1.

Like Weber, Wundt believes that we form hypothetical ideas of physical objects by subtracting the influence of our willful motions from the changes in immediate experience. According to Wundt, the physical scientist must form "hypothetical concepts of the objective properties of matter" to supplement the immediate reality of her continuously changing experiences<sup>112</sup>, and the "knowledge that [physical science] produces is therefore mediate or conceptual." In short, the physical, external world is a hypothetical construction, while experience itself is the only substance of reality itself, for "all concrete reality is distinguished from all that is abstract and conceptual in thought."<sup>113</sup>

### ***The Task of Psychology***

According to Wundt, it is the task of psychology to study the "total content of experience in its immediate form."<sup>114</sup> Psychology is the science of the "contents of experience as actually presented to the subject."<sup>115</sup> Thus, says Wundt, physical and psychological scientists both study the contents of experience, but from different points of view:

There is only one experience...open to two different

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<sup>112</sup> Wundt, *Outlines of Psychology*, p. 5.

<sup>113</sup> Wundt, *Principles of Psychology*, p. 5.

<sup>114</sup> Wundt, *Outlines of Psychology*, p. 4.

<sup>115</sup> Wundt, *Outlines of Psychology*, p. 5.

kinds of scientific treatment: to a mediate form of treatment, which investigates ideated objects in their objective relations to one another, and to an immediate form, which investigates the same objects in their directly known character, and in their relations to all the other contents of the experience of the knowing subject.<sup>116</sup>

Wundt believes, for reasons never made plain (to me, at least), that the singularity of that material studied in the physical and psychological sciences, viz., experience, implies a homology of the methods suitable in the two subjects.<sup>117</sup> Hence, Wundt conceives of the central portion of experimental psychology as a sort of chemistry of consciousness, comparable to John Stuart Mill's analysis of mind<sup>118</sup>:

Now it is one of the first tasks of each science that deals with the investigation of empirical facts, to discover the elements of the phenomena. Its second task is to find out the laws according to which these elements enter into combinations. The whole task of psychology can therefore be summed up in these two problems: (1) What are the elements of consciousness? (2) What combinations do these elements undergo and what laws govern these combinations.<sup>119</sup>

### ***The Mental Elements***

In truth, Wundt assumes the elements that he promises to discover, and his assumptions are simple variations on those of the physiological psychology that preceded his. He divides the

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<sup>116</sup> Wundt, *Outlines of Psychology*, p. 318.

<sup>117</sup> Wundt, *Outlines of Psychology*, p. 9.

<sup>118</sup> Boring, *Sensation and Perception*, p. 9.

<sup>119</sup> Wundt, *Introduction to Psychology*, p. 44.

"psychical elements"<sup>120</sup> into two kinds, sensations and feelings; the former have causes that we recognize as objective, says Wundt, while the latter seem to arise within us. For example, we recognize our sensations of music as being caused by (hypothesized) physical objects, but the feeling of pleasure accompanying the music is "clearly an added subjective element."<sup>121</sup> "Pure" or "individual" sensations are the building blocks of our thoughts and knowledge of the world, according to Wundt; sensations like the "single beat" of a musical passage or the "color of a paint droplet" are his repeated paradigms<sup>122</sup> of sensation units, a concept Wundt adopts explicitly from Fechner.<sup>123</sup> Elemental sensations unite to form psychic compounds<sup>124</sup>, and those compounds that cohere into meaningful wholes are ideas, which are just images. "Thus we speak of the idea of a house, or a table, or the sun or moon, but of the sensations of blue, yellow, warm, cold or of a tone of a definite pitch."<sup>125</sup>

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<sup>120</sup> Wundt, *Outlines of Psychology*, p. 28.

<sup>121</sup> Wundt, *Introduction to Psychology*, p. 51.

<sup>122</sup> Wundt, *Introduction to Psychology*, p. 45.

<sup>123</sup> Wundt, *Lectures*, pp. 47-9.

<sup>124</sup> Wundt, *Outlines of Psychology*, p. 25.

<sup>125</sup> Wundt, *Lectures*, p. 15.

The heart of Wundt's own experimental psychology is an attempt to understand only the smallest parts and principles of experience. More complex psychical formations can only be studied by various non-experimental means, he believes, because the processes are too involved to admit sufficient experimental controls, and because complex mental states assume properties that cannot be reduced to a function of their parts individually.<sup>126</sup> (Wundt himself wrote the ten volume *Völkerpsychologie*, which can be described as an anthropological psychology concerned with complex mental formations.<sup>127</sup>) However, in principle Wundt's "mental chemistry" can be linked to theories of actual behavior, and so to complex mental functions. For example, his theory of *apperception* (roughly, the focus of attention upon some portions of the field of experience to the exclusion of others) is used to explain such psychologically significant behaviors as an infant's instinctive suckling.<sup>128</sup>

Wundt titles his own psychology "physiological," but not because he attempts to reduce psychical laws to physiological laws. To the contrary, Wundt maintains that psychical and physical causality are "polar opposites," and must be described

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<sup>126</sup> Wundt, *Outlines of Psychology*, pp. 22-24.

<sup>127</sup> See Wundt, *Principles of Physiological Psychology*, p. 5, pp. 22-3.

<sup>128</sup> Danziger, "Wundt's theory of Behavior."

independently.<sup>129</sup> According to Wundt's philosophy, the human body must be regarded as a hypothetical concept derived via the abstraction of subjective factors from experience. Thus Fechner's presumption of psycho-physical parallelism, for example, is illegitimate from Wundt's point of view.<sup>130</sup> However, Wundt's program centrally involves those psychophysical parallels that derive either from the unity of inner and outer experience, or from empirical evidence of specific, circumscribed correlations between physiological and psychical states.<sup>131</sup> Thus, physiology enters Wundt's psychology in two ways: (1) manipulation of the body allows the experimentalist to deliberately control immediate experience, and (2) there are empirically evidenced relations between experience and a bodily substrate, viz., the brain, that are a legitimate subject of research.<sup>132</sup>

### ***A Wundtian Experiment***

A somewhat absurd but nicely simple experiment conducted by Titchener, Wundt's disciple and strongest advocate in the United States, is sufficient to give a preliminary understanding of Wundt's style of research. The experiment is intended to determine the temporal limits of attention. Titchener introduces

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<sup>129</sup> Wundt, *Lectures*, p. 454.

<sup>130</sup> See Wundt, *Outlines of Psychology*, p. 318.

<sup>131</sup> See Wundt, *Principles Of Physiological Psychology*, pp. 2-5.



it by remarking that audiophiles can pay close attention to an opera several hours long. Working from the assumption that consciousness is comprised of sensations, Titchener argues that the audiophile merely pays attention to one mosaic of sensations after another, and so employs the same mental function many times over in sequence. To measure the basic capacity of attention, Titchener maintains that we must determine how long a person can pay attention to a single sensation.<sup>133</sup> The experiment he devises relies on the Wundtian presumption that attention simply is the laying of mental focus upon one region of experience so that all other regions fall out of focus, so to speak.<sup>134</sup>

Titchener's experiment runs as follows: paint a gray circle on a piece of cardboard, and remove it to a distance where the circle is just barely perceptible. Thus, in keeping with the theory of jnd's as it survived in Wundt's system, you ensure that it is a single sensation of color you are experiencing rather than a conglomerate. According to Titchener, you will be aware of the sensation of gray only so long as your attention is focused on it; when the attention wanders, the gray sensation will blend into the unfocused mass of sensations in the metaphorical background of experience.

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<sup>132</sup> See Wundt, *Principles Of Physiological Psychology*, pp.12-13.

<sup>133</sup> Titchener, *An Outline of Psychology*, p. 150.

<sup>134</sup> Wundt *Introduction to Psychology*, p. 35.

Let an assistant hold a stop-watch. Each time that the grey becomes clear, tap the table with a pencil: the assistant will note and record the intervals between tap and tap. When you have accustomed yourself to the experiment, you may tap the table not only when the grey appears, but also when it disappears, and compare the length of time during which the attention is sustained with the length of time during which it is relaxed.<sup>135</sup>

The mathematical result of these calculations is the measure of attention.

### ***Wundt's theory of kinesthesia***

Wundt's own hypothesis concerning kinesthetic awareness is typical of those falling within his system. In keeping with Lotze's view, Wundt holds that each tactual, visual, and auditory sensation is accompanied by a *local sign* that indicates the point on the sensory organ from which the sensation originates. A perceptual mechanism then uses the information conveyed in the local signs to arrange sensations into three-dimensional images given in immediate experience. Wundt believes that normally sighted people always experience space in visual terms, even when the original stimuli are tactual or auditory. Spatial knowledge derived by touch or hearing, he says, takes the form of an obscure, three-dimensional visual image.<sup>136</sup> (Wundt believes that

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<sup>135</sup> Titchener, *An Outline of Psychology*, p. 150.

<sup>136</sup> Wundt, *Outlines of Psychology*, p. 105-6.

congenitally blind people have a different experience of space altogether.<sup>137)</sup>

Wundt extends the theory of local signs to account for kinesthesia. "[If] we shut our eyes and then raise our arm," he writes, "we have at every moment an idea of the position of the arm."<sup>138</sup> That idea, in normally sighted people, is supposedly "an obscure visual image of the limb with its surroundings."<sup>139</sup> Wundt continues:

This leads to the assumption that the inner tactual sensations also have local signs, that is, the sensations in the various joints, tendons, and muscles show certain series of local differences.

Introspection seems to confirm this view. If we move alternately the knee-joint, hip-joint, and shoulder-joint...the quality of the sensation seems each time a little different, even if we neglect the connection with the visual image of the limb, which can never be entirely suppressed.<sup>140</sup>

As you walk up the stairs with a bag of groceries tucked against your stomach, then, you know where your feet are because you have an obscure visual images of your body, and that image is comprised of visual sensations arranged according to the information contained in proprioceptive local signs.

### ***Wittgenstein on Kinesthesia***

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<sup>137</sup> Wundt, *Outlines of Psychology*, p. 107.

<sup>138</sup> Wundt, *Outlines of Psychology*, p. 111.

<sup>139</sup> Wundt, *Outlines of Psychology*, p. 111.

<sup>140</sup> Wundt, *Outlines of Psychology*, p. 112.

Wittgenstein writes a surprising amount about kinesthetic knowledge, and more specifically about theories very similar to Wundt's, though it is uncertain where he encountered them. Wittgenstein's position is that the awareness of the position of our limbs is not an experience content, and could not possibly be comprised of sensations; the awareness *might* be called an experience, but not an image. "Does one actually sometimes go by a visual image in bending one's arm?" he asks. No, he answers, "I simply know what movement I have made, although you couldn't speak of any sense-datum of the movement, of any immediate inner picture of the movement. And when I say 'I simply know...'  
'knowing' here means something like 'being able to say' and is not in turn, say, some kind of inner picture."<sup>141</sup> Elsewhere, he writes:

It is odd. My lower arm is now lying horizontally and I should like to say I feel that; but not as if I had a feeling that always goes with this position (as one would feel ischaemia or congestion)--rather as if the 'bodily feeling' of the arm were arranged or distributed horizontally, as, e.g., a film of damp or of fine dust on the surface of my arm is distributed in space. So it isn't really as if I felt the position of my arm, but rather as if I felt my *arm*, and the feeling had such and such a *position*. But that only means I simply *know* how it is lying--without knowing it *because*...As I also know where I feel pain--but don't know it *because*...<sup>142</sup>

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<sup>141</sup> RPP1, §390.

<sup>142</sup> RPP1, §786.

Wittgenstein's remarks indicate that he struggled to develop an argument for his position on the present matter.<sup>143</sup> The simplest is recorded by Geach in the *Lectures on the Philosophy of Psychology*: intensity is characteristic of sensation (according to Fechner, Wundt, and most of their peers<sup>144</sup>), but there is no such thing as greater or lesser intensity of the sensation of the position of a limb. "What is a strong feeling of posture? This question has no answer [because]...there is no postural sensation."<sup>145</sup> Thus, Wittgenstein finds apparent reason to doubt that there are specific sensations of posture.

Wittgenstein makes a stronger case via the same version of the private language argument discussed in the preceding chapter. If we imagine that there is a characteristic feeling--a sensation flavored by its local sign--by which I determine that my finger is bent, then it must be that I recognize that unique coloring each time I feel it, and I must understand its meaning, so to speak. That is, the sensation must have a specific, recognizable quality, a definite bent-finger-ness. Wittgenstein uses the

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<sup>143</sup> See RPP1, §391.

<sup>144</sup> As discussed earlier, the claim that sensations have intensity is crucial to Fechner's thesis that a sensation can be quantified according to the magnitude of its cause. This hypothesis is historically very important, for it purports to get round Kant's contention that inner phenomena are given only in the single dimension of time, and so cannot be mathematically fixed.

<sup>145</sup> LPP, p. 77.

following thought experiment to contradict the possibility of such an informative sensation. Imagine that yesterday I felt my bent finger, and called my the sensation in the knuckle "S." Today I bend my finger again, and of course there is some sensation, and we may imagine that it seems to me like the sensation S. But is today's sensation really the same as S, or does it just seem the same? Maybe my memory is constantly changing, and so I am fooled. Maybe I have misjudged the similarity. It is impossible to answer our question, because there is no means of treating the two sensations objectively, which we must do if we are to compare them; sensations are essentially subjective, and so they can only *be* as they *seem*. Hence, it makes no sense to distinguish between the cases in which the sensations are in fact the same and those in which they only seem the same: "I can certainly, e.g., raise my knee several times in succession and say I have had the same sensation every time...Being the same here of course means the same as seeming the same."<sup>146</sup> Thus, "whatever is going to seem right to me is right. And that only means that here we can't talk about right."<sup>147</sup>

"I had the same sensation three times": that describes a process in my private world. No [the above] difficulty is not a piece of over-refinement; he

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<sup>146</sup> RPP1, §395.

<sup>147</sup> PI, §258.

really does not know, cannot know, which objects are the same.<sup>148</sup>

The upshot of all this is that the kinesthetic sensation cannot play the evidential role assigned to it in Wundt's theory.

It is tremendously important that Wittgenstein specifically attacks the supposition that *knowing* the position of one's limbs must be based on sensory experience. It is the primacy of sensation that he objects to in the theory of local signs:

The idea of local signs is all wrong. ... The paradigm is a picture with a sign. The pain is pictured as a flame and a sign where it is... Everything has to be sensation. The pain is a sensation and the 'where it is' is a sign, another sensation.<sup>149</sup>

Wittgenstein's argument speaks against the belief that knowledge of the physical world is essentially based on the formation of experienced ideas rendered from the evidence of sensation.

Kinesthetic knowledge is an example to the contrary, according to Wittgenstein; we simply do know where our limbs lie, and no sensory process need be posited to explain that knowledge. A neural process is certainly involved, but not necessarily one that involves sensation or ideas.

### ***The Notion of the Subject to Whom Experience is Given***

Wittgenstein's argument against the primacy of sensation in kinesthesia points toward a much deeper and more important theme

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<sup>148</sup> RPP1, §396.

<sup>149</sup> LPP, p. 79.

of his later work. Namely, his attack on the supposition of a knowing self, a mind that formulates ideas about an "external world" based on the evidence of sensations arising in the body. In his "Notes for Lectures on Private Experience and Sense Data," Wittgenstein writes:

The idea of the ego inhabiting the body to be abolished.<sup>150</sup>

I want to describe a situation in which I should not be tempted to say that I assumed or believed that the other had what I have. Or in other words, a situation in which we would not [speak] of my consciousness and his consciousness. And in which the idea would not occur to us that we could only be conscious of our own consciousness.<sup>151</sup>

The myth of the knowing mind is deeply embedded in Wundt's psychological theory (and quite possibly in most psychological theories). Indeed, his scientific investigations are meant to determine the processes whereby the subject constructs or derives knowledge of the world from analysis of the medium of experience. Having attested that his psychological theory will remain positivistic and so contain no entities that are not known through experience, Wundt admits that he cannot posit the self as an entity.<sup>152</sup> Yet he also cannot do without the concept of a self, for he has already posited (at the very root of his psychological

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<sup>150</sup> NLPE, p. 225.

<sup>151</sup> NLPE, p. 225.

<sup>152</sup> Wundt, *Principles of Physiological Psychology*, p. 17-18.



theory) a notion of experience which requires a witnessing subject; Wundt writes:

...naïve consciousness always and everywhere points to internal experience as a special source of knowledge.... 'Mind,' will accordingly be the subject, to which we attribute all the separate facts of internal observation as predicates. The subject itself is determined wholly and exclusively by its predicates; and the reference of these to a common substrate must be taken as nothing more than an expression of their reciprocal connexion. In saying this, we are declining once and for all to read into the concept of 'mind' a meaning that the naïve linguistic consciousness attaches to it. Mind, in popular thought, is not simply a subject in the logical sense, but a substance, a real being...But there is here involved a metaphysical presupposition...we shall consider the mind, for the time being, simply as the logical subject of internal experience.<sup>153</sup>

Wittgenstein ultimately dismisses the dualistic picture of mind and experience that Wundt so crucially presumes, and the fact that he does so is central to his view of philosophy and psychology. Yet his escape from the confusions he attributes theories like Wundt's was hard fought in his own life. In the *Tractatus* (1921), most of whose ideas Wittgenstein abandoned by the time he wrote those remarks which guide the present study, Wittgenstein espouses a view of the self notably similar to Wundt's:

Thus there really is a sense in which philosophy can talk about the self in a non-psychological way.

What brings the self into philosophy is the fact that 'the world is my world'.

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<sup>153</sup> Wundt, *Principles of Physiological Psychology*, p. 17-18.

The philosophical self is not the human being, not the human body, or the human soul, with which psychology deals, but rather the metaphysical subject, the limit of the world--not part of it.<sup>154</sup> In the *Tractatus*, Wittgenstein maintains that it is the philosophical self that knows facts in the world by picturing them:

We picture facts to ourselves.<sup>155</sup>

A picture is a model of reality.<sup>156</sup>

While Wittgenstein's idea of a 'picture' is not so restricted as Wundt's notion of sensory images, in the *Tractatus* he, too, maintains that the world is known through an act of private representation, and that some notion of an ego must be presumed to witness that representation. Many of his remarks from the early 1930's, a period of exploration and transition in his thinking, express a view apparently similar to Wundt's. In *Philosophical Remarks* (1930), for example, he writes:

The description of phenomena by means of the hypothesis of a material world is indispensable because of its simplicity, compared with the incomprehensibly complicated phenomenological description. If I see various detached parts of a circle, then an accurate direct description of them is perhaps impossible, but the specification that they are parts of a circle...is simple.<sup>157</sup>

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<sup>154</sup> T, 5.641.

<sup>155</sup> T, 2.1.

<sup>156</sup> T, 2.12.

<sup>157</sup> PR, p. 285.

A still more striking remark from the same period can be found in notes of Wittgenstein's lectures delivered at Cambridge in the academic year 1932-3:

There is a tendency to make the relation between physical objects and sense-data a contingent relation. Hence such phrases as 'caused by', 'beyond', 'outside'. But the world is not composed of sense-data and physical objects. The relation between them is one in language--a necessary relation. If there were a relation of causation, you could ask whether anyone has ever seen a physical object causing sense-data. We can talk about the same object in terms either of sense-data or hypothesis.<sup>158</sup>

Yet even in the *Tractatus*, Wittgenstein holds that the presumption of a logical subject entails the problematic thesis of solipsism, for the logical subject knows only the world of its own ideas. He writes, "...what the solipsist means is quite correct... The world is my world..."<sup>159</sup> "I am my world. (The microcosm.)"<sup>160</sup> As David Pears carefully demonstrates, Wittgenstein struggled to escape solipsism during the crucial years of 1929 to 1936, when he was settling into his later philosophical position.<sup>161</sup> Indeed, Wittgenstein famously states that the purpose of his later philosophy is "to shew the fly the

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<sup>158</sup> WL, p. 81.

<sup>159</sup> T, 5.62.

<sup>160</sup> T, 5.63.

<sup>161</sup> Pears, *The False Prison*, vol. 2, pp. 199-327.

way out of the fly bottle,"<sup>162</sup> and it is the solipsist who is trapped: "The solipsist flutters and flutters in the flyglass, strikes against the walls, flutters further. How can he be brought to rest?"<sup>163</sup>

As Pears argues, Wittgenstein leads the fly out of the bottle in large part by abandoning the Wundtian idea that the subject experiences only his own sensations, and the phenomenalist claim that sensations and objects are really the same thing. By the time of the *Blue Book* (1933-34), Wittgenstein specifically argues against treating sense-data as objects in any sense that can sustain phenomenism or Wundt's view.<sup>164</sup> There he writes that the relation between sensation and object is conceptual in roughly the sense that wicket-keeping and team spirit are:

...those who say that a sense datum is different in kind from a physical object misunderstand the grammar of the word "kind", just as those who say that a number is a different kind of object from a numeral. They think they are making such a statement as "A railway train, a railway station, and a railway car are different kinds of objects", whereas their statement is analogous to "A railway accident, and a railway law are different kinds of objects."<sup>165</sup>

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<sup>162</sup> PI, §309.

<sup>163</sup> NLPE, p. 258.

<sup>164</sup> See Pears, *The False Prison*, p. 283.

<sup>165</sup> BB, p. 64.

The distinction between sensations and objects is essentially a linguistic one; we put the two categories of expression to different use.

In his mature writings, Wittgenstein develops the idea that experience is a broad conceptual category, not a medium of sensations presented to the subject. In TS 229 (1946-47; reprinted as RPP1) he writes:

The concept of experience [Erlebnisses]: Like that of happening, of process, of state, of something, of fact, of description and of report. Here we think we are standing on the hard bedrock, deeper than any special methods and language-games. But these extremely general terms have an extremely blurred meaning. They relate in practice to innumerable special cases, but that does not make them any solidier; no, rather it makes them more fluid.<sup>166</sup>

The categorical heterogeneity of experience is also emphasized in RPP1 836, the first half of which reads:

Ought I to call the whole field of the psychological that of 'experience'? And so all psychological verbs 'verbs of experience'. ('Concepts of experience.')... A subclass of concepts of experience is formed by the 'concepts of undergoing [Erfahrung].' 'Undergoings have duration and a course; they may run on uniformly or non-uniformly. They have intensity. They are not characters of thought. Images are undergoings. A subclass of 'undergoings' are 'impressions'. Impressions have spatial and temporal relations to one another. There are blend impressions. E.g., blends of smell, colours, sounds. 'Emotions' are 'experiences' but not 'undergoings'. (Examples: sadness, joy, grief delight.)<sup>167</sup>

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<sup>166</sup> RPP1, 648.

<sup>167</sup> RPP1, § 836

Let us digress briefly to consider the shortcomings of the common idea that Wittgenstein's philosophy of psychology can be fully understood as an investigation of psychological language. By and large, Joachim Schulte and Malcolm Budd read Wittgenstein that way, and that leads both to interpret RPP1, 836 as an attempt to formulate a genealogy of psychological concepts. Schulte writes that in regard to the question with which RPP1, 836 begins, "The right answer seems to be yes, for Wittgenstein continues to represent all the other psychological concepts as subclasses or elements of subclasses of the general class of experience."<sup>168</sup> Schulte then translates the entire remark into the following diagram<sup>169</sup> which is very similar to one that Budd provides<sup>170</sup>:

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<sup>168</sup> Schulte, *Experience and Expression*, p. 28.

<sup>169</sup> Schulte, *Experience and Expression*, p. 28.

<sup>170</sup> Budd, *Wittgenstein's Philosophy of Psychology*, p. 13

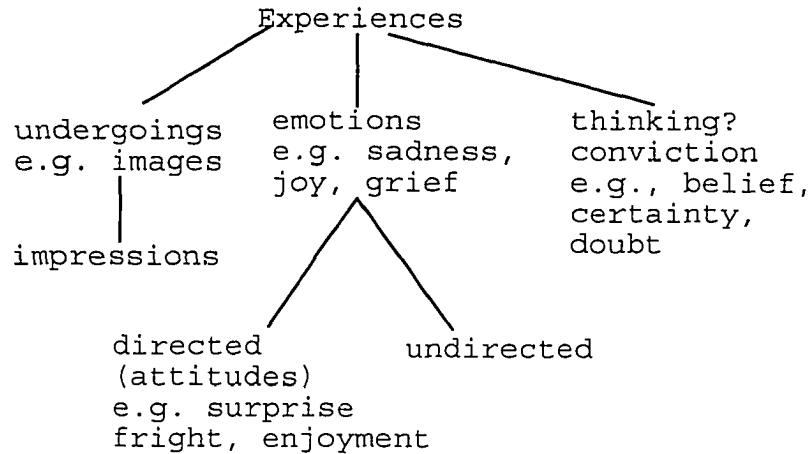


Figure 2 - Schulte's interpretation of Wittgenstein's Psychological Taxonomy

The evidence of RPP1, 837 confirms that Wittgenstein's purpose in RPP1, 836 is at least partly destructive, however. RPP1, 837 reads, "But where does memory belong, and where attention?"<sup>171</sup> and elsewhere Wittgenstein explicitly claims that at least some memories should not be categorized as experiences at all: "When I say: 'He was here half an hour ago'--that is, remembering it-- this is not the description of a present experience. Memory experiences are accompaniments of remembering."<sup>172</sup> RPP1 836 is in one sense a classificatory scheme, but it is important that we see the destructive force of the scheme; Wittgenstein is

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<sup>171</sup> RPP1, § 837.

<sup>172</sup> PI, p. 231

attempting to undermine the notion that *experience* is a medium of inner phenomena, or indeed that experience is any single category of phenomena at all, as Wundt and other psychologists crucially presume.

### **Conclusion**

Back to our cabbages. Wittgenstein's strong criticism of experimental psychology is partly explained by the fact that the presumption of a realm of private sense data plays a central role in Wundtian research, as well as in other systems which dominated the field during most of Wittgenstein's life. It is difficult to find any substantial worth in Titchener's experiment on attention once we abandon the idea that the introspective subject is supplying reports about a private realm of sensations. Hence, Wittgenstein's critical summation:

Psychological--trivial--discussions about expectation, association etc. always pass over what is really noteworthy and it is noticeable that they talk around, without touching, the *punctum saliens*.<sup>173</sup>

Titchener's preoccupation with a fictional realm of sensations leads him astray from the real factors that might shed light on the attention that audiophiles can pay an opera.

It should be apparent that the central complaint leveled against Wundt's psychology here is essentially the same as that made against Helmholtz and Fechner in the previous chapters. In

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<sup>173</sup> Z, §66.



all three systems, mental phenomena are hypostatized and research directed toward the analysis of fictional entities; problems that are really conceptual are treated as empirical and approached scientifically. Thus, we see that essentially the same confusion survives the dramatic theoretical shift from the concept of a physiological sensorium to dual-aspect theory to Wundtian phenomenalism. In the chapters that follow, we will see how further attempts to rectify the situation also fail.

## Gestalt Psychology and the Science of Understanding

### *Introduction*

#### *A reaction against elementism*

Gestalt Psychology first emerged in late Nineteenth Century Germany as a reaction against those elementist psychological theories described in the previous chapters. What is perceived, say the Gestaltists, is not a mosaic of sensory grains, but *Gestalten* (awkwardly translated as "forms," "shapes," "wholes," or "organizations"). When we look into a cage at the zoo, say the Gestaltists, we immediately perceive an animal as a circumscribed unit; we do not, as Helmholtz suggests, actually perceive a mere patchwork of sensations that we gather together under the rubric of a concept.

Gestalt theory can be traced back to von Ehernfels discovery, in the 1890's<sup>174</sup>, of what Wertheimer later named "the Phi-phenomenon." Von Ehrenfels found that if two lights to the left and right of each other are alternately illuminated at an appropriate frequency, they will appear as one light moving back and forth.<sup>175</sup> "From the Gestalt viewpoint," Henry Garrett summarizes, "the value of the phenomenon lies in the fact that it

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<sup>174</sup> See Boring, *Sensation and Perception*, p. 246.

<sup>175</sup> Garrett, *Great Experiments in Psychology*, pp. 208-10.

shows our perception of apparent movement to be an unique and unanalyzable experience, not a rubber-stamp impression of nature. It is evident, say the Gestaltists, that our experiences do not correspond point-for-point with physical stimuli."<sup>176</sup>

In time, the Gestaltists amassed a great stock of visual illusions, all meant to prove the reality of *Gestalten*. The Müller-Lyer illusion (figure 3) and the double cross (figure 4) are relatively familiar examples.

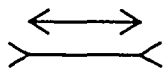


Figure 3 - The Müller-Lyer Illusion

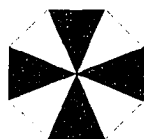


Figure 4 - Double Cross

The horizontal lines of *figure 3* are equally long, and so must produce equally long lines of stimulation on the retinas, yet they actually appear to be different lengths. "This is an astonishing fact," writes Wolfgang Köhler, probably the most

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<sup>176</sup> Garrett, *Great Experiments in Psychology*, p. 210.

widely read of the Gestalt psychologists, "and can only be a matter of the characteristics of perception itself."<sup>177</sup> Similarly, *figure 4* appears alternately as a black cross on a white background, or as a white cross on a black background, despite that its physical effect on the retinas is constant. This, says Köhler, is due to the fact that the impression is alternately organized according to one or another Gestalt.<sup>178</sup>

Shape is just one of a wide variety of facts beyond sensory elements that Köhler claims we immediately perceive, all under the heading of *Gestalten*. In *The Place of Value in a World of Facts*, Köhler assiduously argues that we perceive requiredness, or the tendency of one thing towards another, in a wide variety of cases. A melody, for example, sounds incomplete if it ends on the fifth instead of the tonic. "If we stop after the leading note without a further chord," Köhler writes, "the sequence will be heard as *incomplete*, with a vector towards its completion."<sup>179</sup> Similarly, we immediately perceive that a cat is stalking a mouse, and not merely poised beside it.<sup>180</sup> Elsewhere, Köhler expands upon the same idea, finally reaching the conclusion that we immediately perceive a broad range of values in the world:

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<sup>177</sup> Köhler, "On Unnoticed Sensation," p. 29.

<sup>178</sup> Köhler, *Gestalt Psychology*, pp. 171-2.

<sup>179</sup> Köhler, *The Place of Value*, p. 83.

<sup>180</sup> Köhler, *The Place of Value*, p. 82.

Phenomenologically, value is located in objects and occurrences; it is not an action to which they are subjected. Value may reside in the most varied classes of things. A dress may look elegant or sloppy, a face hard or weak, a street cheerful or dismal, and in a tune there may be morose unrest or quiet power.<sup>181</sup>

### ***Köhler's biological theory of Gestalten***

Like the psychologists who preceded him, Köhler believes that the things that we perceive are representations, or images, produced within the body. He writes:

...the things which I see and feel, cannot be identical with the corresponding physical objects. These objects merely establish certain alterations within my physical organism, and the final products of these alterations are the things which I behold in my visual field, or which I feel with my fingers.<sup>182</sup>

Each Gestalt, according Köhler, is the product of biological processes initiated by stimulation of the sensory organs, and corresponding to a state of the brain itself.

Köhler assumes the strict form of psycho-physical parallelism known as *isomorphism*, according to which "the organization of experience and the underlying physiological facts have the same structure."<sup>183</sup> He claims, for example, that when he perceives a book and a pencil lying at some distance from each other on a table, "there are two local processes in the brain,

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<sup>181</sup> Köhler, "Value and Fact," p. 364.

<sup>182</sup> Köhler, *Gestalt Psychology*, p. 22

<sup>183</sup> Köhler, *Gestalt Psychology*, p. 301.

one corresponding to the pencil, and the other to the book."<sup>184</sup> Accordingly, Köhler maintains that the analysis of brain processes can reveal the mechanism whereby we perceive *Gestalten* rather than mere sensations. Indeed, he maintains that when Gestalt theory advances far enough, psychology will be wholly subsumed by biology.<sup>185</sup>

Köhler claims that *Gestalten* are the result of dynamic, interactive processes in the brain, an hypothesis that he repeatedly sets against what he calls the "machine theory" of elementist psychology.<sup>186</sup> According to the machine theory of perception, Köhler writes:

...objective experience must be composed of purely local sensory facts, the characteristics of which are strictly determined by corresponding peripheral stimuli. For the sake of the maintenance of order, processes in individual pathways and in corresponding cells of the brain have been separated from one another and from the surrounding tissue. It follows that no processes in other parts of the nervous system can alter sensory experience; more particularly, sensory experience cannot be altered by the subject's attitude.<sup>187</sup>

By contrast, Köhler lays heavy emphasis on supposed interaction between disparate portions and processes in the brain in accounting for perception.

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<sup>184</sup> Köhler, *Gestalt Psychology*, p. 209.

<sup>185</sup> Köhler, *Gestalt Psychology*, p. 64.

<sup>186</sup> Köhler, *Gestalt Psychology*, Chapter IV.

<sup>187</sup> Köhler, *Gestalt Psychology*, p. 114.

Köhler compares the behavior of the brain to dynamic physical processes, such as the movement of fluids. "In a pipe," Köhler writes, "a drop of water moves in a way which tends towards equalization of the differential pressure. Such is the operation of forces at all points of all systems. ...the direction of flow of each point also depends upon the tendency of the dynamic factors to bring about equalization of pressure."<sup>188</sup> According to Köhler, neural processes in the brain resemble the behavior of fluids not only in that they continuously interact, but in their tendency towards stability as a whole system.<sup>189</sup> He writes:

Dynamic self-distribution in this sense is the kind of function which Gestalt Psychology believes to be essential in neurological theory. More particularly, it is assumed that the order of facts in a visual field is to a high degree the outcome of such self-distribution processes.<sup>190</sup>

Köhler claims that the organizations of *Gestalten* correspond to dynamic tensions in the brain. For example, we experience the "requiredness" of a musical fifth tending towards the tonic, because our brains neurologically tend toward that stable state corresponding to hearing the tonic aloud.<sup>191</sup> Similarly the double-

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<sup>188</sup> Köhler, *Gestalt Psychology*, p. 128.

<sup>189</sup> Köhler, *Gestalt Psychology*, p. 121ff.

<sup>190</sup> Köhler, *Gestalt Psychology*, p. 132.

<sup>191</sup> Cf., Köhler, "Human Perception," p. 166.

cross (figure 3), he says, is striking because it causes peculiarly unstable neural condition that switches back and forth between one nearly stable configuration and another without finding permanent rest.<sup>192</sup>

Köhler's mention of the influence of the subject's "attitude" upon the organization of experience indicates an interesting facet of his theory of perception. According to Köhler, some shifts in the organization of experience can be willfully induced by deliberately shifting one's "attitude" toward an object. His idea is that we can, in some cases, deliberately introduce an added force into the dynamically interrelated brain processes underlying both attitude and perception. Thus, we can alternately concentrate upon certain lines in figure 5, so as to emphasize the organizations respectively represented in figures 5a and 5b.

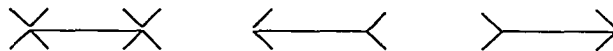


Figure 5 - Double Arrow

Coming far closer to the ordinary notion of attitude, Köhler elsewhere claims that a chimp will actually perceive a situation differently, depending on whether or not she is hungry. Like the

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<sup>192</sup> Cf., Köhler, *Gestalt Psychology*, pp. 171-2.



black cross against the white ground, Köhler claims, a banana will stand out as object in the visual foreground of a hungry ape:

A chimpanzee sees a banana beyond the bars of his cage, too far away for his arm to reach. If he is healthy and not overfed, a well defined subjective attitude immediately appears: the banana arouses his appetite. That is, the relation between his inner condition and the sight of the fruit makes the banana outstanding in the field...<sup>193</sup>

The foregoing example demonstrates the extent to which Köhler sees perception as a plastic process, affected by any variety of factors beyond immediate stimuli.

### ***Gestalten and Understanding***

Köhler and his fellow Gestaltists are acutely aware of the epistemological implications of their theory of perception. Having assumed that we actually perceive "alterations in the nervous system," as opposed to objects in the external world itself, Köhler reasonably assumes that mental phenomena are the primitive facts from which our theory of the external world must be constructed.<sup>194</sup> Our notions of external objects and physical laws have meaning, says Köhler, only insofar as they pertain, at least somewhere down the line, to perceptual facts.<sup>195</sup> Given his

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<sup>193</sup> Köhler, "An Aspect of Gestalt Psychology," p. 59

<sup>194</sup> Köhler, *The Place of Value*, p. 116.

<sup>195</sup> Köhler, *The Place of Value*, p., 128.

thesis that *Gestalten* are phenomenological primitives, it follows that the theory of the external world ultimately pertains to *Gestalten*, not sensory elements.

Köhler presumes that many of the intrinsic characteristics of *Gestalten* are transposed into presumptions about the nature of the external world itself. For example, the primitive "groupings" given in experience, Köhler claims, correspond to the objects that we posit in the world:

...not only phenomenal coincidences are used in the construction of the physical world; the context or structures in which they phenomenally appear are likewise assumed to be common traits of perception and of physical existence.<sup>196</sup>

In both our scientific conception of the world and our immediate perception, says Köhler, an elephant appears to have "four legs, two tusks, one trunk and one tail..."<sup>197</sup>

In a more striking passage, Köhler claims that the causal connections with which physical science is concerned are first, and more powerfully suggested by experienced requiredness. He writes:

The indirect inductive procedures of science give us symptoms of such dependence in cases in which it cannot be observed. They tell us about regularities of coexistence and sequence. But the methods of science presuppose that these regularities may be interpreted as indices of actual causal relationships; and the underlying principle can be justified solely on

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<sup>196</sup> Köhler, *The Place of Value*, p., 130.

<sup>197</sup> Köhler, *The Place of Value*, p. 132.

phenomenological grounds, i.e., by implications which are contained in certain experiences of causal relationship.<sup>198</sup>

Thus, Köhler pits his theory against the Empirist theory of perception and knowledge. Our comprehension of the world is rooted in the primitive facts of perception, according to Köhler, and not the rational analysis from neutral sensory data to abstract principles and laws said to define and describe the external world.

Köhler explicitly claims that comprehension of the external world is impossible in the absence of Gestalt perception. "If the sensory field consisted of mutually independent sensory grains," Köhler writes, "man would find it a hard task to orientate himself in such an environment."<sup>199</sup> And in a related passage, he remarks: "...sensory organization may give us a more adequate picture of the world than light waves do, although these waves are the only messages which come to us from the objects, and although sensory organization occurs only after the arrival of the waves."<sup>200</sup>

Köhler's arguments imply that our ability to comprehend the world is dependent upon our ability to steer the plastic

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<sup>198</sup> Köhler, *Dynamics in Psychology*, p. 38.

<sup>199</sup> Köhler, *Gestalt Psychology*, p. 163.

<sup>200</sup> Köhler, *Gestalt Psychology*, p. 161.

processes of perception in the direction of revealing configurations. He claims that "value and corresponding insight constitute the very essence of human mental life."<sup>201</sup> "The sudden grasping of a connection in an entirely different direction than was first expected is the functional core"<sup>202</sup> of many forms of understanding. According to Köhler, we can potentially comprehend important facts in the world without recourse to analysis and reason; rather, we must assume an attitude towards a situation that reveals "*verständliche Zusammenhänge*,"<sup>203</sup> or "understood connections" between phenomenal facts.

### ***Gestalt Theory and Psychological Perception***

Köhler's experimental methodology is shaped by his epistemological theory on two levels, which exert competing influences on his work. First, he calls upon his right to speak of the world in terms of perceived wholes and relations of *requiredness*. As we will see, doing so allows him to conceive of psychological facts in very different terms than were possible on earlier psychological theories, and so carry the discipline in a new direction. Second, Köhler's biological postulates repeatedly invade the more holistic brand of psychology implied by his

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<sup>201</sup> Köhler, *The Place of Value*, p. 36.

<sup>202</sup> Köhler, "The Nature of Intelligence," p. 169.

<sup>203</sup> Köhler, "The Scientists from Europe," p. 432.

acceptance of primitive perceptions, and ultimately compromise his ideas.

A tremendously important implication of Gestalt theory concerns the perception of psychological facts. According to Köhler, we can immediately perceive that a person is thinking, intending, feeling joy, etc., simply by perceiving the situation at hand under a particular experiential organization. To recognize another person's "mental calm," says Köhler, is not to infer the existence of a private mental state based on the evidence of public facts. Rather, it is to perceive the public facts themselves under a psychologically revealing *Gestalt*:

If I refer to the calmness of a man before me, I refer to a fact which I perceive. ... Similarly, if a man "gets excited," the *crescendo* which occurs before my eyes and ears is not, of course, a neutral sensory fact; rather, the dynamics of the perceptual event *is, or contains*, what I call the man's excitement. I do not ask myself whether something that belongs to another world accompanies the impressive display.<sup>204</sup>

Thus, Köhler apparently solves the problem of other minds via his theory of perception.

Köhler most successfully applies his view of psychological perception in his earliest monograph, *The Mentality of Apes*<sup>205</sup>. In that book, Köhler entirely refrains from biological hypotheses regarding brain dynamics, and restricts himself mostly to pure

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<sup>204</sup> Köhler, *Gestalt Psychology*, p. 242.

<sup>205</sup> Köhler, *The Mentality of Apes*.

description of the behavior of the chimps whom he studied. However, as Köhler argues in an essay from a later date, his observations have psychological significance only so long as he regards those behaviors from a psychological aspect, within which the chimps' mental states are intrinsically revealed:

An animal "struggles to its feet," he "staggers," he "strokes" a person; lower apes often show "volatile, unstable behavior, etc. All the words here used for description reflect *total impressions* which correspond to movement *complexes* in the observed animals. Is it therefore a matter of *unanalyzed* perceptions, and does this not also mean unclarity? Must we not undertake the analysis of complexes if we are to discover their true parts--what is really there? But if we change to this method and direct our observation and description to parts of these movement complexes, the result turns out to be entirely unsatisfactory...*there are realities in the animals investigated which are perceptible to us only in those total impressions.*<sup>206</sup>

If not for his willingness to describe the chimps' behaviors in the terms that he does, says Köhler, he would not be able to draw conclusions regarding their mental lives at all.

The chief conclusion that Köhler draws from his observation of apes is that their intelligent behavior is founded on Gestalt perception. His objective is to analyze the intelligent behavior of apes in order to reveal something of the nature of the "plastic state processes" that underlie them, and which he presumes underlie the intelligent behaviors of humans as well.<sup>207</sup>

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<sup>206</sup> Köhler, "Methods of Psychological Research with Apes," pp. 205-6.

<sup>207</sup> Köhler, "Methods of Psychological Research with Apes," p. 2.

The "plastic processes" to which Köhler refers here, even at this early stage in his career, are indeed the plastic processes of Gestalt perception. Köhler claims that chimps understand the facts in the world by seeing them under revealing aspects.

Most of Köhler's experiments with chimps target their ability to use various tools and strategies to get bananas placed out of their immediate reach. Köhler describes, for example, how one day a chimp named Sultan sat uneasily staring at a banana out of reach beyond a fence. Sultan made a few futile attempts to reach the banana with each of two bamboo sticks, but neither was long enough to reach it. Quite suddenly, and with obvious enthusiasm, says Köhler, Sultan inserted the narrower piece of bamboo into the hollow of the larger one, thus creating a "double-stick" long enough to reach the fruit.<sup>208</sup> Köhler believes that Sultan's insight was rooted in a perceptual reality, suddenly given before his mental eye. He writes:

In the field experiments carried out here the insight of the chimpanzee shows itself to be principally determined by his optical apprehension of the situation... It is therefore difficult to give a satisfactory explanation of all his performances, so long as no detailed theory of form (Gestalt) has been laid as a foundation.<sup>209</sup>

Despite the fact that Köhler repeatedly emphasizes the importance of admitting the primitive facts of perception into

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<sup>208</sup> Köhler, *The Mentality of Apes*, p. 129.

<sup>209</sup> Köhler, *The Mentality of Apes*, p. 267.

the data of psychology, he simultaneously relies on his biological hypotheses to justify and explain them. Regarding the problem of other minds, for example, Köhler does not rest content with what might be regarded as a conceptual solution. He does not, that is, halt at the idea that psychological facts are aspects of behavior. Instead, he speculates that the causal processes of perception induce sympathetic brain states in the percipient similar to those in the perceived subject. It is because the percipient experiences a similar psychological state to the subject, says Köhler, that he can "perceive" the other's calm, for example.

Köhler uses the foregoing hypothesis to explain his own ability to observe the mental states of chimps. He compares the situation to a piano recital, wherein according to Köhler, the musician effectively recreates her own mood in her audience via causal connection. The pianist's mood affects how she strikes the keys, says Köhler, which in turn affects the various qualities of the sound waves produced when the hammers strike the strings. Those sound waves travel through the air, strike the eardrums of people in the audience, and finally cause certain alterations in their brains. According to Köhler, the causal connection is such that the percipients' brains will enter a state similar to the



pianist's, and thus the percipients will have a similar experience to hers.<sup>210</sup> Köhler writes:

The ape in the experiment behaves as the [piano] player, the observer as the hearer; and if musical understanding presupposes that correspondence, the same is true, *mutatis mutandis*, for the understanding by the observer of what the ape does.<sup>211</sup>

Köhler is suggesting that the sight of an ape struggling to get a banana, for example, impresses itself on the brain in such a way that the observer internalizes the ape's desire, and so perceives the ape's ambition.

### ***Wittgenstein on aspect perception***

#### *Other minds*

Like Köhler, Wittgenstein also claims that we immediately perceive the mental states of others, in the sense that our psychological concepts have direct application to certain situations that we observe. We do not infer the existence of internal mental states from the evidence of outer, bodily facts, says Wittgenstein. Rather, we immediately perceive situations where it is appropriate to apply our psychological concepts. He writes, for example, "one sees sadness insofar as one sees a person's sad facial expression."<sup>212</sup> "We do not see facial

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<sup>210</sup> Köhler, *Gestalt Psychology*, p. 219

<sup>211</sup> Köhler, "Methods of Psychological Research with Apes," p. 219.

<sup>212</sup> LW1, §769.

contortions and *make the inference* that he is feeling joy, grief, boredom. We describe a face immediately as sad, radiant, bored, even when we are unable to give any other description of the features."<sup>213</sup>

The foregoing ideas go far to explain Wittgenstein's crucial idea that "Psychology deals with certain aspects of human life."<sup>214</sup> To consider another person's mental states is to regard her according to a psychological organization, or under a psychological aspect, and not to consider a medium of private phenomena. Conversely, to deny the reality of another's mental life is not to deny the existence of something hidden behind her words and gestures, but to fail to see those words and gestures under the aspect within which they are themselves regarded as the expression of mental life. "Seeing a living human being as an automaton is analogous to seeing...the cross-pieces of a window as a swastika, for example."<sup>215</sup>

However, on top of the fact that Köhler's neurological hypothesis regarding the perception of other minds is obviously far-fetched, his theory is also problematic in a more crucial respect. Namely, it hangs out of reach of the real problem at hand. Whatever the effects of stimuli on our brains, they do not

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<sup>213</sup> RPP2, §570.

<sup>214</sup> RPP2, § 35.

<sup>215</sup> PI, §420.

causally determine "what is seen," and so they cannot causally explain our perception of other's psychological states. Köhler's fundamental mistake is the same as Helmholtz's, for both authors mistakenly assume that "what is seen" is identical with an internal image. Thus, Wittgenstein writes:

Does "a loving face" describe our visual image? Do we see tenderness, kindness, etc.?

There are two schools (i) Obviously tenderness, kindness, etc. are indirect descriptions of what we see. (ii) Obviously not; because we can't describe the colour patches but only say "his face lit up". So kindness etc., distance, etc., are as optical as colour.

I want to say that both are wrong. 'The ideal description of what we see' is a chimera.<sup>216</sup>

The debate between the Gestalt theorists and the elementists regarding the definitive characteristics of the object of sight hangs on a misunderstanding of the concept of *seeing*. We might say that Köhler is right when he claims that another person's calm can be immediately perceived, and not only inferred from more primitive perceptual facts. However, he explains that fact wrongly. The proper explanation is that the concept of "seeing" has an application according to which we may say that a person perceives calm and other qualitative characteristics, irrespective of all internal representations. Wittgenstein puts the point as follows:

Two uses of the word "see".

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<sup>216</sup> LPP, p. 110.

The one: "What do you see there?"--"I see *this*" (and then a description, a drawing, a copy). The other: "I see a likeness between these two faces"--let the man I tell this to be seeing the faces as clearly as I do myself.

The importance of this is the difference of category between the two 'objects of sight'.<sup>217</sup>

Köhler's theoretical justification for our use of the concept of *seeing* is redundant. Whatever phenomenal and biological processes are going on when a person sees are beside the point that it is appropriate to say that someone *sees* the smile on a face, etc. In the sad, strange case of individuals who are unable to recognize the psychological characteristics of facial expressions (prosopagnosia), it is not their eyesight that is impaired.<sup>218</sup> Indeed, what is so strange about such people is precisely that, in one sense, they *see* the same things that normally sighted people do, but fail to react to those things normally. However, it is also apt to say that such people actually *see* the world differently than most of us, for the concept of *seeing* has a second application that encompasses reactions, or ways of dealing with, what is perceived.

In an effort to drive a wedge between the concept of *seeing* and the biological processes of perception, Wittgenstein imagines the possibility of discovering that certain physiological facts about the eye dictate the order in which we scan a picture. Such

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<sup>217</sup> PI, p. 193.

<sup>218</sup> PI, p. 210.

a discovery might have some relevance to the question of why we are inclined to notice certain "groupings" of lines and shapes. If we now say that the biological processes reveal what is really seen, says Wittgenstein, then we "have now introduced a new, a physiological, criterion of seeing."<sup>219</sup> For there is already a concept of seeing in place that has a useful application independently of such biological facts. "The psychological concept hangs out of reach of this explanation," Wittgenstein concludes, for its native application is at home within a context that makes no reference to ocular oscillations or other biological facts.<sup>220</sup>

*The criteria for "seeing an aspect"*

Wittgenstein's criticism goes beyond the problem of other minds, straight to the heart of Gestalt theory. He argues that the distinction between the various ways of seeing certain objects or situations "lies in another dimension" than the interior realm that Köhler supposes.<sup>221</sup> Consider the simple case of seeing the double cross and similar pictures under two aspects. What makes these images peculiar is not that they produce two distinct internal images, says Wittgenstein, but that

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<sup>219</sup> PI, p. 212.

<sup>220</sup> PI, p. 212.

<sup>221</sup> PI, p. 200.

one and the same picture can be interpreted in two ways. Wittgenstein makes this point in reference to Jastrow's duck-rabbit, which looks like a duck under one aspect and a rabbit under another:

I see two pictures, with the duck-rabbit surrounded by rabbits in one, by ducks in the other. I do not notice that they are the same. Does it follow from this that I see something different in the two cases?--It gives us a reason for using this expression here.

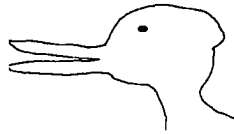


Figure 6 - Jastrow's Duck-Rabbit

The change of aspect. "But surely you would say that the picture is altogether different now!"

But what is different? My impression? my point of view?--Can I say? I *describe* the alteration like a perception; quite as if the object had altered before my eyes.<sup>222</sup>

To say that the picture itself has altered is only one way of describing the experience of perceiving the picture's two aspects. But it is a mistake to interpret that way of describing the situation as a reference to two different mental objects.

We can see that there is a problem with the presumption that every perceived aspect is first produced in the medium of mental

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<sup>222</sup> PI, p. 195.

representations if we consider the range of aspects that any situation presents. Even a simple picture like the double-cross (figure 3) or the duck-rabbit "can be seen, not just in two but in very many different ways,"<sup>223</sup> and not all of these aspects are on a par<sup>224</sup>. "You only 'see the duck and rabbit aspects' if you are already conversant with the shapes of those two animals," Wittgenstein writes, "There is no analogous condition for seeing the aspect [of the double cross]."<sup>225</sup> Similarly,

It is possible to take the duck-rabbit simply for the picture of a rabbit, the double cross simply for the picture of a black cross, but not to take the bare triangular figure for the picture of an object that has fallen over. To see this aspect of the triangle demands *imagination*.<sup>226</sup>

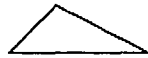


Figure 7 - Fallen Triangle

Köhler tries to find the difference between aspects in the medium of inner experience when the difference actually lies "in another dimension."<sup>227</sup> "The expression of the aspect is the expression of a way of taking (hence, of a way-of-dealing-with,

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<sup>223</sup> RPP1, §1017.

<sup>224</sup> PI, p. 207.

<sup>225</sup> PI, p. 207.

<sup>226</sup> PI, p. 207.

<sup>227</sup> PI, p. 200.

of a technique); but used as a description of a state."<sup>228</sup> We might say that children "see" a chest as a house when playing a particular game<sup>229</sup>, but it is unnecessary to suppose that their visual experience of the chest has altered in some way comparable to the shift in foreground and background represented by the double-cross. In this case, what we mean by "seeing as" is clearly rooted in the children's manner of interacting with the object.

Similarly, according to Wittgenstein, whether or not it is appropriate to say that someone sees a triangle as hanging from its apex or lying on its side depends on how that person engages the figure.<sup>230</sup> "The substratum of this experience is the mastery of a technique."<sup>231</sup> In the context of building an appliance from a diagram, say, it might be important to see a triangle as dangling freely or as resting on its side. We might say to someone, "No, no, you must look at it like this," and then go on to explain how the figure is to be applied. In that case, it is clear that whether we say that the builder is seeing the figure this way or that--or, is having one experience rather than another--is rooted in the application he makes of it.

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<sup>228</sup> RPP1, §1025.

<sup>229</sup> PI, p. 206.

<sup>230</sup> PI, p. 200.

<sup>231</sup> PI, p. 208.



The case of seeing a figure under an aspect that guides us in an activity, such as the construction of an appliance, highlights the categorical difference between "seeing" and "seeing as." "There is such an order as... 'Now see the figure like this;'" Wittgenstein writes, "but not: 'Now see this leaf as green'.<sup>232</sup> One might be ordered, for example, to see a drawing as representative of the back of the appliance that he is constructing rather than the front, in order that he may appropriately utilize it in his work. We might say, in that case, that the person is being ordered to see that drawing as having one *meaning* rather than another. The case is comparable to telling a person to regard "bank" as the river bank rather than the financial institution when told, "I will meet you at the bank." Thus, Wittgenstein writes, "It is--contrary to Köhler--precisely a *meaning* that I see."<sup>233</sup>

The fact that mastery of an application defines "seeing as" in a wide variety of cases cuts to the quick of Köhler's hypothesis that all aspect perception is rooted in phenomenal realities. Whatever image might dance before the eye of the craftsman, it is appropriate to say that he sees the diagram as representing the back of an appliance rather than the front if he goes on to apply it correctly as he works. Thus, Wittgenstein

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<sup>232</sup> PI, p. 213.

<sup>233</sup> RPP1, §869

concludes, "'Seeing as...' is not part of perception. And for that reason it is like seeing and again not like."<sup>234</sup>

### *Gestalten and Understanding*

The foregoing arguments speak against Köhler's theory that Gestalt perception is the essential core of (human and primate) understanding. The hypothesis that Sultan sees a particular relationship between the stick and the banana hangs out of reach of the question of how he *understands* how to employ what he sees. Köhler's hypothesis "would not suffice," says Wittgenstein, "and then again, it would be too much. I want the monkey to *reflect* on something."<sup>235</sup> Köhler's hypothesis is both insufficient and redundant, because any picture can be interpreted and applied in any number of ways. Even if we imagine that Sultan sees his arm and the stick as a united length, still it takes *understanding* on top of that for him to comprehend how to employ the image.

Köhler's hypothesis speaks to the idea that some internal process of thinking explains intelligent behavior. It is fairly natural to ask what must go on inside Sultan so that he knows to stack boxes and build double-sticks to get at bananas. "These auxiliary activities are not the thinking;" Wittgenstein summarizes, "but one imagines thinking as the stream which must

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<sup>234</sup> PI, p. 197.

<sup>235</sup> RPP2, §224.

be flowing under the surface of these expedients, if they are not after all to be mechanical procedures."<sup>236</sup> Yet when we go to apply that picture of an interior processes, as Köhler does, we find that it lacks the capacity to explain what *thinking* and *understanding* really are. Even if we grant that sensations, Gestalten, or words flitter through our heads while we work, still we would have to reflect on the meaning of those phenomena and apply them appropriately if we are to say that we are *thinking* and *understanding*.

Seen against the background of traditional epistemological theories, the claim that seeing aspects can be regarded as a brand of understanding is potentially very important. It speaks against Helmholtz's theory, which has footholds in both Rationalist and Empiricist epistemologies, that all understanding is rooted in the cognitive analysis of causal relations, for example. As we saw earlier, Helmholtz maintains that we immediately perceive only an intrinsically meaningless flow of sensations within which we rationally decipher regular, lawful patterns. By contrast, if understanding the meaning of human gestures and expressions turns on the ability to take an appropriate attitude towards them, or to perceive them under an appropriate aspect, then we have identified at least one

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<sup>236</sup> Z, §107.

important domain of understanding that is not based on causal ideas.

On the other hand, Köhler's scientific explanation of Gestalt perception has no genuine bearing on the nature of understanding. Whether or not another's sad gestures causally reproduce some particular images in my mind, or vectors of neural force in my brain that are similar to those that occur when I myself am sad, my comprehension of the meaning of his gestures is another kind of psychological fact altogether. The concept of *understanding* itself relates to an aspect of human behavior, we might say, whose nature is independent of whatever internal processes might be going on within us during periods of thinking or comprehending.

## William James: consciousness as a causal medium

### *Jamesian Functionalism*

Even before the advent of Gestalt theory, a more fundamental shift in psychology was taking place in America. With the publication of *The Principles of Psychology* in 1890, William James formalized a functionalist theory of mind that marks a momentous shift away from the representational theory of ideas. The definitive characteristic of consciousness is not to represent the outer world, on James' view, but to effectively guide the organism through the world of objects. Thus, the question of whether the mind is filled with stimuli or *Gestalten* is, at most, a secondary issue for James.

James's functionalism derives from Darwin, and the presumption that all bodily capacities have evolved to meet the demands of the environment. According to James, thought and consciousness are amongst the capacities that evolution has produced in man. "All action is ...reaction upon the outer world," he writes, "and the middle stage of consideration or contemplation or thinking is only a place of transit, the bottom of the loop, both of whose ends have their point of application in the outer world."<sup>237</sup> To achieve its practical objective, says James, it is not necessary that thought resemble the outer

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<sup>237</sup> James, *The Will to Believe*, p. 113.

world<sup>238</sup>, but only that it effectively "act on" the world (via the body). A "true thought," says James, is one which serves as a successful "instrument of action."<sup>239</sup>

James speculates that in the course of evolution, the cerebral hemispheres gradually grew more complex, and took on the role of governing the more sophisticated reactions of the body to the environment.<sup>240</sup> The lower portions of the brain govern only "mechanical" actions, says James, wherein a particular response is invariably called out by a given stimulus. On the other hand, those actions produced by the cerebral hemispheres, he claims, are "spontaneous." In defense of his hypothesis, James notes that the relatively complex behaviors of a normal frog such as crawling, croaking, and swimming cannot be elicited by any specific stimulus. The frog's "conduct has become incalculable. We can no longer foretell it exactly."<sup>241</sup> On the other hand, if the frog's cerebral hemispheres are removed, his behavioral repertoire is reduced to invariable reactions; the damaged frog will swim whenever placed in water, for example, and will

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<sup>238</sup> Cf., James, *Principles of Psychology*, p. 307.

<sup>239</sup> James, *Pragmatism*, p. 202.

<sup>240</sup> James, *Principles of Psychology*, p. 11.

<sup>241</sup> James, *Principles of Psychology*, p. 11.

automatically rub a foot over a spot on its skin which we irritate with a drop of acid.<sup>242</sup>

Not surprisingly, James hypothesizes that consciousness is located in the cerebral hemispheres. However, the details of his theory regarding the relation between brain and mind are ultimately somewhat murky. In some passages, James speaks of consciousness as a force acting upon the cerebral hemispheres, causally guiding their output. He writes, for example, "the distribution of consciousness shows it to be exactly such as we might expect of an organ grown too complex to regulate itself."<sup>243</sup> In a more striking passage, James writes:

However inadequate our ideas of causal efficacy may be, we are less wide of the mark when we say that our ideas and feelings have it, than the Automatists are when they say that they don't. ...Psychology is a mere natural science, accepting certain terms uncritically as her data, and stopping short of metaphysical reconstruction. Like physics, she must be naïve; and if she finds that in her very peculiar field of study ideas *seem* to be causes, she had better continue to talk of them as such. ... If feelings are causes, of course their effects must be furtherances and checkings of internal cerebral motions... The [brain] will be for us a sort of vat in which feelings and motions somehow go on stewing together...<sup>244</sup>

In other passages, however, James advocates the more modest thesis of psychophysical-parallelism, according to which there is

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<sup>242</sup> James, *Principles of Psychology*, p. 11.

<sup>243</sup> James, *Principles of Psychology*, p. 94.

<sup>244</sup> James, *Principles of Psychology*, p. 90.

"...a blank unmediated correspondence, term for term, of the succession of states of consciousness with the succession of total brain-processes."<sup>245</sup> On most accounts, a chief virtue of the theory of psycho-physical parallelism is precisely that it locates all bodily causality in the physical realm, while simultaneously making apparent sense of the fact that brain states correspond to states of consciousness. James promises not to violate that conception of the mind-body relation in the *Principles*.<sup>246</sup> In practice, however, he continues to treat ideas as causes, and many of his hypotheses would lose most or all of their significance were he to retreat from that way of thinking.

While the *Principles of Psychology* is, in one aspect, a compendious textbook containing summaries and discussions of many significant branches of 19C experimental psychology, the vast majority of James' original contributions are causal analyses of conscious phenomena themselves. The first two sentences of the *Principles* read, "Psychology is the science of mental life, both of its phenomena and of their conditions. The phenomena are such things as we call feelings, desires, cognitions, reasonings, decisions, and the like..."<sup>247</sup> James stays fairly close to that description of his subject throughout most of his psychological

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<sup>245</sup> James, *Principles of Psychology*, p. 119.

<sup>246</sup> James, *Principles of Psychology*, p. 119.

<sup>247</sup> James, *Principles of Psychology*, p. 1.



writings, concentrating his attention on the interior phenomena of consciousness.

James' psychology is primarily a science of the various mind-stuffs<sup>248</sup> that supposedly pass through consciousness between stimulation and response. Dismissing ontological doubts about inner entities on the grounds that they are "too philosophical" for the scientist to quibble with, James' writes that mental states (elsewhere described as "*the stream of thought, of consciousness, or of subjective life*"<sup>249</sup>) "form a practically admitted sort of object whose habits of coexistence and succession and relations with organic conditions form an entirely definite subject of research."<sup>250</sup> "These thoughts are the subjective data of which [the psychologist] treats, and their relations to their objects, to the brain, and to the rest of the world constitute the subject matter of psychologic science."<sup>251</sup>

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<sup>248</sup> I have noticed that several writers limit their use of "mind-stuff" to that of the James, *Principles of Psychology*, chapter 6, where James uses the expression to refer to the supposed elemental constituents of thought posited in psychophysics, a posit that James rejects. (E.g., Myers, *William James*.) However, in other chapters, James uses the term in a non-elementaristic vein, such as in the following statement of functionalist Psychology: "The reader sees by this time that it makes little or no difference in what sort of mind-stuff, in what quality of imagery, his thinking goes on" (*Principles of Psychology*, 174). Thereafter, James continues to use the expression "mind-stuff" to refer to the contents of consciousness that he does himself posit.

<sup>249</sup> James, *Principles of Psychology*, p. 155.

<sup>250</sup> James, "A Plea for Psychology," p. 274.

<sup>251</sup> James, *Principles of Psychology*, p. 129. Original italics removed.

James maintains that introspection is the chief means of psychological inquiry--after all, how else can one observe subjective phenomena? His brand of introspection is very different than the Wundtians', however. He makes few gestures toward experimental control, and he does not enter into introspection with the baggage of Wundt's theory of perception and sensation. "The word introspection need hardly be defined," James writes, "--it means, of course, the looking into our own minds and reporting what we there discover. *Every one agrees that we there discover states of consciousness.*" <sup>252</sup> James' experiments often consist of little more than a description of his own states of consciousness, intermingled with causal hypotheses about both the brain and the course of conscious events themselves.

### ***James' Theory of Meaning***

Via introspection, James' claims to notice that conscious phenomena are broadly divided into two categories, substantives and transitives. Substantives are places of relative rest within the thought stream, and are usually images or words. Transitives, according to James, are essentially "thoughts of relation" between substantives, and are responsible for directing the flow of consciousness in a particular direction. "It then appears that the main end of our thinking is at all times the attainment

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<sup>252</sup> James, *Principles of Psychology*, p. 121.

of some other substantive part than the one from which we have just been dislodged. And we may say that the main use of the transitive parts is to lead us from one substantive conclusion to another."<sup>253</sup>

Several significant elements of James' psychology come together in his theory of meaning, which we may begin defining in the negative. As mentioned above, James' functionalist conception of mind liberates him from the representational theory of ideas. In a passage directed against Empiricist philosophy, but equally bearing on German psychology, James argues that it is unnecessary for ideas to "be cast in the exact likeness of what they know."<sup>254</sup> James argues that one mental image can potentially be the substantive core of countless thoughts, so long as those thoughts terminate in different ends. Thus, James argues, the meaning of one's verbal expressions cannot be identical with an interior image:

When I use the word *man* in two different sentences, I may have both times exactly the same sound upon my lips and same picture in my mental eye, but I may mean, and at every moment of uttering the word and imagining the picture, know that I mean, two entirely different things. Thus when I say, "What a wonderful man Jones is!" I am perfectly aware that I mean by man to exclude Napoleon Bonaparte or Smith. But when I say: "What a wonderful thing Man is!" I am equally aware that I mean to include not only Jones, but

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<sup>253</sup> James, *Principles of Psychology*, p. 158.

<sup>254</sup> James, *Principles of Psychology*, p. 307.

Napoleon and Smith as well.<sup>255</sup>

It is the development of the thought as a whole that defines our meaning, according to James, and it is transitives, not substantives, that causally govern the development of ideas in the mind. It is important that the reader recognize that transitives are items within the thought stream, on James' view, and not mere abstractions. He regards the *intention to say something*, for example, as a specific, causally efficacious state of consciousness:

And has the reader never asked himself what kind of a mental fact is his *intention of saying a thing* before he has said it? It is an entirely definite intention, distinct from all other intentions, an absolutely distinct state of consciousness...as the words that replace [the intention] arrive, it welcomes them successively and calls them right if they agree with it, it rejects them and calls them wrong if they do not.<sup>256</sup>

Thus, if our intention is suited to a meaning for which we cannot recall the right word, it refuses inadequate substitutes. If we try to recall a forgotten name, says James, then we experience a specific state of mind containing a "wraith" of the desired name, "...beckoning us in a given direction, making us tingle with the sense of our closeness..."<sup>257</sup> We feel the word on the tip of our

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<sup>255</sup> James, *Principles of Psychology*, pp. 307-8.

<sup>256</sup> James, *Principles of Psychology*, p. 164.

<sup>257</sup> James, *Principles of Psychology*, p. 163.

tongue, so to speak, because its form is already outlined in our thoughts.

On James' view, meaning is also a specific transitive fact of experience. "The sense of our meaning is an entirely peculiar element of the thought. It is one of those evanescent and 'transitive' facts..."<sup>258</sup> In fact, there seems to be little or no distinction between intentions and meanings on James' view; both are ascribed the same role in guiding the development of thoughts and their expression. When we speak or write, according to James we are guided by the transitive element of meaning (or intention) coexisting in the thought stream:

Annihilate a mind at any instant, cut its thought through whilst yet uncompleted, and examine the object present to the cross-section thus suddenly made; you will find, not the bald word in process of utterance, but the word suffused with the whole idea.<sup>259</sup>

As we utter the sentence, "The pack of cards is on the table," James claims, each word passes relatively quickly. Yet immediately before we say the sentence, says James, "the entire thought is present to our mind in the form of an intention to utter that sentence".<sup>260</sup> And all the while that we speak, even as the individual words come and go from consciousness, says James,

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<sup>258</sup> James, *Principles of Psychology*, p. 307.

<sup>259</sup> James, *Principles of Psychology*, p. 183.

<sup>260</sup> James, *Principles of Psychology*, p. 181.

"all will admit that we again think its entire content as we inwardly realize its deliverance."<sup>261</sup>

In keeping with his ideas about the biological substratum of consciousness, ambiguous though they are, James hypothesizes that meaning has a neurological correlate. Though he does not spell out the reasons for extending his theory of meaning to include physiological postulates, we may assume that he is deliberately laying out the principles by which thought and meaning are transformed into action upon the external world. His theory is the following:

Nothing is easier than to symbolize all these facts in terms of brain-action. Just as the echo of the whence, the sense of the starting point of our thought, is probably due to the dying excitement of processes but a moment since aroused; so the sense of the whither, the foretaste of the terminus, must be due to the waxing excitement of tracts or processes which, a moment hence, will be the cerebral correlatives of some thing which a moment hence, will be vividly present in thought. Represented by a curve, the neurosis underlying consciousness must at any moment be like this:



Each point of the horizontal line stands for some brain-tract process. The height of the curve above the line stands for the intensity of the process.<sup>262</sup>

### ***Wittgenstein on Meaning and Mind***

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<sup>261</sup> James, *Principles of Psychology*, p. 181.

<sup>262</sup> James, *Principles of Psychology*, p. 166.

James' hypothesis contradicts one of Wittgenstein's most hard-fought claims, viz., that meanings are not private mental accompaniments to language. "When I think in language," Wittgenstein writes, "there aren't 'meanings' going through my mind in addition to the verbal expressions: the language is itself the vehicle of thought."<sup>263</sup> The meanings of our expressions are (in a "large class of cases") defined by their use<sup>264</sup>, says Wittgenstein, not by objects or processes within us. Wittgenstein's ideas about meaning are too complex to cover thoroughly within the present discussion, especially in light of the controversies surrounding their interpretation. However, a brief discussion of his thought on the subject will give us sufficient background to continue with our analysis of James' psychology.

In turning to an analysis of his own experiences to discover the nature of meaning, James makes two crucial mistakes, from Wittgenstein's point of view. The first is to presume that meanings are private mental facts at all. It is this aspect of Wittgenstein's theory of meaning that seems sufficiently well understood to warrant only a brief synopsis here. The second mistake made by James is to regard his introspective statements as reports about items in a phenomenal realm suited to causal

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<sup>263</sup> PI, §329.

<sup>264</sup> Cf., PI, §43.

analysis and description. This second subject has more immediate bearing on scientific psychology, and so will be covered more thoroughly below.

In the *Philosophical Investigations*, Wittgenstein begins developing his view of meaning no later than §2, where he asks us to imagine the fictional case of two builders communicating through the use of only four words: "block," "pillar," "slab," and "beam." "A calls them out;--B brings the stone which he has learnt to bring at such-and-such a call--Conceive this as a complete primitive language."<sup>265</sup> It is tempting to imagine that when A calls out the order "Slab!", B can only carry out the order if he first understands the meaning of the expression.

Wittgenstein intends for us to see that the builders' call-and-response can be understood as a primitive kind of behavior in which mediating cognitive processes are essentially irrelevant. He compares the builders "language-game" to ring-a-ring-a-roses,<sup>266</sup> a game in which small children sing a song and drop to the ground when it ends. To understand the meaning of the lyrics in that context may be seen as knowing how to react to them; the words are lent meaning by their social and behavioral context. Similarly, says Wittgenstein, we can imagine the builders of PI, §2 raising their children to react to "Slab!" by bringing an

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<sup>265</sup> PI, §2.

<sup>266</sup> PI, §7.



appropriate rock. The question of whether such children grasp the meaning of "Slab!" or have only learned a kind of game has no foothold; to understand the command simply is to react appropriately, according to Wittgenstein, not to undergo some private mental process that leads to appropriate action.<sup>267</sup> "The children are brought up to perform *these* actions, to use *these* words as they do so, and to react in *this* way to the words of others."<sup>268</sup>

When we want to understand what a person means by an expression, says Wittgenstein, we should look to the "particular circumstances" surrounding it in order to determine its contextual use.<sup>269</sup> The meaning of "Slab!", says Wittgenstein, is defined by its use in the activity of building; whatever interior mental processes might be going on within the builders is beside the point.

Wittgenstein illuminates the categorical difference between mental processes and meanings (or understanding) by demonstrating the difference in the use of the expressions "understanding" and "mental process." Conscious mental states such as pain and depression have qualities of duration and intensity, Wittgenstein notes, while understanding does not (at least not in the same

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<sup>267</sup> PI, §6.

<sup>268</sup> PI, §6.

<sup>269</sup> PI, §154.

sense). If I say that I have been in continuous pain since yesterday, for example, I have described my conscious states, but not if I say that I have understood a given word since yesterday. If a word or a sentence is not in my mind at all, still I understand it--as I understand how to play chess even when I am not playing.<sup>270</sup> A pain, on the other hand, simply ceases to exist when I do not experience it. These points add up to the conclusion that "'I meant this by that word' is a statement which is differently used from one about an affection of the mind."<sup>271</sup>

According to Wittgenstein, the meaning of our expressions is not determined by some interior mental fact that might be revealed in a cross-section of consciousness, as James proposes. If it is unclear whether I mean Smith or Jones when I say "him," then nothing in my bodily or mental state determines whom I meant. Wittgenstein writes, "If God had looked into our minds he would not have been able to see there whom we were speaking of."<sup>272</sup> However, the fact that the meaning of an expression is not decided by bodily or mental states does not entail that *nothing* determines its meaning. Rather, the meaning of our expressions comes from their application; the meaning of "Slab!", for example, is shown by its use in the activity of building. And

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<sup>270</sup> PI, §151.

<sup>271</sup> PI, §676.

<sup>272</sup> PI, p. 217.

whether or not I mean Smith or Jones when I say "him" is shown by the application I make of the expression:

"Of Course I meant B; I didn't think of A at all!"  
"I wanted B to come to me, so as to ..."--All this points to a wider context.<sup>273</sup>

The fact that James can mean either universal or particular man even while the same image dances before his mind's eye, is "explained" by the fact that his meaning is not identical with any interior item whatsoever, but arises from the application of the expression.

#### *The nature of introspective reports*

The fact that James is inclined to look within his own mind to find meanings shows not only a misunderstanding of the nature of meaning, but a misunderstanding of the nature of mental phenomena and introspection. James interprets his experiences of meaning and intention as distinct mental items, but they are nothing of the kind, says Wittgenstein:

James, in writing of this subject, is really trying to say: "What a remarkable experience! The word is not there yet, and yet in a certain sense is there,--or something is there, which cannot grow into anything but this word." --But this is not experience at all. *Interpreted* as experience it does indeed look odd. As does intention, when it is interpreted as the accompaniment of action; or again, like minus one interpreted as a cardinal number.<sup>274</sup>

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<sup>273</sup> PI, §686.

<sup>274</sup> PI, p. 219.

The fact that we all have a sense of where our thought is headed, Wittgenstein writes, "proves as little that my thought was completed in a ghostly form as my intention to whistle a tune before I do (when I say, 'Now I'm going to whistle you the theme....') proves that I whistled the tune in thought before whistling outwardly."<sup>275</sup> Certainly we can speak of someone intending something before he has spoken, but his intention is not a mental experience accompanying his actions:

I take the milk-jug, go a few steps, then I see that it isn't clean, say "No!" and go to the water-tap. Then I describe what happened and name my intentions. Now didn't I have these? Of course! But once again: isn't it misleading to call them experiences? if, that is, one also calls by that name what I said to myself, imagined etc.! (It would also be misleading to call intention a "feeling".)<sup>276</sup>

In short, the intention to fetch a pail of water is not an interior state guiding our actions, and it is not the sort of interior fact that James imagines, i.e., one which plays a causal role in our thoughts and actions.

The illusion that the first person expression of a feeling, thought, intention, etc., describes the state of an interior mechanism, says Wittgenstein, is the product of grammatical confusion. The first person report of a psychological state is essentially expressive; "I mean..." and "I feel that I know..."

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<sup>275</sup> Z, §2.

<sup>276</sup> RPP1, §188.

are more like a spontaneous shriek than the report of an object on the horizon. Wittgenstein suggests that the expression 'I have a pain' "replaces crying or other expressions of pain."<sup>277</sup> Verbalization supplants congenital forms of expression. "...our language is an extension of the more primitive behaviour. (For our language-game is a piece of behaviour.)"<sup>278</sup> We might imagine, says Wittgenstein, that the primitive reaction of a cry is supplanted by verbal behavior through the learning process as follows: "A child has hurt himself and he cries; and then adults talk to him and teach him exclamations and, later, sentences. They teach the child new pain behaviour."<sup>279</sup>

The demonstrative function of our first person psychological expressions is partly obscured by what Wittgenstein calls the "asymmetric" use of psychological language, or the difference between their first and third person usage. "Their [psychological verbs] characteristic is this, that their third person but not their first person is stated on grounds of observation. That observation is observation of behavior."<sup>280</sup> Thus, if I say, "He is feeling sad," I base my statement on the evidence of his behavior. To the contrary, I do not judge that I am sad on the

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<sup>277</sup> LPP, p. 37.

<sup>278</sup> RPP1, §152.

<sup>279</sup> PI, §244.

<sup>280</sup> RPP1, §836.

basis of any evidence, either inner or outer--in most cases, I use the expression as a child uses a cry. The first person statement is the native expression of my sorrow, not a description of an inner object.

Loosely speaking, my statement that "I am sad" is indisputable, in the sense that my statement is not a judgment, and there is no evidence I was considering that you might judge differently. (Of course, you might say, "What are you talking about? You've been active, smiling, productive, etc. etc." And now we might debate whether it is right to say that I am sad.)

It is of course the indisputability that favours the picture of something's being described here, something we see and the other does not, and that is near to us and always accessible, but for the other is hidden: hence something that exists within us and which we become aware of by looking into ourselves. And psychology is now the theory of this inner thing.<sup>281</sup>

Wittgenstein wants us to give up the idea that our first person psychological reports are descriptions of inner objects in favor of the idea that they serve a variety of purposes, including self-expression. Our ability to see the real meaning of our psychological expressions is the key to breaking down the apparent duality of mind and body that lies so near the center of our project:

The characteristic sign of the mental seems to be that one has to guess at it in someone else using external clues and is only acquainted with it from one's own

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<sup>281</sup> RPP1, §692.

case. But when closer reflection causes this view to go up in smoke, then what turns out is not that the inner is something outer, but that 'outer' and 'inner' no longer count as properties of evidence. 'Inner evidence' means nothing, and therefore neither does 'outer evidence'.<sup>282</sup>

Our third person psychological statements such as "He is sad" are not guesses at inner mental objects that the subject has private access to; the whole idea that there are such objects is a fiction born from the misinterpretation of our psychological expressions. "It won't do. It is absurd to call the third person an expression of indirect knowledge, because there is no question of direct knowledge. It isn't like rain, which I can either see, or infer from the noise, the wet wall, etc."<sup>283</sup> Our psychological concepts have this complex role, according to which they are applied asymmetrically. It is a grave mistake to interpret that asymmetry as a function of the private nature of mental phenomena: "One has to look at the concepts 'to be in pain' and 'to simulate pain' in the third and first person. Or: the infinitive covers all persons and tenses. Only the whole is the instrument, the concept."<sup>284</sup>

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<sup>282</sup> LW2, p. 62.

<sup>283</sup> LPP, p. 34.

<sup>284</sup> LW2, p. 37.

### *Introspective Reports Continued*

The misinterpretation of subjective psychological expressions as reports of an interior mechanism is a common source of trouble in experimental psychology. Countless experiments have attempted to decipher the workings of an internal mechanism involving such hypostatized mental entities. For example, there is a substantial body of psychological literature concerning the causal role that the feeling-of-knowing, or FOK, supposedly plays in our thoughts and actions, where the feeling-of-knowing is the experience of feeling that one knows a name, word, fact, etc., that one cannot articulate at the moment. In the introduction to his recent article summarizing his research into FOK, the experimental psychologist Asher Koriat writes:

Even when [subjects] fail to recall a solicited target, they can provide feeling-of-knowing (FOK) judgments about its availability in memory. Most previous studies addressed the question of FOK accuracy, only a few examined how FOK itself is determined, and none asked how the processes assumed to underlie FOK also account for its accuracy. The present work examined all 3 questions within a unified model, with the aim of demystifying FOK phenomenon.<sup>285</sup>

Koriat's demystification is supposedly rendered by his "accessibility model," according to which FOK is a mental byproduct of a partial search for a targeted memory. Koriat speculates that the strength of FOK is determined by the

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<sup>285</sup> Koriat, "How Do we Know," pp. 609-639.



productivity of the partial search; "FOK judgments use the quantity,  $q$ , of information accessible at time  $t_1$  to predict the likelihood of correct memory performance,  $c$ , at time  $t_2$ ."<sup>286</sup> Koriat hypothesizes that increasingly strong FOK (high FOK judgment) is produced with a proportional increase in both the quantity of information retrieved during the partial search, and the ease with which that information is obtained.<sup>287</sup>

Koriat's theory is intended to be causal and explanatory, of course. For example, it supposedly accounts for the fact that FOK judgments often accurately predict later memory performance by the fact that a strong FOK is the byproduct of a fruitful partial attempt to retrieve information, and so usually betokens a fruitful full attempt. Conversely, the model suggests that the inaccuracy of some FOK judgments (sometimes people feel strongly that they can remember something accurately when they cannot) is explained by the fact that the strength of FOK is determined solely by the productivity and ease of the partial search, whether the information obtained is accurate or not:

...FOK judgments must be computed on-line on the basis of clues accumulated during the initial stages of search and retrieval: The abortive attempt to retrieve the target leaves behind scattered debris that feed into a memory-monitoring processes, which assesses the likelihood that the target will eventually be located. This process, then, is not independent of the

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<sup>286</sup> Koriat, "How Do we Know," p. 614.

<sup>287</sup> Koriat, "How Do we Know," p. 615.

retrieval process; if the latter goes astray, so will the former.<sup>288</sup>

The initial retrieval of partial wrong information (PI-W) misleadingly contributes to the formation of strong FOK; thus, "...PI-W is possibly responsible for the inaccuracy of some FOK judgments..."<sup>289</sup>

Koriat translates his model into the following diagram, (which shows a kinship with William James' theory and model of recall):

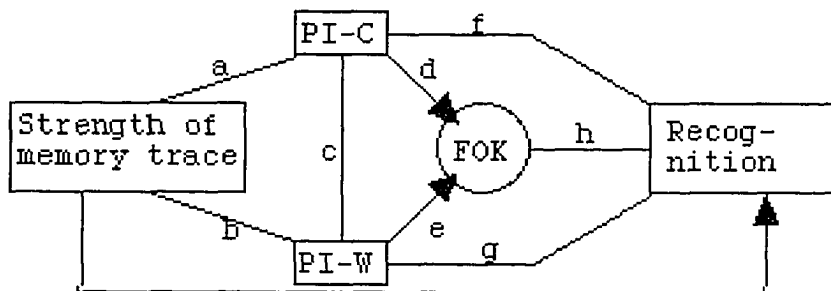


Figure 8 - Koriat's diagram of FOK

The accessibility model of the feeling of knowing (FOK). (PI-C = correct partial information [retrieved during the preliminary search for the target information]; PI-W = wrong partial information. The letters a-i represent links.)<sup>290</sup>

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<sup>288</sup> Koriat, "How Do we Know," p. 612.

<sup>289</sup> Koriat, "How Do we Know," p. 631.

<sup>290</sup> Koriat, "How Do we Know," p. 615.

Koriat claims that his hypothesis is corroborated by the results of several experiments that he conducted, the conditions of which he describes as follows:

In each trial, subjects memorized a four [or five]-letter nonsense string and were then asked to recall as many letters as they could from it. [In order to solicit partially accurate memory and to stifle guessing, "subjects were instructed that on each trial they could gain one point for each correct letter but would win nothing on that trial if they report even a single wrong letter."<sup>291</sup>] Finally, they provided FOK judgments [which the subjects rated on a scale from 0 to 100<sup>292</sup>], and their recognition memory was tested.... The recognition test included the target and seven lures [or nonsensical strings of letters other than the target. The subjects were simply asked to identify the target from amongst the eight possibilities].<sup>293</sup>

Koriat then analyzes the mathematical relations between high FOK judgments and memory performance. His results show that subjects rated their FOK's highly in all cases in which they supplied several letters, whether those letters were right or wrong. This result supposedly corroborates the hypothesis that FOK is produced by an easy and productive initial attempt at recall, whether the fruits of that attempt are PI-C or PI-W.<sup>294</sup> Koriat says that "the entire story" of his research into FOK is told by the fact that:

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<sup>291</sup> Koriat, "How Do we Know," p. 617.

<sup>292</sup> Koriat, "How Do we Know," p. 617.

<sup>293</sup> Koriat, "How Do we Know," p. 617.

<sup>294</sup> Koriat, "How Do we Know," p. 620.

PI-C is related in the same way to FOK judgments and correct recognition; PI-W, in contrast, is positively related to FOK and negatively related to recognition. Thus, the dependence of FOK on PI-C is responsible for its success in predicting correct recognition, whereas its dependence on PI-W is responsible for its inaccuracy...<sup>295</sup>

Even on a generous reading, Koriat's experiments only awkwardly fit the problem that he describes in his abstract and the model of FOK that he provides. Of modest concern is the fact that Koriat makes a functional equation between the partial string of letters produced outwardly in the middle stage of his experiment and the inner, psychological items that "PI-C" and "PI-W" designate in his model. More troublesome is the fact that Koriat tacitly equates the capacity to *recognize* a letter string with having a representation of that string recorded in one's mind, for the recognition test is meant to determine how many letters the subject has stored in an accessible memory. But of course, there are many things that I can recognize that I might not have complete representations of in my memory--the Mona Lisa, for example. Let us put these matters aside in their inchoate form, however, and move directly to more pressing issues.

Koriat presumes that FOK is a byproduct of the search for information stored in memory, and that presumption is essential if we are to regard his theory as causal and empirical. However, the feeling-of-knowing is not a *something* that accompanies the

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<sup>295</sup> Koriat, "How Do we Know," p. 620.

found information. We can see this by examining Koriat's own experiment. In keeping with his instructions, at the middle stage of the experiment, Koriat's subjects provide only as many letters of a given string as they feel that they remember accurately--or that they are confident are correct; they understand that they should neither guess nor withhold. Thus, their asserting any given letter communicates that they *feel* that they know those letters to be correct; the behavior and the verbal declaration of FOK that Koriat solicits amount to the same thing.

Consider the strange possibility of a subject in Koriat's lab who repeatedly asserts four letters while giving her FOK judgments low ratings. Koriat's model suggests that the subject might simply suffer a pathological condition on which the retrieval process fails to produce strong FOK. Thus, it is compatible with his theory that a strange subject could say, "I believe that I have recalled all four letters correctly," or, "I think that I have recalled all four letters correctly," while simultaneously asserting, "I don't *feel* that I remember the letters correctly," or even "I *feel* that I don't remember the letters correctly." Such strange behavior indicates more than a lack of feeling, however; it is not comparable to a person who lacks pain receptors who says, "I believe that I am hurt, but I don't *feel* that I am hurt." The strange behavior more likely indicates schizophrenia--or at least that the subject does not grasp the proper use of the expression "I feel that I know." Her

other assertions and behaviors fully satisfy the criteria for the applicability of "I feel that I know," and her inability to use the expression accordingly is a (peculiar) mistake.

It follows from the fact that the bizarre subject has misunderstood the proper use of the expression "I feel that I know," that Koriat, too, has misunderstood it; his interpretation of the report of a feeling-of-knowing in terms of a specific subjective state misunderstands the expression. "A scientist says that he only pursues empirical science and not philosophy," Wittgenstein writes, "--but he is subjected to the temptations of language like everyone else, he is in the same danger and must be on guard against it."<sup>296</sup> The expression, "I feel that I know that" is no more the report of a particular inner condition than "I feel like a kid, sitting in this chair." Like so many of his colleagues, Koriat has set pseudo-scientific problems for himself by misinterpreting an everyday expression, and he has wasted time, energy, and money researching and theorizing about the causes of the facts that he invents.

Koriat's theory appears significant only if we regard FOK as a specific experience that his subjects can accurately report. But the feeling-of-knowing is nothing of the kind. I use the expression, "I feel that I know" not to designate an inner experience, comparable to a tickle or nausea, but to signal that

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<sup>296</sup> NLPE, p. 275.

I believe that I can supply accurate information. In most cases, the expression can be satisfactorily replaced by "I think I can remember," or, "I know that, but I can't quite remember it now." Indeed, we may also say that the expression is comparable to simply clutching one's brow just so and saying, "Give me a second."<sup>297</sup>

The feeling-of-knowing is no more a definite experience than the feeling-that-something-is-wrong-here, or the feeling-that-this-theory-is-confused. If I say that I feel that Koriat's theory is confused, I am not informing you of my inner condition, I am telling you, tentatively perhaps, that I think that something is amiss in Koriat's ideas. Of course, there are certain characteristic experiences that accompany the use of the expression "I feel that I know"<sup>298</sup>, but those experiences are not a feeling-of-knowing, construed as a specific mental state. There are characteristic experiences associated with listening carefully to a talk, too, but "listening carefully" does not designate a particular inner experience. Similarly, there might be certain characteristic experiences associated with saying in the seminar room, "I feel that there is something wrong with this

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<sup>297</sup> Cf. Wittgenstein's remarks on the experience of feeling that one has a word "on the tip of the tongue." E.g., PI, p. 219. The tip-of-the-tongue feeling (designated by the acronym TOT), as it so happens, has also been studied by experimental psychologists in the late twentieth century. (See Koriat, "How Do we Know," p. 609)

<sup>298</sup> Cf., PI, p. 219.

theory," but those experiences are not the referent of the expression, and the feeling-that-there-is-something-wrong is not itself an inner experience. In short, the "feeling of knowing" is categorically unsuited to the sort of analysis that Koriat provides.

In summary, it is a fundamental mistake to regard consciousness as a causal medium linking stimulus and response. Thinking, knowing, and understanding are not states of an interior mechanism whose operations we can peek in on through introspection, or deduce from statements or actions. Rather, as suggested in our discussion of Gestalt theory, statements and actions seen in a certain light are themselves thoughts and actions, in a manner of speaking. That conclusion seems to favor behaviorism, though it does not really. In order to clarify Wittgenstein's meaning and our own, we must finally tackle that subject head on.



## Neobehaviorism and Behavioral Epistemology

### *The Causal Interpretation of Behavior*

The neobehaviorist movement of the mid twentieth century arose during what Sigmund Koch has dubbed "The Age of Theory," in reference to the explicit concern on the part of American psychologists in particular with fundamental philosophical and methodological issues.<sup>299</sup> In light of the interest paid to philosophy by psychologists from Helmholtz to Köhler, and the general disregard for it since the 1960's, it might be better to regard neobehaviorism as marking the end of The Age of Theory. In any case, the primary figures of neobehaviorism -Hull, Tolman, and Skinner -all pay serious attention to epistemology and the philosophy of science. In fact, each constructs a sophisticated epistemological theory intrinsic to his psychological system. As Lawrence Smith puts the point, "...the 'philosophies' of science of the major neobehaviorists can profitably be understood as a set of psychologies of science."<sup>300</sup>

Like James' psychology, neobehaviorism is deeply rooted in the Darwinian view of biology. Hull, Tolman, and Skinner all rely heavily on the idea that human behavior can be understood as an adaptive response to the pressures of the environment. Hull

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<sup>299</sup> Koch, "Psychology and Emerging Conceptions," p. 11.

<sup>300</sup> Smith, *Behaviorism and Logical Positivism*, p. 19

writes, for example, "From the point of view of biological evolution, organisms are more or less successfully self-maintaining mechanisms. In the present context, a mechanism is defined as a physical aggregate whose behavior occurs under ascertainable conditions according to definitely storable laws."<sup>301</sup> While Hull regards the human being far more literally as a mechanism than either Tolman or Skinner, all three assume that behavior can be understood as a bodily reaction to environmental influences.

In considering scientific behaviorism, one can hardly overemphasize the importance of the presumption that behavior can be explained by reference to external causes. Neobehaviorism adopts a view of the human being as a body within the physical continuum of the universe, whose actions can be explained as the effects of physical causes. Skinner writes:

The external variables of which behavior is a function provide for what may be called a causal or functional analysis. . . . This is our "dependent variable"--the effect for which we are to find a cause. Our "independent variables"--the causes of behavior--are the external conditions of which behavior is a function. Relations between the two--the "cause-and-effect" relationships in behavior--are the laws of a science. A synthesis of these laws expressed in quantitative terms yields a comprehensive picture of the organism as a behaving system.<sup>302</sup>

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<sup>301</sup> Hull, *Principles of Behavior*, p. 382.

<sup>302</sup> Skinner, *Science and Human Behavior*, p. 35.

The hallmark of all scientific behaviorism is the claim that stimulus-response functions (or causal relations) can be scientifically described, and that those relations fully explain human behavior.<sup>303</sup>

Indeed, the neobehaviorists hold that behavior can only be explained causally. Skinner suggests, for example, that such complex questions as "What were Robespierre's real motives?" and "How can we explain Leonardo's paintings?" are best explained causally, though we in fact lack sufficient information to carry out functional analyses in those cases.<sup>304</sup> Moreover, the neobehaviorists hold that even one's explanation of one's own actions must ultimately refer to causes, and take the form of a functional account.<sup>305</sup> Thus, if I am to give a meaningful explanation of why I moved to Chicago, the neobehaviorists suggest, I must do so in terms of the causes that prompted my action, along with the functional state of my organism at the time.

The neobehaviorists maintain that everyday psychological accounts of human action that are not couched in the language of science are, at bottom, causal explanations, most of which are false. According to Skinner, for example, if I say that I was

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<sup>303</sup> See Tolman, *Behavior and Psychological Man*, p. 94

<sup>304</sup> Skinner, *Science and Human Behavior*, p. 40.

<sup>305</sup> See, e.g., Tolman, *Behavior and Psychological Man*, p. 94.

curt with a friend because I was angry, then I have ostensibly explained my actions via reference to my emotion, an inner state. This constitutes a causal theory, says Skinner, but one which is at best uninformative, and at worst, specious<sup>306</sup>; we know nothing of how one mental state causally affects another, says Skinner, and we have no opportunity to directly observe the relation in action.<sup>307</sup> According to Skinner, in most instances, mental states should be dismissed as fictions posited in a naïve attempt to give a causal account of the behavior:

The fictional nature of this form of inner cause is shown by the ease with which the mental process is discovered to have just the properties needed to account for behavior. When a professor turns up in the wrong classroom or gives the wrong lecture, it is because his *mind*, at least for the moment, is *absent*. . . . Upon occasion there is nothing in what he says because he lacks *ideas*. In all this it is obvious that the mind and the ideas, together with their special characteristics, are being invented on the spot to provide spurious explanations.<sup>308</sup>

Despite that they view human behavior as bodily reaction, the neobehaviorists do not all attempt to reduce the causal relationships of psychology to biological principles. Skinner, for example, argues that while we may in the far future "know the precise neurological conditions which immediately precede, say, the response, 'No thank you,'" no such account of behavior is on

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<sup>306</sup> Skinner, *About Behaviorism*, p. 11.

<sup>307</sup> Skinner, *About Behaviorism*, pp. 11-12.

<sup>308</sup> Skinner, *Science and Human Behavior*, p. 30.

the horizon at present.<sup>309</sup> For the time being, at least, we are resigned to study the functional relations between stimulus and response with little or no reference to intervening biological causes.<sup>310</sup>

The question of whether or not psychological accounts of human behavior can be reduced to biological principles is associated with the question of whether or not all meaningful psychological expressions can be reduced to the language of physics. In fact, the thesis of linguistic reduction is far more adamantly argued by the Logical Positivists (who developed what is sometimes called "logical" or "philosophical" behaviorism, in contrast to "scientific" or "methodological" behaviorism) than it is by the neobehaviorists. The paradigmatic statement of logical behaviorism is Rudolf Carnap's, "Psychology in Physical Language." Carnap argues that all meaningful psychological statements can be reduced to physical statements, in the sense that all meaningful psychological statements imply physical statements that carry identical factual content.<sup>311</sup> Thus, Carnap claims that all psychological expressions ultimately describe "physical occurrences in the body."<sup>312</sup> Carnap writes, "To express

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<sup>309</sup> Skinner, *Science and Human Behavior*, p. 28.

<sup>310</sup> Skinner, *Science and Human Behavior*, p. 28.

<sup>311</sup> Carnap, "Psychology in Physical Language."

<sup>312</sup> Carnap, "Psychology in Physical Language," p. 197.

this in the material mode of speech: *all sentences of psychology describe physical occurrences, namely, the physical behavior of humans and other animals.*"<sup>313</sup> "I was excited yesterday," Carnap maintains, has the same semantic content as the sentence "My body was yesterday in that physical condition which one tends to call 'excitement.'"<sup>314</sup>

On the whole, the neobehaviorists stake far less on reductionism than the Logical Positivists do.<sup>315</sup> Tolman in particular argues that behavior cannot be adequately described without reference to *purpose* and *cognition*, and he insists that those concepts must not be reduced or eliminated if psychology is to do justice to its subject.<sup>316</sup> On the other hand, while reductionism as such is not an intrinsic element of neobehaviorism, the claim that all meaningful psychological facts can be described in the language of science is. Indeed, Tolman justifies his use of the concept of purpose via a convoluted neorealism, according to which purposiveness is an intrinsic and objective quality of behavior itself, as real to the scientific eye as rocks.<sup>317</sup>

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<sup>313</sup> Carnap, "Psychology in Physical Language," p. 165

<sup>314</sup> Carnap, "Psychology in Physical Language," p. 191

<sup>315</sup> See Smith, *Behaviorism and Logical Positivism*, p. 60.

<sup>316</sup> Tolman, *Behavior and Psychological Man*, Chapter 5.

<sup>317</sup> Smith, *Behaviorism and Logical Positivism*, p. 85.

## ***Behavioral Epistemology***

Neobehaviorism is an epistemological theory as well as a scientific formula, for the neobehaviorists define knowledge itself in behavioral terms. Out of his mechanistic conception of the human body<sup>318</sup>, for example, Hull derives the idea that all theory and knowledge are nothing but behavioral habits of response to the environment. In his notes from 1926-27, he writes, "I have been haunted for many days by the profound importance of ideas and theories being nothing but habits--mainly symbolic habit activities. This means that all science, all natural laws, all mathematical processes, are at bottom nothing but symbolic habits."<sup>319</sup> In a passage written many years later, Hull writes that the environment "stamps its imprint" on the organism, in the sense that the organism is constitutionally shaped by stimuli, and that the effect may be regarded as knowledge. "In this very intimate and biologically significant sense," Hull writes, "the organism may be said to know the world. No spiritual or supernatural forces need be assumed to understand the acquisition of this knowledge. The process is entirely naturalistic throughout."<sup>320</sup>

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<sup>318</sup> Hull holds, for example, that the brain "acts as a kind of automatic switchboard" which links a stimulus to an appropriate response." (*Principles of Behavior*, p. 382).

<sup>319</sup> See Smith, *Behaviorism and Logical Positivism*, p. 236

<sup>320</sup> Hull, "Psychology of the Scientist," p. 514.

Skinner similarly defines knowledge as behavior. "For Skinner, knowledge is behavior," writes Lawrence Smith, "and in its most basic form this knowing is simply adaptation to an environment."<sup>321</sup> Skinner himself writes, "The world which establishes contingencies of reinforcement of the sort studied in an operant analysis [i.e., S-R description of behavior] is presumably 'what knowledge is about.' A person comes to know that world and how to behave in it in the sense that he acquires behavior which satisfies the contingencies it maintains."<sup>322</sup>

According to the neobehaviorists, science itself is fundamentally a practical endeavor whose only legitimate end is effective behavior, or mastery over the environment. Skinner writes that at bottom science is a set of practical rules that help us "deal effectively with ...the world."<sup>323</sup> Similarly, Tolman writes, "Even physics' account of the external world is, in the last analysis, an ultimately, though very abstracted, behavioral account. For all knowledge of the universe is always strained through the behavior-needs and the behavior-possibilities of the particular organisms who are gathering that knowledge." <sup>324</sup>

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<sup>321</sup> Smith, *Behaviorism and Logical Positivism*, p. 290.

<sup>322</sup> Sinner, *Contingencies of Reinforcement*, p. 156.

<sup>323</sup> Skinner, *Science and Human Behavior*, p. 14.

<sup>324</sup> Tolman, *Purposive Behavior*, p. 430.



On the neobehaviorists' view, psychology itself will be said to constitute knowledge only to the extent that it serves the scientist, qua organism, to cope with the environment. Thus, the neobehaviorists often resound Watson's claim that "It is the business of behavioristic psychology to be able to predict and control human activity."<sup>325</sup> No other end for psychology is in keeping with behavioral epistemology.

### ***Wittgenstein on Behaviorism***

#### ***Reductionism***

Many philosophers have accused Wittgenstein of espousing a logical behaviorist reduction of psychological expressions, despite his claims to the contrary. Geach records Wittgenstein having said firmly, "I am not doing behaviorism."<sup>326</sup> Although reductionism is not essential to behavioral epistemology, the question of whether or not Wittgenstein is an unwilling behaviorist is worth considering. The question of whether or not one can reject the notion that mental events are private phenomena within the head without falling back to behaviorism is clearly an important one for both philosophy and psychology.

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<sup>325</sup> Watson, *Behaviorism*, p. 11.

<sup>326</sup> LPP, p. 37.

Probably the best argument that Wittgenstein is a behaviorist was written by Fodor and Chihara in 1965.<sup>327</sup> The authors begin by attributing to Wittgenstein an "operationalistic theory" of meaning (akin to Carnap's). The authors believe that Wittgenstein reduces the meaning of any concept/term to the operations it implies or involves. Their immediate evidence lies in such remarks as: "Language is an instrument. Its concepts are instruments."<sup>328</sup> And, "[We may] think of words as instruments characterized by their use."<sup>329</sup> In similar fashion, they read into Wittgenstein's notion that there are criteria warranting proper use of term or expression the idea that operations are the means of revealing criteria.

Fodor and Chihara illuminate the sense of operational definitions by example. In one case, they consider the meaning of concepts of length. If one extends a measuring tape from the bow to the stern of a canoe and reads "6 ft.," then one says that one's canoe is six feet *long*. The authors claim that the operation reveals the meaning of "length," according to the view they attribute to Wittgenstein. As evidence of this interpretation, they cite Wittgenstein's remark, "The meaning of the word 'length' is learnt, among other things, by learning what

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<sup>327</sup> Fodor and Chihara, "Operationalism."

<sup>328</sup> PI, §569.

<sup>329</sup> BB, §67.

it is to determine length."<sup>330</sup> Fodor and Chihara encapsulate the view that they attribute to Wittgenstein as follows: "In short, a philosophic analysis of 'length,' insofar as it seeks to articulate the language game played with that word must thus refer to the operations which determine the applicability of length predicates."<sup>331</sup>

Given his operational definition of meaning, say Fodor and Chihara, Wittgenstein can only define psychological expressions in behavioral terms. They assume that the only facts suitable for operating on linguistically that might count as psychological are behavioral:

By parity of reasoning we can see that to analyze such words as "pain," "motive," "dream," etc., will *inter alia* involve articulating the operations or observations in terms of which we determine that someone is in pain, or that he has such and such a motive, or that he has dreamed, etc. But clearly such determination are ultimately made on the basis of the behavior of the individual to whom the predicates are applied (taking behavior in the broad sense in which it includes verbal reports). Hence, for Wittgenstein, reference to the characteristic features of pain behavior on the basis of which we determine that someone is in pain is essential to the philosophical analysis of the word 'pain,' just as reference to the operations by which we determine the applicability of such predicates as 'three feet long' is essential to the philosophical analysis of the word "length." In both cases the relations are conceptual and the rule of language which articulates them is in that sense a

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<sup>330</sup> PI, p. 225.

<sup>331</sup> Fodor and Chihara, "Operationalism." p. 38.

rule of logic.<sup>332</sup>

Fodor and Chihara flesh out the "logical connection" between behavior and psychological concepts, supposedly found in Wittgenstein's philosophy, using an analytical definition of criterion: "X is a criterion of Y in situations of type S if the very meaning or definition of 'Y' (or, as Wittgenstein might have put it, if the 'grammatical' rules for the use of 'Y') justify the claim that one can recognize, see, detect, or determine the applicability of 'Y' on the basis of X in *normal* situations of type S."<sup>333</sup> What are the criteria for the psychological statement "he is in pain"? Fodor and Chihara rightly note that Wittgenstein denies that the criterion can be a private mental object. If the criterion is not an inner state, they conclude, then "behavioral criteria are the only plausible candidates."<sup>334</sup> Hence, they conclude, Wittgenstein is committed to logical behaviorism.<sup>335</sup>

It is true that Wittgenstein says that "Language is an instrument,"<sup>336</sup> and he compares the varieties of language to the variety of tools in a tool-box, each of which is suited to a

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<sup>332</sup> Fodor and Chihara, "Operationalism." p. 39.

<sup>333</sup> Fodor and Chihara, "Operationalism." p. 44.

<sup>334</sup> Fodor and Chihara, "Operationalism." p. 48.

<sup>335</sup> Fodor and Chihara, "Operationalism." p. 48.

<sup>336</sup> PI, §569.

particular task, or to perform a specific operation.<sup>337</sup> However, he also repeatedly attacks the idea that "language always functions in one way,"<sup>338</sup> and he emphasizes the heterogeneous uses of language. He writes, for example:

But how many kinds of sentence are there? Say assertion, question, and command?--There are countless kinds: countless different kinds of use of what we call "symbols", "words", "sentences".<sup>339</sup>

On Wittgenstein's view, reductionism and logical behaviorism fail to acknowledge the subtle and various ways that psychological expressions can actually be applied. Even if some of our psychological concepts can be accurately described as instruments for "operating on behavior," others will certainly defy that categorization. Joachim Schulte summarizes Wittgenstein's view on matter nicely:

A serious objection to a behaviourist's or physicalist's attempt to reduce our psychological language would concern the way that would restrict the richness of our ways of speaking. Alluding to Nietzsche's Zarathustra, Wittgenstein wonders: 'Am I saying something like, "and the soul itself is merely something about the body?" No. (I am not that hard up for categories.)'<sup>340</sup> Wittgenstein does not wish to object to the physicalist that he is somehow wrong about matters of fact; he complains about the expressive poverty of the intended language. Wittgenstein sees no philosophical relevance in the

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<sup>337</sup> PI, §11.

<sup>338</sup> PI, §304.

<sup>339</sup> PI, §23.

<sup>340</sup> RPP2, §690.

physicalist's way of putting his questions but merely a deplorable tendency towards simplification.<sup>341</sup>

Wittgenstein's claim that there are behavioral criteria for the application of psychological expressions to others<sup>342</sup> is not, then, a case for reductionism. Contrary to Fodor and Chihara, we are not constrained to choose between behavioral and phenomenal interpretations of our psychological expressions. The fact that there are behavioral criteria for certain psychological states shows that our behavioral and psychological concepts overlap, not that one can be reduced to the other. "Different concepts touch here and coincide over a stretch. But you needn't think that all lines are circles."<sup>343</sup> "There are inner and outer concepts, inner and outer ways of looking at a man. Indeed there are also inner and outer facts --just as there are for example physical and mathematical facts. But they do not stand to each other like plants of different species."<sup>344</sup>

Wittgenstein's claim is that behavioral and psychological descriptions cast different lights on a given situation. We may say that most of our psychological concepts engage a different

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<sup>341</sup> Schulte, *Experience and Expression*, p. 161.

<sup>342</sup> PI, §580.

<sup>343</sup> PI, p. 192.

<sup>344</sup> LW2, p. 63.

aspect of life than do our behavioral concepts. Wittgenstein writes:

Then psychology treats of behaviour, not of the mind?

What do psychologists record?--What do they observe? Isn't it the behaviour of human beings, in particular their utterances? But *these* are not about behaviour.

"I noticed that he was out of humour." Is this a report about his behaviour or his state of mind? ("The sky looks threatening": is this about the present or the future?) Both; not side-by-side, however, but about the one *via* the other.<sup>345</sup>

The expression "he was writhing and moaning" does not have the same meaning as "he was in pain," though, within an appropriate context, the fact that a man is writhing and moaning does warrant saying that he is in pain. Again, the concepts overlap, but are not identical.

### ***The Causal Explanation of Behavior***

Although reductionism is not a central tenet of neobehaviorism, Wittgenstein's analysis of psychological language does bear on the fundamental ideas of neobehaviorism. Namely, it establishes that our psychological expressions have significant meaning independent of causal ideas. There are legitimate forms of psychological explanation (or, in the present context, "informative account") that make no reference to causes, if Wittgenstein is right, which cannot be supplanted by the functional analysis of stimulus-response relations. Wittgenstein

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<sup>345</sup> PI, p. 179.

makes this latter point via a slightly artificial semantic distinction between the notion of *cause* and the notion of *ground*.

If we say that the notion of cause entails the idea of mechanism or functional relation, says Wittgenstein, it is notable that many of our psychological statements concern the grounds of one's behavior, where grounds do not imply cause. In many cases, for example, we may say that a motive is a good ground for action, but not that it is a cause. "In a law-court you are asked the motive of your action and you are supposed to know it," Wittgenstein writes, "You are not supposed to know the laws by which your body and mind are governed."<sup>346</sup> "Cause is a matter of observed regularity; whereas I *know* my motive. If I said I murdered Dr. Malcolm for money, that would be understood. But if I said 'because he wore a tweed suit' or 'because he ate an apple', they wouldn't accept this as a motive."<sup>347</sup> In this case, the motive *explains* the action in a sense appropriate for a legal proceeding, without reference to a cause.

Similarly, in a wide variety of cases it is appropriate to speak of the *reasons* for one's own actions in the sense of a ground, without any reference to causes whatsoever. The concept of a *reason for action* has a legitimate explanatory function, despite

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<sup>346</sup> LC, p. 21.

<sup>347</sup> LC, p. 82.



the fact that it does not fit the neobehaviorist model.

Wittgenstein writes:

The proposition that your action has such and such a cause, is a hypothesis. The hypothesis is well-founded if one has had a number of experiences which, roughly speaking, agree in showing that your action is the regular sequel of certain conditions which we then call causes of the action. In order to know the reasons which you had for making a certain statement, for acting in a particular way, etc., no number of agreeing experiences is necessary, and the statement of your reason is not a hypothesis.<sup>348</sup>

The everyday psychological perspective from which we regard a person's thoughts and feelings as the grounds for her actions is largely independent of the perspective from which we recognize a material cause of the same actions. From a psychological perspective, we immediately see that a rooster calls a hens by crowing, says Wittgenstein, but "Isn't the aspect quite altered if we imagine the crowing to set the hens in motion by some sort of physical causation?"<sup>349</sup> In general, to be sure, when we are interested in another person's mental life, we are not interested in the mechanisms governing her behavior; we are interested in the psychological grounds of her behavior. Wittgenstein writes:

If I say 'I can't figure him out', this bears little resemblance to: 'I can't figure this mechanism out.' I think it means approximately: I can't foresee his behaviour with the same certainty as with people 'with

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<sup>348</sup> BB, p. 15.

<sup>349</sup> PI, §493.

whom I do know my way about.<sup>350</sup>

The point is not to deny that the causal analysis of bodily mechanisms and stimulus-response functions might explain human action in one sense--nor even to deny that such explanations might, at least in some cases, afford psychologists the control that behaviorists claim is their end. The present point is to defend the legitimacy of other forms of psychological explanation. Skinner's claim that reference to a professor's absent mind is an ad hoc causal hypothesis fundamentally misunderstands the meaning of the expression. Its function is to throw a particular light on the situation, not to explain the mechanism behind the professor's actions. More importantly, if I explain my actions by reference to my motivations, then I have given a legitimate and meaningful account that should not invariably be passed over in favor of another kind of explanation. Both forms of account are legitimate, and each has a unique role to play in our lives.

The neobehaviorists' reduction of all psychological explanation to causal factors threatens to stand in the way of other avenues of explanation that are actually better suited to certain kinds of psychological facts. Reactions to art, for example, are generally more helpfully accounted for via reference to features of the art itself, surrounding facts in an

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<sup>350</sup> LW2, p. 65

individual's history or mentality, and other matters that make no reference to the body or stimulus-response functions couched in the concepts of science. "The sort of explanation one is looking for when one is puzzled by an aesthetic impression is not a causal explanation," Wittgenstein writes, "not one corroborated by experience or by statistics as to how people react."<sup>351</sup> "There is a 'Why?' to aesthetic discomfort not a 'cause' to it."<sup>352</sup> The behavioral analysis of stimulus-response functions might one day reveal that certain colors invariably provoke certain kinds of neurological reactions, and that might very well have bearing on the explanation of a painting's effect or appeal. However, one can gain valuable insight into the haunting quality of Francis Bacon's paintings simply by reflecting on their subject matter, the way that paint is applied, etc.

### ***The Behaviorists Sacrifice of their Subject: an Example***

The Behaviorists' insistence on defining all psychological data in the terms of physical science has serious repercussion on their scientific achievements. To consider one example, there is a vast body of experimental literature aimed at determining the extent to which people suffering clinical or generalized anxiety are predisposed to perceive or focus on threats in their environment that non-anxious people would not notice or not focus

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<sup>351</sup> LC, p. 21.

<sup>352</sup> LC, p. 14.

on. The very framework of that research is suspect, for there seems little point in labeling someone "clinically anxious" or saying that her anxiety is generalized if it has not already been determined that she is predisposed to focus on threats and dangers to a degree we deem inappropriate. However, the real problem with the research on the topic is more fundamental.

Mogg, Bradley, De Bono, and Painter of Cambridge University recently published a paper typical of those addressing the subject.<sup>353</sup> Their method was the following, though with added controlling factors that do not interest us: a cross was displayed on a computer screen for 500 msec. Then two words were displayed, one above where the cross's horizontal line had been, the other below. One of the words implied either a social or physical threat (e.g., "stupid", "despised", "collapse", "illness") while the other was neutral. The word pair was displayed for 100, 500, or 1500 msec. Immediately after, a dot appeared in the same location where one or the other word had been, and the subjects were asked to indicate whether that location was the upper or the lower location as quickly as possible. The principal measure was of the rate of response when the dot replaced a threatening word vs. when it replaced a neutral word. Each subject's rate of response was then compared

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<sup>353</sup> Mogg et. al., "Attentional Bias," pp. 297-303.

to his or her level of anxiety, as measured by several questionnaires, an exam, and verbal queries.<sup>354</sup>

The team found that higher anxiety levels did correspond to a faster response to probes replacing threatening words, but that the duration of the word exposure did not correlate with faster or slower response times. Thus, the authors take their study not to support the 'vigilance-avoidance' hypothesis, according to which anxious individuals initially focus on threats, but then fail to analyze them sufficiently to recognize the actual level of danger they pose.<sup>355</sup> The authors draw the conclusion that "clear evidence emerged of a relationship between state anxiety and an attentional bias for threat."<sup>356</sup>

The latter extrapolation, which lends the experiment the impression of relevance beyond its immediate findings, is not justified. It is not justified firstly because mere words flashed upon a screen out of all context are not a threat in the proper sense. In the real world, the anxious individual is not presented with an array of facts, some of which are inherently threatening and some of which are neutral. The anxious individual must see the world from a certain perspective in order to recognize threatening situations. That is, situations must be interpreted

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<sup>354</sup> Mogg et. al., "Attentional Bias," p. 299

<sup>355</sup> Mogg et. al., "Attentional Bias," pp. 301-2

<sup>356</sup> Mogg et. al., "Attentional Bias," p. 302

in such a way that their threatening aspect comes to light before they can act as the stimulus for anxious behavior. The paranoid must interpret a chuckle as a sign of disparagement, and the hypochondriac might draw connections between his own nausea and his grandmother's lymphoma before settling into a fear of the cancer that might be devouring his stomach.

Because the sort of facts that inspire anxiety in real life are only manifest given a certain way of seeing the world, those facts are not amenable to quantification, or to application in the sort of functional analysis done by Mogg et. al. Mocking sneers and innocent smiles cannot be counted up like eggs or words. Hence, there is no possibility of proving that the same function holds over these real life S-R conditions as the Cambridge team observe in the laboratory, and their experiment hangs out of reach of the psychological facts it is intended to unearth. Insofar as we can study the "attentional biases" of anxious individuals, we have no choice but to recognize how anxious individuals interpret the world itself in their construction of threatening stimuli, so to speak.

The Cambridge experiment misses the important distinction between cause and ground by treating all threatening stimuli as causes, whereas many real-life threats can only be understood as grounds for a psychological response. If a paranoid says that she was frightened by the "lurid implications" of his therapist's suggestion that he take yoga to help him relax, then the

perceived implication is the ground of his response. The idea that his brain was set into paranoid motion by some specific causal factor in the therapist's voice or behavior is far fetched, at best.

### ***Against Behavioral Epistemology***

The Darwinian view of life casts an interesting light on very many matters. The structure of the cormorant's beak and the social hierarchy of ant colonies can both be explained as products of evolution. No doubt, at least some human psychological traits can profitably be seen from the same perspective. Sexual appetite and the yearning for companionship, for example, have such indubitable biological value that one can hardly doubt that evolution at least partially explains their existence and expressions. However, there remains considerable room to doubt the neobehaviorists' interpretation of knowledge in Darwinian terms.

In some cases, it does indeed seem appropriate to speak of knowledge as profitable ability. Knowing the migratory patterns of prey or how to carve an arrowhead are easily seen in terms of biological advantage. Yet such cases shade off into others for which biological interpretation seems disturbingly forced. In the context of an academic or political career, it may well be advantageous to know a great deal about Russian history, but it is awkward, at best, to reduce the character of that knowledge to

its biological expedience, or to a set of habitual reactions to stimuli. Knowing the dialogue of *Star Wars* by heart is even further from the neobehaviorists' ideal.

In everyday discourse, the expression "the body knows" is only a metaphor. We ordinarily speak of *persons* knowing skills, languages, history, and dialogue, not bodies, and the concept of a person, seen as a being capable of thought and knowledge, is importantly different than the concept of a body capable of physical activity. To see another person as a mentally active being we must perceive him from a psychological perspective; as we have seen, such concepts as "perceiving," "thinking," and "feeling" describe a different aspect of life than we address through a material description of the body. Thus, the neobehaviorists' definition of knowledge as bodily habits severely strains the native meaning of the concept. While the metaphor of "bodily knowledge" can successfully bring certain facts into view, the neobehaviorists' exclusive interpretation of knowledge as behavior occludes more fundamental uses of the concept, and blinds us to the aspects of life that those other uses ordinarily illuminate.

"There is no one exact usage of the word 'knowledge',"<sup>357</sup> Wittgenstein writes, and it is a mistake to attempt to define all

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<sup>357</sup> BB, p. 27.



varieties of knowledge in one way.<sup>358</sup> If we pursue the question "what is knowledge," we should expect a variety of answers. In thinking about the concept of knowledge, says Wittgenstein, it is helpful to ask, "What do we call 'getting to know' or, 'finding out'?"<sup>359</sup> The answer is, a variety of things. Getting to know a person is a different sort of process than finding out about a political conspiracy, and what we mean by "knowing another person well" is quite different than what mean by "knowing that the CIA was behind" revolution in the third world. Similarly, knowing how to tie a fishing lure is importantly dissimilar from knowing what will make one happy. Behavioral epistemology insists upon taking one view of all these kinds of knowledge, and so yields a distorted view of many of them.

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358 BB, p. 27.

359 BB, p. 23.

## Conclusion

Up to this point, we have primarily discussed the failure of specific psychological theories and research programs to properly resolve epistemological questions about the natures of thought, knowledge, and the "external" world. In making that claim against so many different psychological theories, we have repeatedly returned to Wittgenstein's idea that our everyday psychological concepts engage an aspect of life, not a domain of processes amenable to scientific analysis and description. From Helmholtz to the Behaviorists, we have seen that psychologists commonly misinterpret the meaning of our psychological expressions, and the correlative natures of mind and "mental phenomena."

Looking back from the vantage we have gained, we can identify a general problem with the attempt to naturalize epistemology. Namely, the epistemologically relevant psychological states of *perceiving, thinking, knowing, understanding, etc.*, are properly seen from a different perspective than we occupy while thinking about the world in the terms of natural science. Science can properly identify certain biological processes involved in visual perception, for example, but it cannot define "what a person sees," the contents of thought, or the function of knowledge. Appropriate discussion of the latter topics requires us to look at people in a very different light than natural science throws.

Those who would naturalize epistemology presume that science can define the content, forms, and function of thought. The psychologists whom we discussed heretofore claim that thought operates on the mental data produced by physical stimulation of the sensory organs, or that thought is a causal process mediating physical stimulation and bodily response, etc. In each case, they first look upon the human being as a material entity within the world described by physical science, and then proceed to formulate theories regarding the place of thought and knowledge within that picture of the world. If the analysis of the preceding chapters is correct, then such theories must be badly misleading, even if they contain elements of truth. The concepts *of thinking, understanding, and knowledge* are at home in a different context, and we can only understand the natures of the facts that they concern if we occupy the perspective to which they are natively suited.

It is certainly not only psychologists who try to define knowledge and mental phenomena from within science. Consider the philosophy of W.V. Quine, who by his own account is in the vanguard of empiricists promoting positivism and the naturalization of epistemology<sup>360</sup>. Quine maintains that the theory of the external world serves the organic purpose of helping the individual to predict and control the sensory stimuli that it

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<sup>360</sup> Quine, "Five Milestones of Empiricism," pp. 67-72.

encounters. He writes, "Our talk of external things, our very notion of things, is just a conceptual apparatus that helps us to foresee and control the triggering of our sensory receptors in the light of previous triggering of our sensory receptors."<sup>361</sup> "From the impacts on our sensory surfaces," Quine says elsewhere, "we in our collective and cumulative creativity down the generations have projected our systematic theory of the external world. Our system is proving successful in predicting subsequent sensory input."<sup>362</sup>

Quine's reductive analysis of our "talk of external things" rests on the very sort of interpretation of the mind that we have argued scuttles experimental psychology. His implicit reasoning is relatively familiar: Bodies are acquainted with the world beyond the skin only through stimulation of the sensory organs, and bodies "communicate" with the outer world only via gross motor behavior. In order to produce appropriate behavior given a particular stimulus situation, the body must inherit or develop effective mechanisms of response. In essence, according to Quine our talk and theories of the external world are part of that mechanism, or the principles by which the bodily mechanism acts.

While it might be reasonable to say that the human body navigates the world of physical objects via the interpretation of

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<sup>361</sup> Quine, "Things and Their Place in Theories," p. 1.

<sup>362</sup> Quine, *Pursuit of Truth*, p. 1

sensory stimuli, that is a badly misleading way to describe the epistemological situation of beings to whom we attribute meaningful speech (i.e., talk), notions or ideas, and theories. We attribute thoughts to persons regarded in a psychological light, not to bodies qua material entities. Stimuli cause nerves to fire, glands to secrete, muscles to contract, even vocalizations and gross motor movements. However, none of those reactions can be regarded as thinking or understanding, unless, perhaps, we dramatically alter our perspective on them.

In fact, in order to meaningfully apply the concepts of "thinking" and "theorizing" to persons, we must acknowledge the reality of those things in the world that we ordinarily say people think and theorize about. There simply is no meaningful application of the concepts of *thinking* and *perceiving* that allows us to say that theories are tools for operating on stimuli, sensations, *Gestalten*, etc., rather than trees in a field or the smile on a face. If, as Wittgenstein claims, the concept of "thinking" draws connections between various features in a subject's behavior, environment, history, etc., then it is inappropriate to apply the concepts from a perspective that occludes those surrounding facts.

Ironically, the illegitimate analysis of our psychological concepts within the context of natural science has commonly grounded epistemological arguments for the supremacy of natural science as a means of acquiring knowledge. Thus, the original

mistake of misapplying the natural scientific view of the world in a domain to which it is unsuited has the frustrating effect of implying its own legitimacy. We saw earlier, for example, that Helmholtz claims that the causal explanations of science are the only possible vehicle of understanding the world. All understanding ultimately concerns the flux of sensations arising from stimulation of the sensory organs, Helmholtz argues, and only the scientific discovery of lawful patterns of causation within that flux promises to render it comprehensible. Similarly, Quine argues that theories that link stimulus conditions via hypotheses derived via natural science have a special status, because science is singularly devoted to positing entities and principles solely according to their testable entailments<sup>363</sup>. He writes:

At any rate scientific method, whatever its details, produces theory whose connection with all possible surface irritation consists solely in scientific method itself, unsupported by ulterior controls. This is the sense in which it is the last arbiter of truth.<sup>364</sup>

If it is false to say that thinking and theory are a means of bridging the gap between stimulus and response, then Quine's estimation of science is in serious trouble. Indeed, contrary to both Helmholtz and Quine (and countless other epistemologists),

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<sup>363</sup> Quine, *Pursuit of Truth*, p. 2

<sup>364</sup> Quine, *Word and Object*, p. 23

thinking cannot be said to have any one organic purpose. It is an obvious truth that different kinds of analysis and thought are suited to different subjects; thermodynamics, American history, the Oedipal complex, and poetry are not all equally suited to natural scientific explanation. However, that obvious point has profound epistemological implications when coupled with the insight that thinking itself cannot be firstly defined as an organic means of comprehending and coping with stimuli or their supposed mental effects. In conjunction, those two ideas imply that most epistemological arguments for the supremacy of scientific knowledge are groundless.

Assuming its validity, the present interpretation of Wittgenstein's philosophy goes far to explain his complaints about scientism (which are sometimes misconstrued as a merely anti-scientific sentiment). He writes, "Science: enrichment and impoverishment. One particular method elbows all the others aside. They all seem paltry by comparison, preliminary stages at best. You must go right down to the original sources so as to see them all side by side, both the neglected and the preferred."<sup>365</sup> If it is true that knowledge has no principal form or aim, then it is a damaging mistake to ignore and denigrate non-scientific avenues to understanding. "People nowadays think that scientists exist to instruct them," Wittgenstein writes, "poets, musicians,

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<sup>365</sup> CV, pp. 60-1.

etc. to give them pleasure. The idea *that these have something to teach them--that does not occur to them.*"<sup>366</sup>

Psychology has suffered substantially under the tyranny of scientism. While science has an important role to play in many areas of psychology and has doubtless made significant contributions, we stand to gain enormously if we exercise the sober insight that science should be applied to psychological problems only when and where it is appropriate. To the contrary, as we have seen, the ambition to formulate the principles of a psychological system that can be regarded as a respectable branch of natural science has repeatedly determined the problems that psychologists recognize, and the methods that they employ. In their zeal to find a scientific statement of psychological problems, psychologists often lose sight of the real issues we face in understanding the mental lives of others.<sup>367</sup>

More importantly, the historical attempt to formulate the problems of psychology and epistemology in the terms of natural science has been a unified movement within experimental psychology. Both projects have been tied to the idea that psychological states, including thinking and knowing, can ultimately be described and defined via the natural scientific

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<sup>366</sup> CV, p. 36.

<sup>367</sup> E.g., Titchener's attempt to decipher the nature of attention via his experiments focusing on a painted circle.



study of the human being. If the arguments and ideas presented in this dissertation are substantially correct, then genuine understanding of knowledge and psychology often requires us to look at human beings in a different light, or under a different aspect. The imposition of scientific concepts and ideas ultimately obfuscates many of the issues that experimental psychologists have hoped and claimed to explain.

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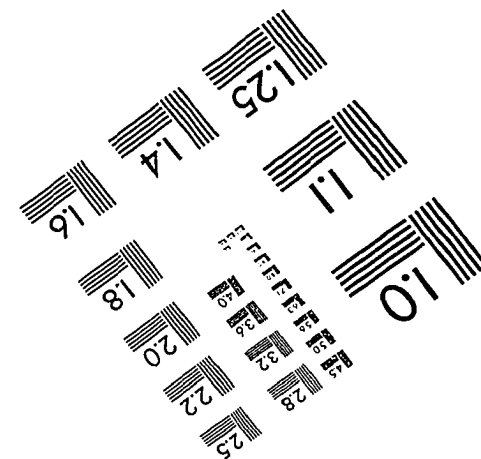
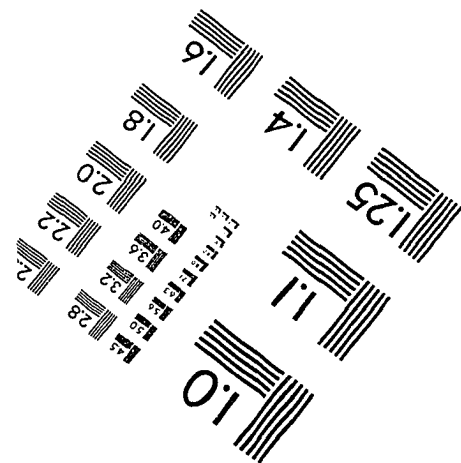
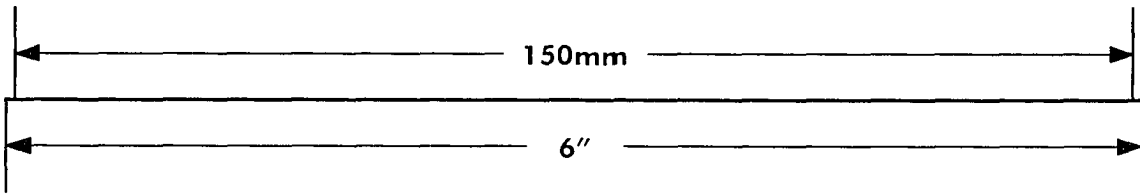
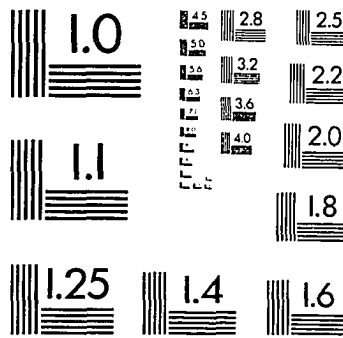
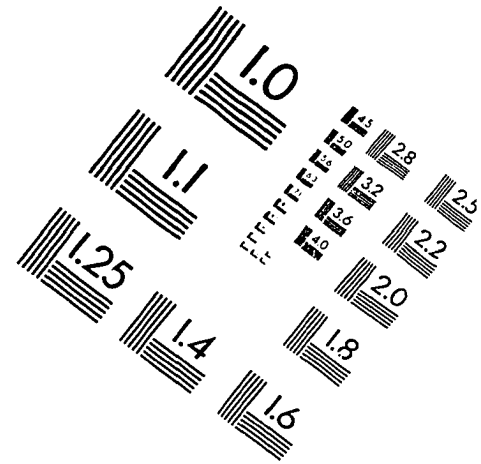
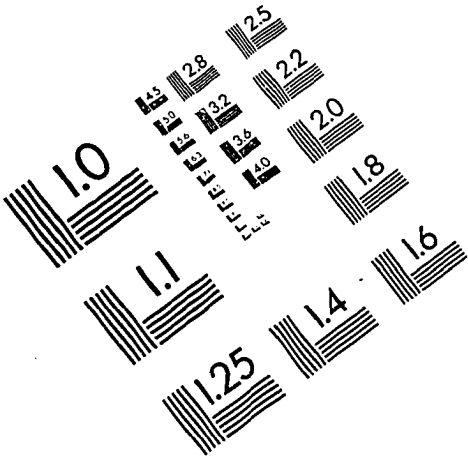
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