

THE HISTORY OF INTROSPECTION RECONSIDERED

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The term "introspective psychology" is misleading in that it covers a variety of diverging positions on the theory and practice of introspection. From the beginning there was a basic discrepancy between the British and the German philosophic tradition, with the former relying more exclusively on introspection than the latter. Wilhelm Wundt's advocacy and use of introspection was extremely circumscribed and essentially limited to simple judgments tied to external stimulation. During the first decade of the twentieth century some experimental psychologists, notably E. B. Titchener and the Würzburg School, greatly enlarged the scope of introspection, ushering in the brief vogue of "systematic introspection." The latter never gained wide support in North America and was supplanted in Germany by developments that do not constitute "introspective psychology" in any precise sense.

For a topic of rather central importance in the emergence of modern psychology, introspection has not been accorded the historical attention it deserves. From the global statements and glib generalizations that abound one might easily get the impression that introspection always meant the same thing, irrespective of time and place. That, of course, is far from true, and if we are to avoid historically unjustified generalizations about "paradigms" and so forth, we will have to develop a far more differentiated view of the topic than presently prevails.

Some of the reasons for our historical difficulties are obvious enough. We are still living in the shadow of the behaviorist revolt against introspection, and the attitudes of many of our authorities in the field are clearly colored by that revolt. For a start, the very notion of an "introspectionist psychology" is a product of behaviorism. As E. G. Boring has pointed out: "Introspectionism got its *ism* because the protesting new schools needed a clear and stable contrasting background against which to exhibit their novel features. No proponent of introspection as the basic method of psychology ever called himself an *introspectionist*."¹ The first task of any objective account, therefore, is the exploration of the variety that lies behind the convenient polemical slogans of the opponents of introspection.

Boring's own account, while it contains some valuable observations, is unsatisfactory in a number of respects. Its treatment of many of the most important aspects of the topic is extremely perfunctory. In particular, his consideration of the non-American literature ranges from the merely uninformative to the positively misleading. It appears that Boring frequently based his account on E. B. Titchener's opinions and special interpretations rather than on a careful direct examination of the foreign sources themselves.

To achieve a sense of perspective on this topic, however, it is necessary to avoid any kind of parochialism. One has to recognize that clear thought on the subject has not been encouraged by the peculiar emotional penumbra which the topic of introspection acquired in the American literature. Historically, this has its source not only in the ideological aspects of behaviorism, but in the fact that American psychology of the preexperimental period was dominated by the outlook of the Scottish school. Now, in the wide spectrum of philosophical attitudes that one finds in this period the Scottish school

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occupies an extreme position in terms of its "extravagant" commitment to the virtues of introspection.² What is more, the topic seems to have retained some of the religious overtones that it had lost in Europe. It is therefore not surprising that it became the focus of emotional reactions. The effects of this background are still to be detected in some of the secondary literature on the topic and must be duly allowed for.

In view of the wide ramifications of the topic, the following analysis concentrates on the period from 1880 to 1914 and is limited to academic psychology. The preexperimental period is considered only in terms of those aspects that are of particular importance for an understanding of subsequent developments. Quite excluded from consideration are the implications of practice in the clinical field and developments after World War I which took place on the basis of the acceptance of the behaviorist framework. These aspects are important for the more recent history of introspection, but they introduce new themes which would require a separate analysis.

TWO PHILOSOPHICAL TRADITIONS

In order to understand the course of subsequent developments it is necessary to appreciate that introspection did not have the same status in the German and in the British philosophical tradition. In the latter, the equation of mind and consciousness had gone unquestioned until well into the nineteenth century. Hence the interrogation of consciousness had seemed to be the obvious and the basic method for gaining evidence on the nature and constitution of the human mind. This point of view had been presented with particular force by the Scottish school and by both the Mills. By contrast, the German tradition in philosophy had had Leibniz's explicit denial of the equation of mind and consciousness impressed upon it from its inception. This had been a key point in Leibniz's criticism of Descartes and in his foundation of a philosophical orientation very different from the latter's. In the history of psychology this aspect of Leibniz's thought is well known in the form of his theory of "obscure perceptions" which was revived by Johann Friedrich Herbart in somewhat altered form and which was important in the development of the concept of the threshold of consciousness and hence the sensory threshold.³ In the present context the importance of Leibniz's position derives from the clear implication that if mind is not to be equated with consciousness, one cannot expect to discover its nature and constitution simply by observing consciousness. Introspection therefore cannot be regarded as a method of unquestionable reliability and fundamental importance. In this tradition the methods of logic and of mathematics are characteristically accorded a much higher status than that of introspection.

These attitudes are very much to the fore in Immanuel Kant's contribution to the topic. Johann Nicholas Tetens, who was to some extent influenced by British philosophy, had criticized the psychology of Leibniz's disciple Christian Wolff for its neglect of the evidence of the so-called inner sense.⁴ With his usual act of arbitration between the claims of rationalism and empiricism Kant had ruled that introspection is limited to knowledge of the *phenomenal* self, a world of psychological appearances that provided some material for a set of popular lectures but that is of little consequence when one gets down to the serious business of investigating the constitution of the human mind. "I know myself by inner experience only as I *appear* to myself."⁵ The true basis of our mental life, however, the subject of pure apperception, the subject that knows, wills, and judges, is inaccessible to "inner experience." What is more, the description of the world of the phenomenal self must remain on a purely anecdotal level and cannot, by the very nature of its subject matter, aim at the status of a science.⁶ In terms of the history of introspection Kant's position essentially reinforces that of Leibniz. Consciousness is

further devalued in terms of mind or subjectivity as a whole, and the observation of consciousness is not a serious scientific activity. The contrast to the prevailing views of English and Scottish philosophers could hardly be more pronounced.

The influence of the Hegelian school in Germany only served to confirm the low evaluation of individual self-observation. With mind or spirit conceived as an objective category embodied in what we would now call culture and glimpsed directly only in the form of philosophical abstractions, the role left to the observation of the individual human mind was small indeed. Nor was Herbart's contribution designed to advance the cause of introspection. In the tradition of Leibniz, he preferred a mathematical and purely speculative approach to the point where later generations could only marvel at his readiness to ignore even quite elementary psychological evidence. Even Friedrich Eduard Beneke, who was relatively open to introspective evidence, founded his whole psychological system on a doctrine of unconscious mental activity.⁷

Among the major systems of German idealist philosophy it was that of Johann Gottlieb Fichte which provided some grounds for attaching importance to the observation of the individual consciousness. It was on this philosophic basis that Karl Fortlage developed a genuinely introspective psychology in the 1850s. The reaction was predictable. A decade later Friedrich Albert Lange published a withering attack on the method of introspection in general and on Fortlage in particular.⁸ However, he struck a new note. Both introspection and the speculative logico-mathematical method were to be replaced by a new "somatic" method according to which psychological activity was to be studied in terms of its material manifestations. This included not only the physiological method of Hermann Helmholtz but also the empirical study of language and speech, the observation of infants and of animal behavior, and the application of statistics to the data of complex human behavior. Lange's influence was considerable at the time.⁹

German philosophical ideas slowly began to exert some influence in Britain towards the middle of the nineteenth century. Sir William Hamilton, breaking with the tradition of his Scottish predecessors, introduced explicitly Leibnizian notions of unconscious mental activity.¹⁰ This earned him the criticism of John Stuart Mill who had taken on the role of chief defender of the central status which introspection had always been accorded in British philosophical psychology. To Mill, as to his predecessors, the direct evidence of consciousness seemed to provide a firm ground of empirical observation, the devaluation of which led to the perils of either metaphysical speculation, as in the case of Hamilton, or phrenological speculation, as in the case of Auguste Comte.¹¹ But the opening provided by Hamilton was exploited by Henry Maudsley who rejected introspection altogether in favor of a reliance on objective methods.¹² Maudsley's position, however, remained an isolated one in the English language literature. Even those British philosopher-psychologists whose attitude to Comte's general position had been far more sympathetic than Mill's refused to follow Comte in his rejection of introspection. Both Herbert Spencer and G. H. Lewes accorded a significant role to the use of introspective evidence, though other sources of evidence were now to supplement it.¹³ Late-nineteenth-century American psychologists, like William James and G. T. Ladd, clearly remained within the British tradition in terms of the value they attached to introspection as a source of knowledge about the mind. German work was appreciated more in terms of its technical achievements than its more fundamental theoretical perspectives.

Insofar as the technical achievements of early German experimental psychology entailed a view of introspection which was significantly different from the traditional British view, the widespread adoption of its methods created a good deal of mis-

understanding and confusion wherever the British view continued to dominate the *theory* of introspection while German models began to shape the *practice* of psychological research. Over large areas of experimental investigation introspection was, by the end of the nineteenth century, playing a much more limited role in practice than one might gather from the general methodological statements to be found in the English language texts of the time. In addition, there was the special position occupied by Titchener, who attempted to reinterpret the theoretical basis of the new German experimental psychology, as represented by Wilhelm Wundt, so as to make it less incompatible with the traditional British psychology that formed the basis of his own approach.¹⁴ Wundt had recognized that a systematic program of psychological experimentation required a reformulation of the role of introspection. This reformulation provided an explicit statement of the practical norms to be applied to experimental research, norms which influenced others either directly, or indirectly, insofar as Wundt's practice became a model for them. Wundt's formulation of the role of introspection demands particular attention, not only because it initiated a new phase, but also because it was lost to English language psychology. The widespread confusion about the early relationship between introspection and experimentation cannot be dispelled unless we replace the myth that has grown up around Wundt's "introspectionism" by the reality.

WUNDT ON INTROSPECTION AND EXPERIMENT

Wundt elaborated his methodological position in the course of the two major debates about the foundations of psychology that engaged him at different periods of his life. He faced very different opponents on these two occasions. The first period of methodological clarification occurred at the time of the formation of his psychological laboratory and of his journal, the *Philosophische Studien*. His program for an experimental psychology aroused some scorn on the part of certain German idealist philosophers, and in the course of replying to some of the criticisms Wundt found himself obliged to clarify his own position on the subject of a scientific psychology. The second period of controversy began a decade later, in the mid-nineties, and culminated in 1907 in Wundt's relatively well-known criticism of the methodology of the Würzburg School. By this time the notion of an experimental psychology was no longer strange and had in fact generated a considerable amount of enthusiasm. This time Wundt found some of his adversaries, not among the idealist philosophers, but rather ironically, among that generation of experimentalists he had previously done so much to inspire. If allowance is made for the great difference in the context of the two debates Wundt's position remains remarkably consistent.

The basis for Wundt's initial discussion of the problem of introspection is provided by his insistence on the distinction between "self-observation" (*Selbstbeobachtung*) and "internal perception" (*innere Wahrnehmung*).¹⁵ Unfortunately, English language references to Wundt's position almost invariably fail to reproduce this distinction and use only the single term "introspection" to cover both concepts indiscriminately. This not only makes it difficult to understand the nature of Wundt's contribution to the problem of introspection, it also leads to the appearance of extraordinary inconsistency. Thus, in one place he contemptuously likens the introspectionist to Baron Münchhausen attempting to pull himself out of the bog by his own pigtail,¹⁶ and in another place he lays it down that introspection is the foundation of psychology.¹⁷ Of course, he was referring to *Selbstbeobachtung* (introspection in the more literal sense) in the first instance and to *innere Wahrnehmung* in the second. The distinction therefore expresses Wundt's op-

posite evaluation of two processes, and if one translates both of them by the single term "introspection," one can easily convey the impression that he meant the opposite of what he in fact said.¹⁸

What, then, was the motivation for Wundt's distinction of introspection (*Selbstbeobachtung*) and internal perception (*innere Wahrnehmung*)? ¹⁹ It is clear that he took very seriously the problem posed for a scientific psychology of consciousness by the criticisms of introspection that had been advanced by Lange and by Comte. In fact, he accepted the validity of these criticisms but held that they arose specifically out of the problems of an internal *observation*. The older introspective psychology had landed in trouble because it naively identified the *perception* of subjective events with their observation. That subjective events are perceived is hardly open to doubt, but one cannot conclude from this that they are therefore also observable in any scientific sense. Here, all the classical criticisms of introspection become operative. Scientific observation demands the kind of independence of subject and object which introspection (self-observation) destroys. The process of introspection succeeds only in destroying, or, at best, grossly distorting its object. The attempt to achieve a solid foundation by this procedure is indeed an endeavor worthy of Baron Münchhausen. Moreover, Wundt rejected the attempt to rescue introspection on the basis of "retrospection," that is, the argument that the essential problems of introspection are avoided if we recognize that what the introspectionist observes are not the original experiences but their memories. (This argument had been developed by J. S. Mill in his reply to Comte and continued to enjoy a certain popularity with English-speaking introspectionists until the early years of the twentieth century.) Such memories would be subject to manifold distortions, some of which could be precisely documented even in Wundt's day. At the very least, such retrospective introspection would not be comparable to observation in the natural sciences which addresses itself to events as they occur and not to their memory images.

At the same time, internal perception also fails as a method for scientific psychology. In the nature of the case, it must be casual and therefore unsystematic. It excludes all deliberate investigation, because as soon as it becomes aware of itself it turns into the self-observation that is open to all the well-known and valid criticisms. It is, indeed, the basis of a psychology of consciousness, in the sense that conscious processes must be perceived to be known, but for a science it is not enough.

For a scientific psychology, Wundt thought, it would be necessary to manipulate the conditions of internal perception so that they approximated the conditions of external perception. This manipulation was accomplished in the psychological experiment, and it was this goal which gave to the experiments their specific form and their characteristic prescriptions. Wundt was explicit about the ways in which the experimental method would produce a set of conditions under which internal perception approximated to external perception and could therefore provide a raw material for a science. In the first place, laboratory conditions could be used to reduce the time interval, between the original perception and its reproduction for purposes of observation, to the point where distortions of memory would be greatly reduced and perhaps become altogether negligible. If observation and report could follow immediately on the original perception, without time for reflection and self-consciousness, the conditions of psychological observation might approximate the conditions of external observation. Wundt's preference for experienced observers arose out of these considerations. The advantage of the experienced observer lies in the fact that his acts of observation have become automatic habits, and therefore are marked by speed and attentiveness with a lack of self-

consciousness. The preference for experienced observers was strictly a means for achieving precisely defined purposes, it was certainly not a matter of principle in itself. In the writings of the 1880s in which he carefully defined the principles of his approach to psychological observation Wundt hardly gave passing mention to the matter of the experience of the observer.

The lore that grew up in the American literature about Wundt's exacting demands must be seen in the context of the kind of reaction to German laboratory standards that was common among the first generation of American students who sought training in German laboratories precisely because such training was not yet available at home. The slightly awed reaction was not peculiar to Wundt's laboratory.

It was in Titchener's circle that the emphasis on the trained observer became a matter of principle. Moreover, the requirement was now expressed in terms of the *training*, rather than simply the *experience* of the observer. To appreciate the historical significance of this shift one must remember that Titchener did not owe his introduction to the method of introspection to Wundt but to his reading of James Mill while still a student at Oxford before his Leipzig interlude. In 1909 he stated, "my belief in introspection is old enough to have attained its majority: for it was in 1888, when for the first time I was reading James Mill's *Analysis*, that the conviction flashed upon me—'you can test all this for yourself!'—and I have never lost it since."²⁰ Now, for Mill the analysis of mind involved a special exercise which aimed at bringing into full awareness the elementary sensations that were the stuff out of which all complex experience was composed. His sensationalist doctrine entailed a discrepancy between the complex perceptions of naive experience and the clear perception of sensory elements that could only be achieved as the result of learning.²¹ The notion that a trained mind was needed to penetrate beyond naive experience to the underlying elements became a part of the British introspectionist tradition.

Both for the British introspectionists and for Wundt the skill of the observer played some role in the attempt to overcome the problems of an empirical psychology of consciousness. But these problems were seen to have different sources in the two approaches, and so the nature of the role assigned to the skill of the observer had to be different too. For the classical British tradition the problem was one of reconciling the claim that psychology, or mental analysis, could be empirical with the fact that the doctrine of sensationalism was not supported by naive experience. For Wundt, the problem was one of reconciling the claim that psychological observation could be scientific under certain circumstances with the demonstrated fact that introspective observation normally lacked the objectivity of scientific observation. Within the British introspectionist tradition the observer had to be *trained* to perceive clearly the elements that sensationalist doctrine required. For Wundt, the observer had to be *practiced* for the purpose of enhancing quick and attentive observation while minimizing the disturbing effects of surprise and self-consciousness. In this way, he hoped, the conditions of psychological observation would approximate more closely the conditions of ordinary scientific observation of external events.

The second essential feature of the experimental method which allowed internal perception to approach the reliability of external perception involved, Wundt thought, the factor of replication. If we make use of the fact that identical external stimuli produce identical or very similar subjective experiences, we can initiate such experiences at will and repeat them as often as we wish. This makes it possible for them to be repeatedly presented in internal perception, and it is this circumstance which provides a

basis for the valid observation of subjective experience. The problem is that internal perception is valid only while it occurs. In the normal flow of experience a perception is already over when we decide to observe it, and then introspection becomes retrospection, the observation of an unreliable memory image. We could wait for the perception to recur, but we might wait forever. This is where experiments come to our aid. By means of the experimental presentation of stimuli we produce the perception we want to observe again and again, and under these circumstances we do not have to rely on doubtful memory images—we know the perception is coming and we are ready to observe it when it comes. Insofar as experimental conditions permit this kind of observation of “the process itself,”²² rather than our memory of it, psychological data will have the same value as the data of natural science gathered by the observation of external events.

Granting all the criticism of classical introspectionism, and unwilling to accept the alternative of retrospection, which had been suggested by British introspectionism, Wundt proposed instead that internal perception (not introspection) could yield acceptable data for science only insofar as experimental conditions permitted a replication of inner experience at will. But these conditions immediately imposed very severe limitations on the scope of experimental psychology and of scientific introspection. The Wundtian rationale for the validity of introspection under experimental conditions rested on the assumption that identical or near-identical perceptions could be produced deliberately and reliably by the repeated presentation of known external stimuli. This limited experimental psychology to those areas of human experience where the fundamental assumption of the method could be regarded as being fulfilled. Sensation and perception were the areas which most clearly fulfilled Wundt’s fundamental requirements, and these always remained the areas of major concentration in Wundt’s laboratory.

At the other end of the spectrum of psychological processes there are two areas which Wundt excluded from the possibility of experimental investigation from the very beginning. The first of these is constituted by “the processes of thought in themselves,”²³ which he believed could only be investigated via the kind of nonexperimental psycholinguistics which he subsequently developed in great detail.²⁴ The second area that lies beyond the necessary boundaries of the method of experimental introspection is constituted by “feelings and their complex connections, affects and processes of volition.”²⁵ In his criticism of Titchener, Wundt pointed out that it is scientifically worthless to obtain subjects’ introspective reports on the feeling they experienced upon the presentation of certain external stimuli.²⁶ Here he was simply drawing the necessary conclusion from his earlier fundamental stipulation that constant external conditions must have constant subjective results if scientific introspection were to take place. He thought that in this area of psychology there was little or no room for introspection, and accordingly he favored the use of physiological measures of affective response. In this context we find Wundt adopting a stance that would practically have qualified him as a good behaviorist.

The severe restrictions which Wundt placed on introspection also manifest themselves in the types of judgment that his experimental subjects were required to make. In accordance with the precept that internal perception can only become observation insofar as it is linked to controllable external stimuli, the introspective reports from his laboratory are very largely limited to judgments of size, intensity, and duration of physical stimuli, supplemented at times by judgments of their simultaneity and succession.

In a few studies a limited form of introspection is used to check on the effectiveness of experimental manipulation of conditions; this might involve reports of judgments of

the pleasantness of stimuli or of the intensity of attention, usually on a two-point scale. There are a handful of marginal studies that involve somewhat more difficult introspective judgments, for instance, of the intensity of images, of the quality of taste sensations, and of the preferability of stimuli in the context of experimental aesthetics. But such studies are distinctly atypical in terms of the norm constituted by the overwhelming majority of studies reported in Wundt's journal. In the nearly 180 experimental studies published between 1883 and 1903 in the twenty volumes of the *Philosophische Studien*, there are just four which use qualitative introspective data in a manner approaching the practice of other laboratories during the next decade.²⁷ On the other hand, Wundt's laboratory produced a large number of studies whose data base was entirely "behavioral," mostly in the form of various kinds of reaction time measures. What was "mentalist" about these studies was the theoretical interpretation of the results, not the data base itself.

For Wundt the significance of these reaction time studies lay in their potential contribution to his theories about apperceptive-volitional functions which constituted the centerpiece of his psychological system. But there is a clear division between the data-oriented empirical studies and Wundt's theoretical discussion of the findings. The data that are reported in the empirical papers are simply time measurements taken under varying experimental conditions.²⁸ It is when Wundt came to discuss the *interpretation* of these data in a separate theoretical paper²⁹ or in the relevant section of his text, the *Grundzüge der physiologischen Psychologie*, that a mentalistic model of the operative psychological processes was introduced. In the course of these theoretical discussions Wundt occasionally introduced an introspective observation by way of illustration. But it is generally clear from the context of his argument that his purpose was no more than illustrative—the *confirmation* of his theories of mental functioning he clearly saw as depending on further objective measurements under controlled experimental conditions.³⁰ The confusion between criticism of introspection as a technique and criticism of mentalistic concepts in psychological theory is one which could only arise when the strict discipline of the Leipzig laboratory had been replaced by a more permissive attitude to introspective evidence.

In the course of his long career Wundt at times expressed himself with varying degrees of optimism or pessimism as to whether certain areas of psychology were likely to succumb to the experimental method. Such opinions, however, did not involve any change in basic principles. What he always accepted, as an inescapable corollary of his fundamental principles of methodology, was the notion that the area of psychology cannot be coextensive with the area of experimental psychology. The appropriateness of experiment for the solution of various types of psychological problems is a matter of degree. At one extreme are problems for which the experimental method provides an excellent source of valid data, at the other extreme are problems that are quite unsuitable for experimental investigation. Wundt consistently assigned problems in the areas of sensation and perception to the top end of this quasi scale and problems in the areas of thinking, affect, voluntary activity, and social psychology to the bottom end. In between there are areas, such as memory, imagery, and attention, where the experimental method is partially appropriate. Precisely where the line is to be drawn at any time depends partly on technical developments and partly on the optimism of the investigator, and hence the line is historically variable. But such decisions do not affect the fundamental frame of reference within which they are made.

The scope of experimental psychology being thus limited, it follows that for Wundt,

the scope of scientific introspection was at least as limited. For, as we have seen, there can be no scientific introspection outside the psychological experiment. It is only the experiment which provides the conditions under which fleeting "internal perceptions" can provide the material for systematic observation. But the experiment can only perform this function for those areas of conscious experience where the link between the external and the internal is direct and reliable. Thus, those large areas of conscious experience where this link is neither direct nor reliable are incapable of yielding scientific introspective data. This does not mean that they are not susceptible to scientific treatment, it only means that they are beyond the scope of experimental introspection. Wundt would have been appalled to find himself categorized as an "introspective psychologist," not only because of his scorn for the introspectionist tradition, but also because of the implication that the reach of psychology was for him coextensive with the scope of introspection, an inference that was totally at variance with his whole approach to psychology. Quite apart from the ten volumes of his social psychology (*Völkerpsychologie*), his major text of experimental psychology, the *Grundzüge der physiologischen Psychologie*, contains a great deal of psychology that goes well beyond the data provided by experimental introspection.

To appreciate the role of introspection within Wundt's psychology as a whole, it is necessary to understand his conception of the relation between theory and data in psychology. In his first programmatic essay entitled "The Tasks of Experimental Psychology" he points out that the kind of description of elementary conscious phenomena, and of their coexistence and succession, which the psychological experiment yields, is only the first step towards the construction of a scientific psychology.³¹ He uses an interesting analogy, namely, the relationship between Kepler's laws of planetary motion and the Newtonian system. The former are simply summaries of empirically observed regularities, but the latter, although it takes planetary motion as a basic datum, has a scope that is far greater than this limited aspect of the physical world. It was obviously Wundt's ambition to be the Newton rather than the Kepler of psychology. Experimental observations of subjective phenomena would provide psychological theory, not with answers, but with questions in a form that demanded a scientific rather than a metaphysical solution. In Wundt's view of the nature of science, description must be followed by "causal analysis." A science of psychology would be a causal science whose final concern was with the uncovering of the laws of "psychic causality." The scope of these laws would, of course, be far greater than the experimental reports of subjective experience that had formed the starting point. The systematic data yielded by psychological experiments did not constitute the science of psychology, just as the systematic observations of planetary motion did not constitute the science of physics.

Even in the area of perception, where experimental introspection is able to provide a wealth of observational data, Wundt's account is full of hypothetical processes and entities which he considered necessary to provide the kind of causal analysis he was aiming at. The category of hypothetical entities contains not only such obvious contenders as local signs and feelings of innervation, but also simple feelings and even the elementary sensations. In the second round of Wundt's debate with the philosopher J. Volkelt this became a key issue. Volkelt had wanted to restrict psychological processes to those that could be directly verified by introspection and had accused Wundt of "invention." In a paper with the provocative title "Invented Sensations" Wundt proudly pleaded guilty to the charge. Yes, he said, I advocate the use of hypothetical processes in order to attempt a causal explanation of what is given in conscious perception. In particular, the elemen-

tary sensations are "never given to us in immediate internal perception, but are the result of a psychological abstraction."³² Science does not simply accept the external appearance of natural phenomena but attempts to explain them causally as the outcome of underlying hypothetical processes. In other words, the data yielded by internal perception constitute a domain of phenomena that psychology has to explain, they do not contain the explanatory principles themselves.

It is apparent that Wundt's use of the method of introspection was a very limited one. Because he accepted the classical criticisms, he rejected introspection as such and replaced it with "internal perception." For the practical purposes of psychological investigation this became almost synonymous with the observation and report of external perception. Most mental phenomena, and in particular the phenomena of thought and complex feeling, were excluded from introspective study. Even in the area of sensation and perception "introspective" reports were limited to the simplest judgments and qualitative reports were largely excluded. Nonintrospective data in the form of behavioral measures and of products like language occupied a large place in psychological investigation. Finally, the explanatory concepts and principles of psychology were not to be found in internal perception but were essentially hypothetical constructs. Wundt's was a psychology that was mentalistic in the sense that the psychologist was obliged to explain various conscious phenomena; it was not "introspective" in the sense that this method, as commonly understood, was considered the key to this enterprise.

THE PERIOD OF "SYSTEMATIC INTROSPECTION"

During the closing years of the nineteenth century, methodological developments within psychology were beginning to bypass Wundt. These developments were of two kinds. On the one hand, the methods of child and animal psychology, for which Wundt had no particular enthusiasm, came to be regarded with greater interest. On the other hand, the method of introspection began to be developed in directions which were completely at variance with his basic precepts. There ensued a relatively brief period of introspective enthusiasm which rapidly culminated in crisis and, at least in America, in behaviorism.

The contrast between this period and the preceding Wundtian era was remarked upon by Titchener, who had himself played no small part in bringing about the change. Writing in 1912 he begins his introduction to introspection as follows:

Those who remember the psychological laboratories of twenty years ago can hardly escape an occasional shock of contrast which, for the moment, throws into vivid relief the difference between the old order and the new. The experimenter of the early nineties trusted, first of all, in his instruments; chronoscope and kymograph and tachistoscope were—it is hardly an exaggeration to say—of more importance than the observer; . . . There were still vast reaches of mental life which experiment had not touched; . . . meanwhile, certain chapters of psychology were written rather in the light of "system" than by the aid of fact. Now twenty years after we have changed all that. The movement towards qualitative analysis has culminated in what is called, with a certain redundancy of expression, the method of "systematic experimental introspection" . . . A great change has taken place, intensively and extensively, in the conduct of the introspective method.³³

The "extensive" changes Titchener was referring to included the diffusion of "systematic" introspective analysis to such areas as memory, thinking, and complex feelings. For the most part, these were areas that Wundt had explicitly excluded from the legitimate province of experimental introspection. The Würzburg experiments con-

stituted the most advanced elements in this new wave of introspective analysis, and in attacking them Wundt was putting himself in opposition to the entire trend. His arguments against the Würzburgers were not new; they were quite directly based on the precepts he had previously formulated to provide a rationale for his own experimental program. It is only when "the objects of introspection are directly tied to external physical objects or processes" that one had ideal conditions for psychological investigation; all other circumstances constitute a more or less satisfactory approximation of this ideal and need to be treated with great circumspection.⁸⁴ The difficulty of subjective observation and the fallibility of memory produce "an uncrossable barrier" which affects primarily the investigation of thinking and of feeling and volitional processes.⁸⁵ As an alternative to the Würzburg methods for the investigation of complex cognitive processes Wundt described the combination of experimental and linguistic evidence which he had advocated and practiced for many years.⁸⁶

From a methodological point of view, the "intensive" changes in the application of introspection, that Titchener noted, are even more significant than its extension to previously proscribed subject matter. The changes in the practice of introspection that serve to distinguish its use in the classical Wundtian period from its use during the later period of "systematic introspection" can be grouped under four headings. In the first place, the later introspectionists were much more permissive about the practice of *retrospection* than Wundt had been. It will be recalled that for Wundt the rejection of retrospection had played a key role in his replacement of classical introspection by internal perception under experimental conditions. This established a fundamental difference between him and nonexperimentalists like J. S. Mill and William James. Nevertheless, the practice of asking for retrospective introspective reports gradually spread among a section of experimental psychologists. In the systematization of introspective techniques which the great experimenter G. E. Müller undertook in 1911,⁸⁷ he admits both direct "self-perception" (*Selbstwahrnehmung*) and retrospective report as the two fundamental forms of introspective method. In the following year Titchener adopted exactly the same position.⁸⁸ The general admission of retrospective methods to systematic status was a consequence of the feeling that introspection could interfere with the "natural" or "free" course of mental processes at the time they occurred; hence retrospective accounts would often be necessary. Faced with the choice of limiting their studies to those few areas where subjective responses were so automatic that the introspective attitude would be unlikely to produce serious distortions or extending their studies to more interesting psychological processes and accepting the problems of retrospective report, the systematic introspectionists adopted the latter alternative.

But the reliance on retrospective reports entailed serious problems. Not only had one to cope with many possible distortions of memory, but in particular, human memory had been demonstrated to be full of gaps. This entailed a rather far-reaching consequence, first clearly perceived by Albert Edward Michotte,⁸⁹ namely, that if the retrospective report contained no reference to any particular aspect of the experience reported on, that constituted no grounds for believing that aspect in fact to have been absent. In other words, the retrospective report of the introspectionist provided no reliable decision criterion for rejecting (or for that matter verifying) any particular hypothesis one might entertain about subjective processes. This kind of consideration gradually dampened the enthusiasm for "systematic introspection" among many for whom the behaviorist alternative had no appeal at all.

The second feature of "systematic introspection" which marks it off from the earlier phase of limited introspection involves a shift in the relative importance attached to ob-

jective and introspective data within a particular series of experimental observations. In the more traditional kinds of experiments the essential data had been either completely objective, such as reaction times and errors of recall, or tied directly to measured variations in physical conditions, as in psychophysics and various experiments in perception. In terms of truly subjective data, the subject might at most be expected to give occasional reports on mental processes that accompanied his overt recorded responses. Systematic introspection changed this emphasis. Subjective reports were now required on a regular basis, usually for every experimental trial, and it was they, rather than more objective measures, that provided the essential data of the investigation. The studies of the Würzburg School, and those to which they gave rise,⁴⁰ provide the best known illustration of this trend, though it is not limited to this group.⁴¹ In the Würzburg studies the actual solutions of the experimental tasks become almost irrelevant to the real purpose of the experiment, which is to provide subjective data on the process of thought. To Wundt, of course, these were simply "pseudo-experiments." The more cautious Müller warned against the danger of these methods coming to be considered the norm in experimental psychology.⁴²

Closely connected with the shift towards subjective reports is the third feature of the new introspectionism, the interest in qualitative description. Francis Galton's studies of imagery had to some extent anticipated this trend,⁴³ but in the era of Wundt and G. T. Fechner they constituted a distinctly marginal area of psychological research. It was Alfred Binet who played a key role in challenging Wundtian introspection on its home ground. In 1903 he published a series of papers on investigations of the two-point threshold in which he had not limited himself to the customary introspective reports that went no further than noting whether one or two points had been felt upon application of the stimulus.⁴⁴ By questioning and through spontaneous reports from his subjects, he accumulated a mass of qualitative data which showed that the conventional determination of the threshold represented a gross oversimplification of the subjective processes involved. Subjects not only reported sensations between oneness and twoness, but also described complex decision processes that clearly involved the effects of expectation and suggestion as well as individual differences. Others had previously noted many of the problems associated with the two-point threshold,⁴⁵ but it was Binet who clearly emphasized the methodological implications. His use of complex qualitative introspective material was also a marked feature of his classical study of differences in cognitive style, in which he used his two daughters as subjects.⁴⁶ His claim that he had anticipated the findings of the Würzburg School was made possible largely because his methodological innovations were so similar to theirs. The Würzburg studies also relied on complex, qualitative, introspective reports of a type that had not hitherto been acceptable in experimental psychology. One consequence of their practice was that those who wished to test their results had to make use of similar methods.

The fourth distinguishing feature of systematic introspection which should be noted involves a change in the social psychology of the psychological experiment. This arises out of the much more prominent role which the experimenter assumes in the actual conduct of the experiment. Traditionally, the experimenter's role had been a rather modest one; he made sure that stimulus series were presented as intended and that results were properly recorded, but he did not obtrude himself during the course of the experiment. But the more stress is laid on the importance of detailed qualitative introspective reports by the subject, the more salient and persistent the experimenter's questions tend to become, so that in the extreme case the function of the experiment appears to be simply

the provision of a framework for the dialogue between experimenter and subject.⁴⁷ But even where this stage is not reached, the demand character of the experiment has changed. In the traditional experiment the subject regarded himself as responding to physical stimuli; now what he is responding to are the questions directed at him by the experimenter. Quite apart from the obvious possibility that the formulation of the experimenter's instructions and questions will bias the results, there is the more fundamental effect which consists in the creation of the impression that the questions put by the experimenter are answerable, that the subject ought to be able to give an intelligible account of what went on in his mind while he attempted to solve the experimental tasks. The result was that introspection became less a question of observation than a matter of construction.⁴⁸ The ramifications of the imageless thought controversy quickly showed how easy it was for groups associated with particular laboratories each to construct their own special version of subjective reality, once the methodology of systematic introspection had been adopted. In the earlier phase of experimental introspection there had certainly been theoretical differences in the interpretation of data; systematic introspection, however, provided a vehicle whereby theoretical differences could readily be made to take on the form of differences in the data themselves.

The "systematic introspectionists" shared a desire to transcend the very narrow limits of classical Wundtian experimental introspection. Agreeing that conscious experience formed the essential subject matter of psychology, the systematic introspectionists also shared the aim of including complex mental events within the ambit of experimental investigation. It was generally accepted among them that psychology should and could accomplish the study of conscious experience in the areas of thinking and feeling by experimental means.

Among those who played an influential role in legitimizing a less restricted view of introspection than had been characteristic of Wundt was Theodor Lipps. Some experimental introspectionists derived their phenomenistic inspiration from Lipps rather than from more purely philosophical works.⁴⁹ Lipps's optimism with regard to the possibilities of relatively unfettered introspection formed a striking contrast to the extreme caution of Wundt and of Müller. He believed in the value of retrospective analysis of consciousness, and as for the charge that introspection distorts or destroys its object, he asserted, on the contrary, that "the more intensive the observation, the more the observed emerges in its complete nature."⁵⁰ He distinguished between external and internal experiments. The former category is constituted by Wundt's concept of a psychological experiment in which conscious events are supposed to be tied to physical or physiological data. For Lipps, such "external" experiments have some value but their results are of limited interest and importance. "Internal" experiments, however, are the truly psychological experiments. They involve "the calling up of ideas or thoughts, the free presentation to oneself of all kinds of experiences, the internal variation, the addition of parts and also abstraction." It is the great advantage of introspection, the only essential method of psychology, that it makes such "free inner experimenting" possible.⁵¹ One must suspect that when psychologists with views as diverse as those of Wundt and Lipps are lumped together as "introspectionists" the result is likely to be confusion and misunderstanding.

The brief flourishing of "systematic introspection" within psychology was not unrelated to a much wider current of thought that was highly characteristic of the period around the turn of the century. This is the current of phenomenism. It had manifested itself in the philosophy of science through the enormously influential writings of Ernst

Mach and later of his follower, Karl Pearson; more generally it affected philosophy through the work of Richard Avenarius (closely related to that of Mach) and eventually through the "phenomenology" of Edmund Husserl and others.⁵² Common to these representatives of phenomenalism was a determined rejection of hypothetical explanatory schemata, which were labeled "metaphysical," and a conviction that science and philosophy must return to their grounding in the analysis of the order of direct experience. Explanatory concepts must not be invented but discovered within the scheme, the regularity, the evidence of experience itself. "Systematic introspection" was an expression of this outlook within psychology.

But this broad common basis did not exclude some fundamental divergencies. In particular, phenomenologists were deeply divided in terms of whether the interrogation of direct experience was to be pursued for the sake of finding an order of "givens," exactly like those that nature presents everywhere, or whether it was to be pursued for the sake of discovering the acts by which that order was constituted, but which were themselves different from that order. The former alternative is represented by Mach's positivism for which physics and psychology are both concerned simply with the "analysis of sensations," that is, the givens of experience; they differ in their points of view but not in the nature of their fundamental data.⁵³ The second alternative is represented by Husserl and others who, building on a foundation which in modern psychology goes back to Franz Brentano, attempted to trace the content of what was given in experience to ultimate acts of intentionality, such acts being, of course, unknown to physics. In its first form, phenomenalism becomes heir to an empiricist philosophy which recognizes no order but the order of contingency; in its second form phenomenalism expects to find in experience the grounds for the existence of an order of necessity, that is, a logical order.

Among the systematic introspectionists, who represented the phenomenologist trend in the psychology of the beginning of the present century, there were adherents of both versions of phenomenalism, and this speedily led to a crisis concerning fundamentals. By far the most prominent and theoretically sophisticated representative of the Mach-Pearson type of phenomenalism was Titchener. For him the aim of introspection lay in the analytic description of what was given in consciousness, its "content," as he put it. Introspection would perform a reduction of complex experience to elements that were devoid of meaning, that were, as they were for Mach, identical with the sensory elements that also formed the basis of the data of physical science; the only difference being that psychology studied these elements in their dependence on an organism, while physics treated them independently. Titchener stressed the status of psychology as a natural science based on the fundamental similarity between the introspection of psychology and the inspection practiced by the physical sciences. In this respect he was not simply following Mach, he was also continuing the tradition of the British empiricists with whom Mach himself eventually discovered a strong affinity.

The type of approach represented by Mach had also had a strong appeal to men like Hermann Ebbinghaus and Oswald Külpe. However, in the case of the latter at least, different influences began to get the upper hand after the closing years of the nineteenth century. While remaining highly appreciative of the role of Mach's antimetaphysical positivism in providing a corrective for such systems of hypotheses as that of Wundt,⁵⁴ Külpe came to see the positive alternative to Wundt's approach more and more in terms of a type of act psychology as implied by Husserl's phenomenology and as represented in psychology by Brentano, Carl Stumpf, and Lipps.⁵⁵ In this respect he was following and furthering a trend that was quite marked in Germany during the early years of the pre-

sent century. It was a trend that put its unmistakable stamp on the practice of systematic introspection. Much of the earlier work of the Würzburg introspectionists, for example, was directly inspired by the suggestion, derived from phenomenological logic, that judgments are to be understood as acts of conscious experience. The explicit debt to Husserl is particularly pronounced in the case of Karl Bühler whose work was characterized by a contemporary as a more or less deliberate attempt to subject Husserl's phenomenology to experimental test.⁶⁶ The devaluation of introspection in the Kantian tradition had derived, in large part, from the principle that the real normative order was transcendental and therefore not approachable via the introspective study of merely phenomenal consciousness. Husserl's break with this tradition seemed, to some psychologists, to give a new significance to systematic introspective studies which might now be expected to throw light on some very fundamental questions that had previously been declared to be beyond its reach.⁶⁷

INTROSPECTION IN CRISIS

It is possible to pinpoint the decade from 1903 to 1913 as the period during which "systematic introspection" flourished and proliferated. Before this period the much more limited Wundtian view was not generally challenged by experimentalists, and after this period there was an obvious and rapid loss of interest in the method itself. But while "systematic introspection" is thus identified with a distinct period in the history of psychology, it would be misleading to characterize it as a "school," a "paradigm," or even a "research program." The practitioners of the different variants of the method did hold in common certain aspirations for psychology and share some broad phenomenalist assumptions. In these respects their work showed important distinctive characteristics. But they also differed on fundamentals. In particular, there was a basic philosophic divergence between Titchener's sensationalistic empiricism and the various versions of act psychology which predominated in Germany. Their programs of introspective research were quite different. In the one case one was looking for the abstract sensory elements to which experience was to be reduced, and in the other one was looking for the subjective acts which made experience of various kinds possible. Both programs failed, but not because of the incompatibility of their results. That was something that usually occasioned little surprise, given their divergent aims and presuppositions. In any case, such controversy as did ensue was of very limited scope as the German introspectionists generally took no notice of Titchener's position.

In Germany the fundamental criticism of "systematic introspection" was expressed in terms of the distinction between "description" and "communication" (*Beschreibung* and *Kundgabe*). It was pointed out that "where the words in which the experimental subject describes his experiences do not induce in the experimenter certain experiences of his own, a specific interpretation, and hence a scientific evaluation, of such (introspective) reports is impossible."⁶⁸ The question of the validity of systematic introspective reports therefore becomes a question of the relationship between the subjective experiences that form the ultimate data and the verbal form in which they are symbolically expressed. This relationship, however, can take different forms, just as a physical datum can be symbolically represented by a drawing or by verbal description. One might attempt to describe the distinguishable parts of the original experience, but then one would inevitably fail to communicate the nature of the experience as a whole; alternatively, one might attempt to convey the quality of the whole experience, but this would usually have to be done metaphorically, and therefore ambiguously, hence providing no certainty that the experimenter's interpretation corresponded to what had actually been in the subject's

mind. While a relatively unambiguous description of elements of experience in a sensationalistic language is possible, it is also irrelevant, for it simply does not give an account of the experience as it existed. On the other hand, verbal messages about actual whole experiences have an expressive, so to say poetic, quality which is effective for purposes of normal interpersonal communication, but which allows no scientifically certain conclusions to be drawn about the precise equivalence of what the message evokes in the mind of the listener and what went on in the mind of the reporter.

Faced with this dilemma, German systematic introspectionism dissolved into two diverging currents, neither of which could be described as introspectionist in any classical sense. First, there were those who preferred the greater closeness to real life experiences which the method of *Kundgabe* permitted. But this meant the giving up of any pretense at experimentation and of the kind of precision and certainty at which natural science aimed. Insightful interpretation of qualitative or "clinical" reports became the method of choice. However, it must be emphasized that this was not "introspective psychology." The aim was not to give an account of particular states of consciousness, but to draw conclusions about the subject's dispositions, values, motives, and so forth; that is, about characteristics of the *person* rather than the characteristics of consciousness. By drawing attention to the fact that normal communications about subjective states are not attempts at objective descriptions of states of consciousness but *expressions* of states of the person, the concept of *Kundgabe* helped to put an end to the unfortunate influence which the specter of a disembodied abstract consciousness had for so long exerted on psychology.

Unwilling to give up the advantages of an experimental approach, a second group of German psychologists opted for the relatively greater certainty of description rather than the closeness to lived experience that *Kundgabe* offered. By and large they dropped the characteristic features of "systematic introspection" and took seriously the admonitions of old experimentalists like Müller, that one should subject introspective reports to constant check by measures of overt behavior and of the results of such behavior.⁵⁹ In other words, a much more limited conception of the proper role of introspection once again prevailed. The major new development involved the adoption of a descriptive language that proved a far more satisfactory vehicle for giving an account of the organization of experience than the old sensationalistic language. Phenomenology had undoubtedly pointed the way here. The Gestalt version of this new language became the most widely known, but other versions of it may be found in the later work of Bühler, of Otto Selz, and of the second Leipzig School. It became apparent that, because experience was always organized, its adequate and unambiguous description in fact required the dropping of the misleading language of elements and its replacement by a language that contained the terms necessary for the description of states of organization.

The resolution of the crisis of "systematic introspection" took a very different course in North America. Although it is not a matter of primary importance it is necessary to take into account the rather special position occupied by Titchener in this context. Because of the zest with which he threw himself into polemics, because of his often provocatively dogmatic pronouncements, and because of the strangeness of some of the views he defended, Titchener attained a position of visibility which was by no means a reflection of the representativeness of his views for introspective psychology as a whole. Ever the polemicist, he was able to use his unusual acquaintance with European work to create the impression that his position was a less isolated one than in fact it was.⁶⁰ The result was that when his unique version of introspection was shown to be

plainly inadequate, this was easily generalized to the method as a whole by those who took his arguments at face value. However, the crisis of Titchener's system should not be confused with the more general problems of introspective method in psychology. Titchener's system failed, first, because it was unable to argue away the evidence on imageless thought; and second, and this is more important in the present context, because he insisted that introspective description must be description without reference to meaning. This had been his unique contribution to the methodology of introspection. Now, for one thing, this never really worked,⁶¹ and for another, it was of no interest to anyone. No one could sum it up better than Boring, who is here speaking from personal experience: "Introspection with inference and meaning left out as much as possible becomes a dull taxonomic account of sensory events which, since they suggest almost no functional value for the organism, are peculiarly uninteresting to the American scientific temper."⁶²

This raises the question of just how interesting even non-Titchenerian introspection had been to American psychologists. The historian has to be careful not to be led astray by exaggerations made in the heat of argument by individuals who were passionately advocating a cause. Titchener was not the only dedicated polemicist on the scene. J. B. Watson too was less than objective in the assessment of the situation in psychology which he presented. Like any radical propagandist he was inclined to emphasize the boldness of his solution, and to do this he had to create the myth of a united establishment solidly devoted to corrupt practices. Thus, if one relies on Watson and Titchener, one will get the impression that the devotion to introspection played a rather larger role in the American psychology in the early years of the present century than in fact it did. But in reality, reliance on objective measures had become quite widespread and in many quarters introspection was not being advocated as the central method of psychology in the way it had been by James. Among American textbooks of the time, Titchener's is unusual in limiting its discussion of psychological methods to an exposition of the method of introspection.⁶³ The usual approach was to mention introspection among a list of methods, and increasingly it yielded pride of place to these other methods. E. L. Thorndike was one of the first to emphasize the replacement of "mere" mental observation and analysis by experiments conducted with "quantitative precision."⁶⁴ C. H. Judd, who had translated Wundt's *Outlines* and who generally remained closer to the spirit of Wundt's thought than Titchener, states: "It is very clear that the early psychologists were right when they pointed out the unique importance of introspection. It has come to be equally clear, however, that the early psychologists imposed an unwarranted limitation on their science when they contended that introspection is the only possible method of collecting psychological facts."⁶⁵ Walter Pillsbury defines psychology as "the science of human behaviour," and while "consciousness must still play a very important part in our science," it is also made clear that "man may be treated as objectively as any physical phenomenon."⁶⁶ James McKeen Cattell had firmly put introspection in its place in 1904: "But the rather widespread notion that there is no psychology apart from introspection is refuted by the brute argument of accomplished fact. It seems to me that most of the research work that has been done by me or in my laboratory is nearly as independent of introspection as work in physics or zoology."⁶⁷

By the time Watson's classic paper appeared in 1913,⁶⁸ it had been preceded by a number of direct attacks on introspection. One of these offered a criticism of the presuppositions of the method.⁶⁹ Limiting itself to English language literature it had to address itself to nineteenth-century British examples and to James; the more contemporary American literature, Titchener excepted, simply did not offer any targets of substance,

there being an absence of the kind of interest and concern for the matter that had produced the detailed analyses by such experimentalists as Wundt and Müller.

Cattell's reference to the work done in his laboratory, which did not depend on introspection at all, points to the real factors involved in the eclipse of introspection. To an ever increasing extent, American psychologists were formulating their research problems in terms of the practical performance their subjects were capable of and the manipulable conditions determining and limiting such performance. With such goals for research, introspection became at best irrelevant and at worst an actual hindrance. As early as 1899 R. S. Woodworth had recognized that introspection is not the tool for studying motor skill and had generalized this insight to other areas:

We cannot tell from introspection what guides our movements. . . . We have to rely on a quantitative determination of the degree of accuracy observed under different conditions. Here we have a method of psychology which does not depend upon introspection. And it seems undeniable that this method ought to be applied in as many fields as possible. . . . Give the subject some difficult task to perform under certain conditions from which he cannot escape (much as in a game); then vary the conditions, and measure and compare the success of his efforts.⁷⁰

With the rapid growth of interest in studying practical skills and in testing the practical efficiency of performance there was a steady growth in the number of those for whose work introspection was not merely pointless but in fact interfered with their research goals.

The perspective of performance was quickly extended from motor activity to mental activity in general. This was particularly clear in Thorndike's approach, but it applies equally to others' work in the area of mental testing. What was characteristic of the approach of American investigators was not simply their interest in individual differences per se, but that they were interested in these differences solely from the point of view of *performance*. It was this that distinguished their work from European work on individual differences, such as that of Binet, which took its orientation from the point of view of *style*. Applied to process rather than to effect, the perspective of performance manifested itself in studies of mental training and mental fatigue. It is hardly surprising that some of the criticisms of introspection which preceded those of Watson's came from those who adopted this approach.⁷¹

Watson added nothing to the substance of the criticisms of introspection that were circulating in 1913. What he did add was a much more explicit emphasis on the incompatibility of the method of introspection with the requirements of a discipline oriented primarily to the demands of practice:

If psychology would follow the plan I suggest, the educator, the physician, the jurist and the businessman could utilize our data in a practical way, as soon as we are able, experimentally to obtain them. . . . What gives me hope that the behaviorist's position is a defensible one is the fact that those branches of psychology which have already partially withdrawn from the parent, experimental psychology, and which are consequently less dependent upon introspection are today in a most flourishing condition. Experimental pedagogy, the psychology of drugs, the psychology of advertising, legal psychology, the psychology of tests, and psychopathology are all vigorous growths.⁷²

Watson objected to calling these fields "applied" psychology; he equated their orientation with the only possible orientation for scientific psychology as such. It is noteworthy that two years previously the first textbook to define psychology as the science of human behavior had also done so by reference to the need of industry for

further knowledge of what was called "the human instrument": "The practical end is to determine upon what human capacity depends and, in the light of this knowledge, to discover means of increasing man's efficiency."⁷⁴ Insofar as this end is adhered to, the data of introspection cease to be of any interest. Titchener clearly perceived the source of the new radical enmity that an introspective psychology had to face. He saw it in the identification of the aims of "technology" with the aims of science.⁷⁴ Müller too had discussed the opposition that existed between "the interests of practical life" and the kinds of "psychological interests" on which effective introspection depended.⁷⁶ For this reason he supported the tradition which considered it preferable that introspective data be collected by psychologically trained subjects. With the eclipse of what to Müller were "psychological interests" and their replacement by what he called "the interests of practical life" this restriction lost its point, and the role definition of subject and experimenter changed. It was the latter, and no longer the former, who was now the "observer."

An examination of the relevant psychological literature does not lead to the conclusion that the radical rejection of introspection per se was the result of the internal difficulties that the method encountered. The classical difficulties were well known and had not prevented the combination of a limited form of introspection with the vigorous growth of experimental psychology. The "systematic introspection" which came into vogue at the beginning of the twentieth century undoubtedly added to these difficulties, and it is clear that a choice had to be made between this form of introspection and the method of experiment as normally conceived. That is what happened among German psychologists. But the total rejection in principle of all forms of introspection was not a rational conclusion in the light of the problems that had arisen at the time. This solution can only be understood in terms of the incursion of factors that are external to such internal development of the discipline as is determined by essentially rational norms.⁷⁶ These nonrational factors are constituted by the rise of new "interests" among psychologists, at that time particularly among American psychologists. Such interests redefine the goals of psychological research and hence produce a reselection of the methods needed to achieve these goals. Introspection was less a victim of its intrinsic problems than a casualty of historical forces far bigger than itself.⁷⁷

NOTES

1. Edwin G. Boring, "A History of Introspection," *Psychological Bulletin* 50 (1953): 169-189, p. 172.
2. This is the characterization Maudsley used in his critique. See Henry Maudsley, *The Physiology of Mind* (New York: Appleton, 1878), p. 15.
3. Wundt more than once mentions his indebtedness to the Leibnizian philosophy. The *Grundzüge der physiologischen Psychologie* began a new era, but its final statement is an invocation of the spirit of Leibniz. See the last page of Wilhelm Wundt's *Grundzüge* (Leipzig: Engelmann, 1874).
4. Johann Nicholas Tetens, *Philosophische Versuche über die menschliche Natur und ihre Entwicklung* (Berlin: Reuther and Reichard, 1913; Original 1777).
5. Immanuel Kant, *Anthropology from a Pragmatic Point of View*, trans. M. J. Gregor (The Hague: Martinus Nijhoff, 1974; Original 1798), p. 22.
6. Immanuel Kant, *Metaphysical Foundations of Natural Science*, trans. James Ellington (Indianapolis: Bobbs-Merrill, 1970; Original 1786), p. 8. See also Theodor Mischel, "Kant and the Possibility of a Science of Psychology," *Monist* 51 (1967): 599-622; Charles Gouaux, "Kant's View on the Nature of Empirical Psychology," *Journal of the History of the Behavioral Sciences* 8 (1972): 237-242.
7. Friedrich Eduard Beneke, *Lehrbuch der Psychologie als Naturwissenschaft* (Amsterdam: Bousset, 1964; Original 1845). The one German philosopher whose views in this area came relatively close to the customary

British position was J. F. Fries. See David E. Leary, "The Philosophical Development of the Conception of Psychology in Germany, 1780-1880," *Journal of the History of the Behavioral Sciences* 14 (1978): 113-121.

8. Friedrich Albert Lange, *The History of Materialism*, trans. E. C. Thomas, 2 vols. (New York: Humanities Press, 1950; Original 1865), 2: sect. 3, chap. 3.

9. Lange was Wundt's predecessor in Zurich. He coined the slogan "Psychology without the soul" and played an important role in popularizing the idea of a scientific psychology on a neo-Kantian basis. See O. A. Ellissen, *Friedrich Albert Lange: Eine Lebensbeschreibung* (Leipzig: Baedeker, 1891); also L. J. Pongratz, *Problemgeschichte der Psychologie* (Bern: Francke, 1967).

10. Sir William Hamilton, *Lectures on Metaphysics and Logic* (Boston: Gould and Lincoln, 1863; Original 1859).

11. John Stuart Mill, *An Examination of Sir William Hamilton's Philosophy* (New York: Longmans, 1889; Original 1865). Also *Auguste Comte and Positivism* (Ann Arbor: University of Michigan Press, 1961; Original 1865).

12. Maudsley, *Physiology of Mind*.

13. Herbert Spencer, *Principles of Psychology*, 2 vols., 2nd ed. (London: Williams and Norgate, 1870), 1: 140-141. George Henry Lewes, "The Study of Psychology: Its Object, Scope and Method," in *The Origins of Psychology: A Collection of Early Writings*, ed. W. G. Bringmann (New York: Liss, 1976), chaps. 5, 6. (Originally published in 1879.)

14. In the preface to his first text Titchener characterizes his "general standpoint" as "that of the traditional English psychology." He then mentions that his "system" stands "in the closest relation" to "the German experimental school." See Edward Bradford Titchener, *An Outline of Psychology* (New York: Macmillan, 1896). In attempting to bridge the unbridgeable he frequently presented a reading of the German literature that was far from the spirit of the original.

15. Precisely the same distinction was made by Franz Brentano, *Psychologie vom empirischen Standpunkt*, 2 vols. (Hamburg: Meiner, 1955; Original 1874), 1: chap. 2. Although he does not acknowledge any indebtedness, Wundt refers to Brentano in an early discussion of the point and it is not unlikely that he decided to adopt the terminology which Brentano had introduced.

16. Wilhelm Wundt, "Die Aufgaben der experimentellen Psychologie," *Unsere Zeit* (1882). Reprinted in *Essays*, 2nd ed. (Leipzig: Engelmann, 1906).

17. Wilhelm Wundt, *Logik* 2 vols. (Stuttgart: Enke, 1880, 1883), 2: 482.

18. Titchener rendered either term as "introspection," according to the requirements of his argument. Boring ("History of Introspection") does the same but gives the original German terms in parenthesis. He clearly attaches no importance to the distinction and hence fails to clarify Wundt's position.

19. In what follows I will use this translation of the respective terms.

20. Edward Bradford Titchener, *Lectures on the Experimental Psychology of the Thought Processes* (New York: Macmillan, 1909), p. 96.

21. James Mill, *Analysis of the Phenomena of the Human Mind* (1869; reprint ed., New York: Kelley, 1967), p. 2.

22. Wilhelm Wundt, "Selbstbeobachtung und innere Wahrnehmung," *Philosophische Studien* 4 (1887): 292-309, p. 302.

23. Wilhelm Wundt, "Über psychologische Methoden," *Philosophische Studien* 1 (1883): 1-40, p. 26.

24. Wilhelm Wundt, *Völkerpsychologie*, 10 vols. (Leipzig: Engelmann, 1900-1920), vol. 1.

25. Wilhelm Wundt, *Logik* 3rd ed., 2 vols. (Stuttgart: Enke, 1908), 3: 173. See also "Die Aufgaben der experimentellen Psychologie," p. 208.

26. Wilhelm Wundt, "Bemerkungen zur Theorie der Gefühle," *Philosophische Studien* 15 (1900): 149-182.

27. The serious shortcomings of two of these were explicitly mentioned by Wundt in his critique of the Würzburg work: see Wundt, "Ueber Ausfrageexperimente und über die Methoden zur Psychologie des Denkens," *Psychologische Studien* 3 (1907): 301-360, esp. p. 321. A third involved work not done in his laboratory.

28. For early examples see Max Friedrich, "Über die Apperceptionsdauer bei einfachen und zusammengesetzten Vorstellungen," *Philosophische Studien* 1 (1883): 39-77; Ernst Tischer, "Über die Unterscheidung von Schallstärken," *Philosophische Studien* 1 (1883): 495-542; Julius Merkel, "Die zeitlichen Verhältnisse der Willenstätigkeit," *Philosophische Studien* 2 (1885): 73-127; James McKeen Cattell, "Psychometrische Untersuchungen," *Philosophische Studien* 3 (1886): 305-336, 452-492.

29. Wilhelm Wundt, "Zur Beurtheilung der zusammengesetzten Reaktionen," *Philosophische Studien* 10 (1894): 485-498.

30. Wilhelm Wundt, "Zur Frage des Bewusstseinsumfanges," *Philosophische Studien* 7 (1892): 222-231.

31. Wundt, "Die Aufgaben der experimentellen Psychologie," p. 206-207.

32. Wilhelm Wundt, "Erfundene Empfindungen," *Philosophische Studien* 2 (1885): 298-305, p. 299.

33. Edward Bradford Titchener, "Prolegomena to a Study of Introspection," *American Journal of Psychology* 23 (1912): 427-448, p. 427.
34. Wilhelm Wundt, "Über Ausfrageexperimente und über die Methoden zur Psychologie des Denkens," *Psychologische Studien* 8 (1907): 301-360.
35. *Ibid.*, pp. 319-322.
36. *Ibid.*, pp. 340-344.
37. Georg Elias Müller, "Zur Analyse der Gedächtnistätigkeit und des Vorstellungsverlaufes," *Zeitschrift für Psychologie*, Ergänzungsband 5 (1911).
38. Edward Bradford Titchener, "The Schema of Introspection," *American Journal of Psychology* 23 (1912): 485-508.
39. Albert Edward Michotte, "A propos de la 'Methode d'Introspection' dans la psychologie expérimentale," *Revue Néo-Scholastique* 4 (1907): 522.
40. The most explicit advocate of these methods was Narziss Ach, who coined the term "systematic experimental introspection." See Narziss Ach, *Über die Willensstätigkeit und das Denken* (Göttingen: Vandenhoeck und Ruprecht, 1905).
41. Cf. *ibid.* and J. Segal, "Über den Reproduktionstypus und das Reproduzieren von Vorstellungen," *Archiv für die gesamte Psychologie* 12 (1908): 124-235.
42. Müller, "Zur Analyse der Gedächtnistätigkeit," p. 135. For a defense of the new introspectionism against Wundt see also E. Dürr, "Über die experimentelle Untersuchung der Denkvorgänge," *Zeitschrift für Psychologie* 49 (1908): 313-340.
43. Francis Galton, *Inquiries into Human Faculty and Its Development* (London: Macmillan, 1883).
44. Alfred Binet, "La mesure de la sensibilité," *L'Année Psychologique* 9 (1903): 79-128.
45. For example, G. Tawney, "The Perception of Two Points Not the Space-Threshold," *Psychological Review* 2 (1895): 587-593.
46. Alfred Binet, *L'Étude expérimentale de l'intelligence* (Paris: Schleicher, 1903).
47. cf. Ach, *Über die Willensstätigkeit und das Denken*.
48. In a striking anticipation of modern thought about the demand character of experiments, Georg Elias Müller was able to show how the methods of the Würzburg School would put enormous pressure on the subject to engage in imaginative reconstruction just so he could come up with some kind of acceptable response. Müller, "Zur Analyse der Gedächtnistätigkeit," p. 122f, 137f.
49. See August Messer, "Experimentell-psychologische Untersuchungen über das Denken," *Archiv für die gesamte Psychologie* 8 (1908): 1-224, p. 14.
50. Theodor Lipps, *Leitfaden der Psychologie*, 3rd ed. (Leipzig: Engelmann, 1909; Original 1903), p. 58.
51. *Ibid.*
52. The seminal works are: Ernst Mach, *The Analysis of Sensations* (New York: Dover, 1959; Original 1886); Karl Pearson, *The Grammar of Science* (New York: Dutton, 1911; Original 1892); Richard Heinrich Ludwig Avenarius, *Kritik der reinen Erfahrung* (Leipzig: Reissland, 1888-1890); Edmund Husserl, *Logical Investigations* (New York: Humanities Press, 1970; Original 1900).
53. The wider implications of the adoption of this view by some of Wundt's pupils have been discussed elsewhere. See Kurt Danziger "The Positivist Repudiation of Wundt," *Journal of the History of the Behavioral Sciences* 15 (1979): 205-230.
54. Oswald Külpe, *Die Philosophie der Gegenwart in Deutschland*, 7th ed. (Leipzig: Teubner, 1920).
55. Oswald Külpe, *Vorlesungen über Psychologie*, ed. Karl Bühler (Leipzig: Hirzel, 1920).
56. See E. von Aster, "Die psychologische Beobachtung und experimentelle Untersuchung von Denkvorgängen," *Zeitschrift für Psychologie* 49 (1908): 56-107. For other examples of the influence of Husserl on psychological methodology see G. Anschütz, "Über die methoden der Psychologie," *Archiv für die gesamte Psychologie* 20 (1911): 414-498.
57. Karl Bühler, "Tatsachen und Probleme zu einer Psychologie der Denkvorgänge," *Archiv für die gesamte Psychologie* 9 (1907): 297-369. In his reply to Wundt's criticism Bühler defends himself by saying that it is better to use introspection to discover what is going on in the mind of the subject than to limit oneself to reaction times and then to speculate about underlying processes in the manner of Wundt. See Karl Bühler, "Antwort auf die von W. Wundt erhobenen Einwände gegen die Methode der Selbstbeobachtung an experimentell erzeugten Erlebnissen," *Archiv für die gesamte Psychologie* 12 (1908): 93-123.
58. E. von Aster, "Die psychologische Beobachtung," p. 65. For an early appreciation of the problems inherent in the verbal description of the data of introspection, see Hugo Münsterberg, *Grundzüge der Psychologie* (Leipzig: Barth, 1900).
59. Müller, "Zur Analyse der Gedächtnistätigkeit." A similarly cautious approach to introspection had been maintained by Hermann Ebbinghaus; see Ebbinghaus, *Grundzüge der Psychologie* (Leipzig: Veit, 1902, chap. 6.

60. Experience has taught me that *any* statement by Titchener about a foreign source must be treated with more than the usual degree of caution, irrespective of whether he regarded the source as friend or foe. For a detailed example of a Titchenerian "misunderstanding" see George Humphrey, *Thinking* (London: Methuen, 1951), p. 64. Judging by Titchener's very reasonable performance as a translator, the root of the problem goes much deeper than simply a matter of language.
61. Boring, "History of Introspection," p. 174.
62. Ibid. From a "clinical" perspective, Titchenerian introspection is subject to the same negative verdict: "The cry that a psychology was wanted which would have some usefulness was completely justified when the object of attack was the kind of introspection advocated by Titchener." David Bakan, *On Method* (San Francisco: Jossey-Bass, 1967), p. 101.
63. Edward Bradford Titchener, *A Textbook of Psychology* (New York: Macmillan, 1909).
64. Edward L. Thorndike, *The Elements of Psychology* (New York: Seiler, 1905), p. 322.
65. Charles H. Judd, *Psychology: General Introduction* (Boston: Ginn, 1907), p. 5.
66. Walter B. Pillsbury, *The Essentials of Psychology* (New York: Macmillan, 1911), pp. 1-4.
67. James McKeen Cattell, "The Conceptions and Methods of Psychology," *Popular Science Monthly* 60 (1904): 176-186. Reprinted in *James McKeen Cattell: Man of Science*, ed. A. T. Poffenberger, 2 vols. (Lancaster, Pa.: Science Press, 1947), 2.
68. John B. Watson, "Psychology as the Behaviorist Views It," *Psychological Review* 20 (1913): 158-177.
69. Knight Dunlap, "The Case against Introspection," *Psychological Review* 19 (1912): 404-413.
70. Robert S. Woodworth, "The Accuracy of Voluntary Movement," *Psychological Review Monographs* 3 (1899), No. 13.
71. See Raymond Dodge, "The Theory and Limitations of Introspection," *American Journal of Psychology* 23 (1912): 214-229; also "Mental Work: A Study in Psychodynamics," *Psychological Review* 20 (1913): 1-42.
72. Watson, "Psychology as the Behaviorist Views It," pp. 168-169.
73. Pillsbury, *Essentials of Psychology*, p. 2.
74. Edward Bradford Titchener, "Psychology: Science or Technology?" *Popular Science Monthly* 84 (1914): 39-51.
75. Müller, "Zur Analyse der Gedächtnistätigkeit," p. 103.
76. The terms "external" and "internal" in this context are used with reference to more general considerations in the history and philosophy of science. See, for example, Imre Lakatos, "History of Science and Its Rational Reconstructions," in *Boston Studies in the Philosophy of Science*, ed. Roger C. Buck and Robert S. Cohen, 8 (1972): 91-136; Robert Young, "This Historiographic and Ideological Context of the Nineteenth Century Debate on Man's Place in Nature," in *Perspectives in the History of Science*, ed. M. Teich and R. Young (London: Heinemann, 1973); Walter B. Weimer, "The History of Psychology and Its Retrieval from Historiography II: Some Lessons for the Methodology of Scientific Research," *Science Studies* 4 (1974): 367-396.
77. See Kurt Danziger, "The Social Origins of Modern Psychology: Positivist Sociology and the Sociology of Knowledge," in *The Social Context of Psychological Theory: Towards a Sociology of Psychological Knowledge*, ed. Allan R. Buss (New York: Irvington, 1979).