

Unifying Psychology Requires New Infrastructure, Theory, Method, and a Research Agenda

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Conduct of a long-term research program with a focus on constructing an overarching, unified theory of psychology revealed characteristics of psychology as a science that (a) encourage disunity of its endeavors and (b) impede attaining the unification and consequent power attained by older natural sciences. Considered a “would-be science” because of its disunity, psychology lacks knowledge of theory, theory methodology, and theory needs with respect to changing from a disunified to unified science, as well as the infrastructure needed for this fundamentally important change. These are critical and general deficits. This analysis outlines key developments necessary for psychology to begin its advancement to the powerful unification characteristics of advanced science.

The philosophy of unified positivism and the theory of psychological behaviorism have a progressive and interactive history. Let me pick up this history some four decades ago at the University of California, Los Angeles, where, while still a graduate student, I began a research program that in its continued elaboration has stimulated every piece of work I have done since. The program had a deceptively simple premise: that human behavior is primarily learned and can be understood through use of the experimentally established principles of learning in a series of studies of different types of human behavior. In addition to its specific content, that program progressively led me to construct a unified theory of learning–behavior and, more generally, of behaviorism and psychology. Further development brought a deepening concern with unification, of psychology, of psychology with other sciences, and of science in general.

All of my works in the 1950s involved *unifications*, that is, the joining of behavior analysis with traditional psychology concerns and phenomena. The studies were conducted in

areas such as problem solving (on which I did my dissertation; Staats, 1956), my research grants on communication and word meaning (see Staats & Staats, 1959), attitude formation through language (Staats & Staats, 1958), reading learning and the treatment of dyslexia (see Staats & Butterfield, 1965; Staats, Staats, Schutz, & Wolf, 1962), and the analysis of cause and treatment of a type of psychotic language (see Staats, 1957). By the time I had completed these and other similar studies, it was clear that the same principles applied widely to different behaviors. And this suggested to me that the approach could be elaborated and could yield a broad, overarching, unified theory.

The field of behaviorism at that time was broken into separate and competitive schools whose divisiveness, in my view, was disadvantageous to the science. Great commonalities and consensus were obscured, the rivalry prevented seeing the central lines of advancement needed, and the divided study of learning–behavior was made vastly more difficult and less useful for students, researchers, theorists, and practitioners. It was also the case that the major behaviorists were animal researchers without experience in the study of human behavior, and their theories were constructed to deal with animal studies. Hull’s (1943) theory was too cumbersome for use as a framework for analyzing human behavior. Later I saw similarly that Skinner’s concentration on a detailed analysis of reinforcement schedules had the same characteristic. His (and his students’) only

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program for human work was restricted to using his experimental analysis methodology and simple motor responses in situations considered as analogues of human behavior (see Azrin & Lindsley, 1956; Bijou, 1957; Lindsley, 1956). This yielded only a narrow and undeveloped framework. Broader extensions to the human level (see Dollard & Miller, 1950; Skinner, 1953, 1957) involved only the simple principle of reinforcement in speculative accounts unconnected to empirical study (MacPherson, Bonem, Green, & Osborne, 1984). The fields of behavior therapy, behavior modification, behavior analysis, and behavioral assessment that later formed were initiated by working with the fundamental principles of reinforcement and classical conditioning, really divorced from the theories of Hull, Skinner, and Tolman (see Eysenck, 1960; Salter, 1949; Staats, 1957, 1963; Wolpe, 1958). They aimed at a grand, overarching theory, but, as specialists, Hull, Skinner, and Tolman did not mount systematic programs for advancing their basic animal theories to connect to psychology's various fields dealing with human behavior, a strategy guaranteeing failure.

Such analyses of the characteristics of this tradition were important to me in the 1950s when I began construction of a new type of behaviorism, one that was progressively unified with psychology and that eradicated the divisive school characteristics used by the other behaviorists. I used the basic, "heavyweight" principles of learning and behavior, considering them to be valuable for the study of human behavior, not the theoretical-empirical ways they were treated in the several traditional behaviorism schools. Those heavyweight principles had to be interrelated in a unified basic theory that could be used for treating human behavior rather than just animal behavior. Centrally, that foundation then had to be extended widely to various types of human behavior to establish a general theory of human behavior with analyses specific enough to suggest research and application.

My work had already shown that the principles of the new basic learning theory could be used to analyze different types of human behavior in a unified way. However, unlike previous behaviorisms, my position, even at that time, was that a basic learning and behavior theory, even though necessary, by itself is quite incomplete and inadequate for dealing with human behavior broadly. This psychological

behaviorism basic theory first had to be advanced by studying and adding principles of human learning, cognition, and emotion. Then the conceptual structure—including theories of language and emotion—could be further elaborated in progressively connecting to the other fields of psychology that treated human behavior. Developing that program into a broad overarching theory was the goal of my first book, *Complex Human Behavior* (Staats, 1963).

Thus, although drawing on behaviorism, this overarching theory, presently called *psychological behaviorism*, was not in the orthodox mold. One central difference was that it systematically unified with other psychology perspectives and materials. That theory, which began to unify behavioral and psychological interests, proved to be heuristic, producing new formulations and opening new avenues of research. As such, the theory played a central role in founding the fields of behavior therapy, behavior modification and behavior analysis, behavior assessment, and the cognitive-behavioral tradition (for psychological behaviorism's early contributions, see Staats, 1963, 1968, 1971, 1972).

This was a first development, however, and 12 years later, in 1975, I published the second version of the theory under the title of *Social Behaviorism* (Staats, 1975). (That this is a psychological behaviorism is shown most clearly in the most recent and advanced version of the general approach; see Staats, 1996). In addition to deepening and extending the theory in various directions, the 1975 book crystallized further what overarching, unified theory in psychology must do and, thus, how it has to be constructed. For example, the psychological behaviorism theory began to deal with the relationships of psychology's fields, which are generally autonomous and noncommunicating. These separations contribute heavily to the fragmentation of the mother discipline. In the psychological behaviorism approach, however, the study of animal learning is considered basic to human learning-cognition, which is basic to child development and social psychology, and that to personality and progressively to psychological measurement, abnormal psychology, and educational and clinical psychology. This 1975 work thus proposed that psychology's fields are really hierarchically ordered levels of study that must draw on more basic levels, on the one hand, and contribute principles and concepts to more

advanced levels, on the other. Each level should be seen to have distinctive, “emergent” contributions. None is more important, more scientific, than the others. They all deal with important empirical phenomena. Bridging the levels, and tying them together, from the first was progressively taken to be a central task in unifying the subject matter of psychology. It yields general and deeper meaning, and it opens new avenues of research (see Staats, 1996).

With respect to the several sciences, the noted philosopher Karl Popper (1972, pp. 290–297) stated that chemistry was being reduced to physics, that there was progress in reducing biology to chemistry, and that psychology might be expected to reduce to biology. In my view, however, human behavior could not be reduced to biology. More generally, I considered the concept of classical reductionism to be oversimplified and shortsighted. Rather, I introduced, in the 1975 book, the philosophical position that knowledge exchange between two fields—including psychology’s subfields—really should be conceived of as bidirectional. The products of each scientific field are substantive and are not made expendable when fields are connected. This view is fundamental in a philosophy of unification, both for methodological reasons and because the philosophy increases the motivation of scientists in the to-be-“reduced” field to work for unification. This 1975 analysis stated that in connecting the range of sciences concerned with human behavior, psychology has a pivotal role to play. First, however, it is necessary to have a theory of human behavior that unifies bidirectionally the major fields of psychology. As was exemplified, this overarching theory can then serve to connect bidirectionally with the social sciences of anthropology, sociology, political science, and economics, as well as the humanities, such as history, ethics, and aesthetics. Moreover, another chapter in the 1975 book connected the theory’s basic learning theory end to biological science, including evolution. The philosophy of science for connecting biology, psychology, the social sciences, and humanities was presented in a final chapter titled “Unity of Science in the Study of Man” (Staats, 1975).

View From the Bridge of a Unified Theory

It would be nice at this point to depict the theory heroically riding off into the sunset. But

the fact is that, in 1975, the overarching theory’s features of unification did not fit psychology’s very dominant character of specialization and school separation. Psychology did not even have a model of broad unified theory; its grand theories were all actually specialized theories based in the animal laboratory, clinic, or other specialty area. Their generality and unified claims were really only suggested extrapolations, not programmatic endeavors.

So the 1975 unified theory was neither fish nor fowl. To illustrate, radical behaviorists would adopt new parts of the psychological behaviorism approach they considered to be in harmony with radical behaviorism but would not even consider the larger whole because of its features of traditional psychology. On the other hand, although psychological behaviorism addressed various fields and topics in traditional psychology, and although the unified theory was really psychological and different from traditional behaviorism, for nonbehavioral psychologists a behaviorism is a behaviorism is a behaviorism. They would not consider an approach that included behavioristic characteristics. Even more basically, specialists in the various fields consulted and used only works in that specialty. The only books that treated the several fields of psychology were introductory psychology texts. Thus, equating psychological behaviorism with a general psychology review, specialists would not think of using the overarching theory, even those parts addressed to their field. Specialists generally do not even read broad works that go beyond their fields. Let me suggest that these dynamics are general and that they are contemporary; they still prevent study and use of a unified approach. For what unification really means is including developments that are opposed by or unknown to the specialist or the partisan of any school, and that includes most psychologists (for a recent example of this dynamic, see Staats, 1998; Yanchar, 1998).

One of the things such experiences led me to see is that psychology does not have an understanding of what a real unified theory must do, what kinds of characteristics it must therefore have, and the great productivity it can yield. Psychology has not considered the matter. Without standards and models, I further realized that there are no structures within the science for treating a unified theory. And there are no

organizations or resources in psychology devoted to the tasks of evaluating such theories or, indeed, other types of theories. Without the means for assessing the unification (or other) properties of theories, there is no means for working further to develop them. At best, some particular aspects of an overarching theory will be treated, as occurred in the latent learning studies that compared Hull's (1943) and Tolman's (1932) theories.

My experience, thus, was that my psychological behaviorism theory received no real evaluation as an overarching theory (and in other ways yet to be described). Contrast this with physics. When Einstein presented his theory, many physicists and others meticulously studied it for the purpose of challenging it, testing it, extending it, comparing its implications with those of other theories, and such. An unthinking response to this might be that there are no Einsteins or Newtons in psychology. But the point is that a science that does not systematically assess its theories and exploit them will never know what contribution they have to make. I have described my own experience, but the same could be said for the traditional theories of Freud, Piaget, Hull, and Skinner, as well as Norman Anderson's (1996) and Allen Newell's (1990), all of which aim to be overarching theories of considerable generality. These theories need science evaluation, as well as testing and development when relevant, if they are to contribute to psychology. That need holds also for a number of recent attempts to formulate unified theories in outline form (Boneau, 1988; Gilgen, 1987; Kimble, 1997). Only by working such theories over will psychology advance in gaining knowledge of its theories, what they are, what they cover, what they miss, how they can be joined or combined, where there is redundancy, and how they can be advanced. Only through such work can psychology progress in theory construction standards and skill, essential as these are to the science's advancement. Psychology will learn what is needed to make it coherent only if it pays its dues in systematic endeavor.

What the Unity Lens Showed

Thus, a side benefit of my work in constructing a unified theory was its provision of a special "unity lens" that illuminated the obstacles to

unification in psychology. And the illumination led me to observe and consider more deeply the nature and operation of our science, to study unity within psychology and within the science enterprise more generally. And that revealed differences between psychology and other sciences. To illustrate, early in my career I compared B. F. Skinner's works with Clark Hull's and found great commonality. For example, Hull's behavioristic analysis and research on concepts and concept formation (see Hull, 1920) and Skinner's later analysis of "abstraction" (see Skinner, 1953) were quite the same, despite different empirical underpinnings and terminologies. Moreover, the commonality pertained widely to other principles and characteristics of their theories. But the discipline allowed that sameness and consensus to go unnoted, which was terribly disadvantageous and thus poor science. There was just no structure within the science to undertake the work of bringing the theories into analytic comparison so that their large commonalities could be unified. That was true generally of the various behaviorisms; the great commonality was overlooked, and with it the possibility of establishing a consensual, parsimonious, more understandable, and heuristic body of unified knowledge that could then be used and developed widely in psychology.

The revelations of the unity lens raised my interest in consulting the sociology, philosophy, and history of science to determine whether there might be evidence in support of the view of psychology that was emerging from my work. It was illuminating, for example, to see in the sociology of science that, early in science, funny things occur. To illustrate, at one time there were no rules regarding discovery, and prominent scientists—such as Galileo, Hook, Huygens, and Newton—hid new findings in anagrams rather than announcing them openly. Openly announced discoveries would be claimed by others. The anagrams were a means of asserting ownership before discoveries could be known and taken (Ravetz, 1971, p. 240). Lacking structures for establishing discoveries, open communication—a central need of science—was inhibited in early science.

My unity lens thus raised the possibility that psychology's ways of operating are those of early science. Let us look again at the example of Hull's and Skinner's treatment of concept

formation. One thing exhibited was the production of redundant terms, a mode of "primitive" operation. When one uses the unity lens to scrutinize psychology generally, one can see a science replete with redundant concepts, principles, findings, theories, psychological tests, therapies, and such. Acceptance of redundancy is a manner of operation that, in our prolific science, hugely contributes to unmanageable, chaotic complexity and inefficacy. Such a way of operating would not be tolerated in physics, chemistry, or biology; it goes against the basic demands for parsimony in scientific theory. There is no way that one group of physicists would use the basic terms *mass*, *gravitation*, *proton*, *neutron*, and *quark* while another group used other terms for the same referents, with the differences in terminology taken as legitimate reasons for two separate theories and non-communication. But this is not the case in psychology, with great resulting bewilderment and inefficiency.

The primitive nature of this general mode of operation is so great that it has given rise to a wide, if vague, opinion in the philosophy of science that psychology is not really a science. Stephen Toulmin portrayed our disorganization in the following manner:

The characteristic features of *would-be* [sciences] can best be illustrated . . . [when] we turn to professional psychologists . . . we find a diversity of approaches of a kind unparalleled in physics . . . [a] split into parties, factions, or sects, which have not managed to hammer out a common set of disciplinary goals. . . . So long as a *would-be* discipline remains in this preliminary, inchoate condition, no agreed family of fundamental concepts or constellation of basic presuppositions . . . can establish itself with authority. (1972, pp. 380–382)

This description of psychology's disorganization is accurate, but, without a unity lens, the philosophy of science has not been constructive concerning what psychology's characteristics represent, why psychology has them, or how psychology can rid itself of these characteristics and gain those that are more advanced.

Why Psychology Is Disorganized: The Unified and Disunified Sciences

So, let us ask why psychology has made so little progress in unification. Besides the fact that psychology is young—having hundreds of fewer years than physics as a science—there are

additional reasons. Centrally, psychology studies phenomena that, in their number, range, and complexity, are unique. These phenomena act in infinitely variable combinations, over long periods of time, and many of them are inside the organism, where they are difficult or impossible to observe. Simply put, the greater the number of pieces and the more the pieces that are hidden, the more difficult it is to assemble a puzzle in which the pieces fit and make organized sense.

But there are other impeding factors. Another very central factor, already mentioned, is psychology's disunified modes of operation that actually manufacture unnecessary diversity and redundancy, and hence difficulty. Another factor, surprisingly enough, is psychology's productivity. Physics had the opportunity to begin to unify its knowledge when there were few scientists and poor methods and the morass of knowledge produced was relatively simple. But psychology inherited a developed, highly productive scientific method as well as societal support for many scientists. Thus, it soon began to churn out an ocean of scientific findings. Psychology today has thousands of productive scientists and produces a morass far exceeding that which the early physicists produced. Psychology is a modern disunified science with a new problem of disunity whose size and difficulty make it unique in science. That fact must be recognized and faced or psychology will continue on its way of breaking up, separating the pieces, and making assembly of the puzzle ever more difficult.

Without a model that characterizes the disunified science and how to advance to unification, psychology, since its inception, has followed a model with a simple goal, that of creating new scientific products: apparatuses, measuring instruments, observational methods, experiments, principles, concepts, theories, and empirical findings. All of these products are essential in psychology, as in other sciences. But they are not all that is essential. In the unified sciences, resources are also provided for the tasks of weaving diverse and unrelated findings into a generally meaningful, compact, parsimonious, interrelated, systematic, and substantially consensual body. No matter how many well-conducted scientific studies a discipline produces, when they are unrelated, frequently contradictory, and stated in different non-

communicating languages, they add up to a morass, not to full science. The huge task facing psychology—the task that will not go away and that, until faced, will sentence psychology to the ranks of “would-be science”—is that of unification, of weaving the threads together.

The Disunity–Unity Dimension of Science

Let me further clarify the picture by turning to the history of science. It was surprising and revealing to find parallels between the psychology of today and the physical and chemical sciences several hundred years ago. For example, Thomas Kuhn (1962), while aiming to develop the concept of the paradigm, included excerpts that are useful for another purpose, that of revealing the state of unity in physics of the 1700s.

During that period there were almost as many views about the nature of electricity as there were electrical experimenters. . . . *All their numerous concepts of electricity had something in common . . . all were components of real scientific theories . . . drawn in part from experiment and observation. . . . Yet . . . their theories had no more than a family resemblance . . . early fact-gathering is a nearly random activity . . . it produces a morass [italics added]. . . . What is surprising . . . and unique . . . [to sciences] is that such initial divergences . . . largely disappear.* (Kuhn, 1962, pp. 13–16)

The morass of diversity disappeared, according to Kuhn, when one of the “schools” triumphed (1962, p. 61) and became a paradigm that organized and made the area effective from then on. However, this characterization of Kuhn’s, like those of others, is too simple. Actually, various developments and various types of work are necessary for unification. We can glimpse this in another example that I abstract from the history of science. Early on, the phenomena of electricity, magnetism, chemistry, and light were considered uniquely different. But findings over many years hinted that there were relationships and then mounted to “a demand [that] unified theories . . . should be sought” (Shapere, 1979, pp. 519–521). What should be realized is that setting unified theory as a goal mobilizes the work of scientists, in this case the search for the underlying principles that established the relationships among the phenomena. Bridging separate phenomena and finding common underlying principles are enormously valuable developments. It is important to see what was

involved; it was not the triumph of a particular paradigm. Rather, in my view, what occurred was that physicists progressively became aware that nature is organized by principles, that diverse phenomena may actually be related, and that science must work to find the common underlying principles that produce unity. The model that makes search for unification a central goal helps set the stage for the development from disunified to unified science and all of the power that this entails.

Observation of the characteristics of psychology, laid against the historical descriptions of the modern unified sciences as well as their present character, suggested to me that there is a fundamental dimension in science, the *disunity–unity dimension*. All sciences begin, by necessity, given the complexity of study, to divide nature analytically. Only slowly, effortfully, can they progress to putting the pieces together. Moreover, it became clear to me that very fundamental characteristics of science, and very fundamental changes, are involved in the progression from disunity to unity. Unity is never complete, for much diversity always remains, and there is some unity and consensus even in the disunified science. However, there is a disunity–unity dimension, and where the science is on the dimension contributes greatly to defining how advanced the science is.

Psychology Lacks an Infrastructure for Unification

Very centrally, unified sciences yield unified knowledge because they have an infrastructure for that creation. The disunified science not only does not have unified knowledge, or an understanding of how to create it, it does not even have an infrastructure for producing that knowledge. I illustrated earlier how, in physics, there is only one term for a basic phenomenon, rather than multiple terms that help define competitive theories. A new theorist in physics would not be allowed to introduce a new term for mass, electron, quark, or other science products; the infrastructure of physics ensures that. There is no such infrastructure to prevent new, redundant terms in psychology or to remove the huge redundancy that already exists and goes unaddressed. Would an article be accepted in one of our journals whose purpose was to abstract the commonality in such concepts as self-concept,

self-image, self-perception, self-esteem, self-confidence, self, and self-efficacy? An elementary need, when one thinks about it, a need relevant to many study areas. But we do not have such articles, even though in large number they would greatly help clarify, interrelate, and make our disunified knowledge more compact, parsimonious, usable, and consensual, that is, more unified and powerful. Even more generally, psychology is a science and profession of many theories, and no one tries to interrelate them. The effect is that of a land with different, nontranslatable languages; the reality is all psychologists are divided into many noncommunicating groups. Because we have no infrastructure for unification, psychology's knowledge is a babel growing more diverse and incomprehensible daily.

What to Do? Why, Construct an Infrastructure, of Course

In the process of this personal odyssey, it became clear to me that the modern disunified science of psychology needs an infrastructure for unification of its present knowledge and of its means of producing new knowledge. But how to make this known to our discipline? Well, in 1983 I published *Psychology's Crisis of Disunity: Philosophy and Method for a Unified Science* (Staats, 1983), which dealt fully with the subject. However, as might be anticipated, the message ran counter to conventional wisdom in our modern disunified science. To illustrate, the *Contemporary Psychology* review (Baars, 1985) took a partisan, school approach and rejected the work as behavioristic—though it was a general philosophy of science with no theoretical position—stating that cognitive psychology was already unifying the discipline. (That this argument was erroneous was shown 5 years later [see Bechtel, 1988] when the same analysis of the need for unification was reintroduced in the terminology of cognitivism.) There were also others who, although agreeing with my message, dismissed it nevertheless by considering it ahead of its time, that psychology was not yet ready.

Nevertheless, the year after publication of the unification philosophy, six of us (Leonard Burns, Cyril Franks, Albert Gilgen, Leonard Krasner, Arthur Wiens, and I) formed what became the Society for Studying Unity Issues in

Psychology (SUNI), devoted to organizing American Psychological Association (APA) symposia and invited addresses on unification. I then began the *International Newsletter of Uninomic Psychology* for the purpose of disseminating the papers involved as well as others devoted to unification topics. In the following years, many such APA events appeared that were organized by SUNI, especially within Division 1, as well as Division 24 and others. In a growing tradition, unification has been the theme of conventions of APA, the American Psychological Society, the Association for Behavior Analysis, and the Association for the Advancement of Behavior Therapy. The topic has become progressively more central in Division 1 (the mission of this journal is to publish articles that "cross-cut the sub-disciplines of psychology") as well as in Division 24.

In addition, it appears that *unified theory* has ceased to be the dirty phrase that Koch (1981) and others (Hulse, Deese, & Egeth, 1975) made it after the failure of the behaviorisms as unifying theories. Since the late 1980s, we have seen a number of summary unified theories (see Boneau, 1988; Gilgen, 1987; Kimble, 1997; Yela, 1987); more systematically worked out efforts, such as those of Anderson (1996) and Newell (1990); and advancements in the psychological behaviorism unified theory itself (see Staats, 1996) and the unified positivism philosophy of science.

Let me add another, I believe momentous, event in this progression. In 1998, the founder of sociobiology, E. O. Wilson, with intriguing literary style, published a book titled *Consilience: The Unity of Knowledge*. His general position, like that of psychological behaviorism, is that there is a unity of knowledge to be found in biology, psychology, the social sciences, and the humanities. Although unification in science has been recognized for a long time, as my reference to Popper (1972) indicates, Wilson's theme has claimed widespread public as well as academic interest. This makes this work momentous, for that interest should advance our movement greatly, and it indicates how far we have come.

Although there is much commonality between Wilson's approach and that of psychological behaviorism with respect to the philosophy of science and what is to be unified, the theories

Wilson and I have constructed differ greatly. Wilson attempts to explain individual and group behavioral characteristics fundamentally by biology.

It is the epigenetic rules, the hereditary regularities of mental development that bias cultural evolution in one direction as opposed to another, and thus connect the genes to culture. . . . The search for human nature can be viewed as the archaeology of the epigenetic rules. (Wilson, 1998, pp. 164–165)

Psychological behaviorism—although introducing in 1975 the philosophy of science of unification and its unified theory—has a much different composition. Its foundation for the unification of biology, psychology, the social sciences, and the humanities is its unified theory that interrelates behaviorism and psychology in a way that bridges the major subfields of psychology. The whole represents a systematically developed, overarching theory of human nature that contrasts with Wilson's, as the following passage from my 1996 book, *Behavior and Personality: Psychological Behaviorism*, indicates:

The [psychological behaviorism] position is that all of the marvelous[ly] skilled behavior[al] . . . cognitive and psychological characteristics . . . come about through learning. None of them develops as a function of biological . . . brain . . . development. Rather . . . experience results in learning recorded via the formation of neural networks. The brain's changes reflect the child's learning, not the reverse. (Staats, 1996, p. 165)

Wilson's placement of the central causes of human behavior in the genes and psychological behaviorism's placement in learning—both for the individual and for cultural evolution—result in very different theories grown out of and supported by different research and different research traditions. The theories set vastly different paths for the development of unified knowledge.

Thus, as distinguished from Popper (1972), who presented a purely philosophical analysis, Wilson presents a theory intended for science elaborations, as does psychological behaviorism. Now, here are two theories (Staats, 1996; Wilson, 1998) with wide implications for the conduct of psychology and its unification. To pursue science practices, such theories have to be analytically evaluated, including comparisons with respect to their theory construction, their ways of deriving basic principles, their

comprehensiveness, the manner (closeness and bidirectionality) with which they join different areas of study, their heuristic potentialities across the areas they treat, their methodology of explanation and type of scientific explanation (e.g., predictive or manipulative), their explicitness and detail of analysis, their types and testability of derivations, and such. Without scientific evaluative activities, such theories are left as literary philosophies, simply for general discussion.

We should realize that we are so accustomed to this absence of analysis of related theories that we do not realize the huge work our discipline *shirks*. As another example, let us take the various social psychology theories of attitudes; they exist separately, with no theoretical work done to examine them with respect to commonality, difference, or redundancy. The knowledge produced is not systematized. It would be very valuable to compare such theories along the various dimensions that have been mentioned. Centrally, the knowledge of attitudes is primitive until it has been systematically treated and organized. It has been said that social psychology's studies are of fleeting worth: Its research areas arise, have a flurry of activity, and then retire to the archives, while interest shifts to some new research fad. That characteristic is the outcome of operating as a disunified science, where the knowledge produced is left in its raw, disparate state, not woven together. This is but an example, for the characteristic is not limited to social psychology. All our fields create unorganized theory knowledge, recognized to be inefficacious in science and of a lesser nature than systematic knowledge.

But psychology today does not have the infrastructure for scientific treatment of its many theories. Presently, although APA has a Division of Theoretical and Philosophical Psychology, as well as a Division of General Psychology, there is still no systematic concern with the assessment, development, and interrelating of psychology's theories, large or small. The fact is, psychology has hundreds of different, separated theories. Is it not strange our science displays little or no interest in systematizing this knowledge, not recognizing that a huge analytic work goes undone? Especially in view of psychology's diversity and disunity, its theories must be studied; dissected, all of them; com-

pared for strong and weak points and commonalities and differences; analyzed; and worked on, as I have indicated. And they must be interrelated and organized with respect to one another. Having a number of theorists engaged in such problems would be an important part of an infrastructure for unification and for advancing our theory knowledge. Having theory programs in graduate schools that work on theories and their unification is fundamental. Moreover, having one or more organizations—such as the divisions I have just named—take responsibility for such work is a fundamental part of an infrastructure for theory advancement as well as unification. How can psychology expect to advance as a science without systematic organization or work to make unified knowledge out of its diverse theories? Constructing unifications is the most important type of theory work in our science.

Lest I give the impression that this is all that is needed, let me add that there are various other parts of the infrastructure that have to be developed. At the most basic level, we must make unification of psychology's knowledge and operation a central, important goal. That goal carries with it a number of theory standards and tasks we should adopt from the unified sciences, for example, that of disallowing redundancy in terminology and establishment of standards in such things. New developments must be related to those that already exist; existing products must be studied for relationships. Because there is so much unrecognized commonality in our science, analytic works that point out unrecognized commonality or redundancy should be considered centrally important and be published. We also need a host of studies that attempt to relate different phenomena across differences in fields, subjects, and methods. Is there any relationship among phenomena such as emotions, interests, values, reinforcements, affect, cathexes, motivations, bondings, satisfactions, needs, attitudes, fetishes, and goals, and among stress, depression, anxiety, fear, hate, anger, mood, and dysphoria, as well as many other such cases? Would we not have a more profound knowledge of such groups of phenomena if we knew their relationships and could explain them in terms of common underlying principles? (I illustrate repeatedly such possibilities in my 1996 book, *Behavior and Personality: Psychological Behaviorism*; Staats, 1996) But

why are there not theorists in our science who conduct a widespread search for the interrelationships among psychology's many phenomena? That is what takes place in a unified science.

In addition, psychology needs the infrastructure that recognizes that the separations of its fields represent problems on which there should be widespread work. Should we not have theorists who work to bridge the products of the different fields? Unless we conclude that psychology should be broken into independent disciplines (see Koch, 1981), we have to be concerned with how the fields are to be related and intertwined. For example, broad overarching theories, or theories that make that claim, should be called on to address such problems. We need also an infrastructure that supports work on the separations of schools and separations caused by schismatic issues, such as the nature–nurture split. Such separations must be recognized as science problems that call for theory, method, and research works to establish the needed bridges, because it is the absence of those bridges that allows the divisions and rivalries to arise.

Psychology does not presently undertake these large lines of work; for example, our present review articles and textbooks are reviews, largely disconnected from the goals I have described. They cannot be counted as part of the needed infrastructure; they do not even indicate what that infrastructure should be. One step, thus, in creating an infrastructure for unification, as I am briefly indicating, is to explicitly and systematically expose the various avenues of work to be accomplished (see Staats, 1983). This requires a systematic study of our science and its products. Moreover, another part of the infrastructure lies in designating resources for the support of the unification works. In addition to organizations devoted to unification, we need journal media—such as Division 1's *Review of General Psychology*, Division 24's *Journal of Theoretical and Philosophical Psychology*, and APA's *Psychological Review* and *Psychological Bulletin*—that explicitly and centrally set forth the *new missions* of publishing the studies that emerge from the various types of unification works.

I suggest, further, that every journal of the American Psychological Association devote a special issue to unification. Each such issue would call for papers that treat separate but

relevant theories, concepts, phenomena, schismatic positions, methods, fields, or findings in a theory analysis aimed to produce more coherent, parsimonious, compact, interrelated knowledge. If the APA journals in the year 2000 produced such special issues, that would be the hugely powerful message likely to begin changing the operational nature of our science and to inaugurate the great and central work of unification.

Finally, we need to have our research agencies support research whose aim is to produce unifications of the diverse and separated products of our science. This policy of support would provide a powerful guide.

Conclusion

We now have a firmly planted, well-accepted, philosophical foundation for a goal of unification. The great attention Wilson's (1998) book is getting shows that. But our philosophy still remains ahead of its time, for there is little in the way of unification work. Moreover, there has been no substantive movement to establish an infrastructure to support work on unification, and there has been no consideration of the various large and continuing tasks that have to be accomplished in working toward unification. Psychology must move to the next step, that is, to invest systematic effort and resources into establishing and beginning to work on the tasks of unification as well as to create the organizational, media, and other aspects of infrastructure by which to ensure that work is conducted.

Let me finish by quoting something I wrote in a book chapter in 1970 that adumbrated the unity issue, for I think it is much less ahead of its time now than it was then.

[Psychology] has great basic constituents. It has an experimental methodology . . . principles, sophistication in the logic of science, and a comprehensive subject matter that goes from the simple to the very complex. It is a fund of knowledge and technique that with the concentration of a . . . [unifying] framework—and the participation of a large number of the science's members—could enter into the first rank of science. It is a science on the verge of making it big. (Staats, 1970, pp. 234–235)

If my notion of the disunity–unity dimension in science development is true, psychology at some time will inevitably become a unified and thus enormously more powerful science. Setting

that goal, along with systematic planning and resource investment, could markedly accelerate this achievement. But at the present time, producing diverse and unrelated knowledge gets all of the investment, the work of weaving it together almost none. The sheer mass of ununified knowledge produced makes it necessary to create ever narrower, unrelated specialty fields. This is another of the wages of sin of modern disunified science. The longer we delay, the more fragmentation occurs, the more the pieces of the puzzle multiply, and the more difficult the task becomes. We must begin to invest seriously in unification work. And that demands an infrastructure; let me suggest that APA Divisions 1 and 24 become the vanguard. If that vanguard rises, it will become the central development of psychology.

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