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Chapter I

SYSTEMS OF PSYCHOLOGY: THEIR FUNCTION AND SIGNIFICANCE

IT is something of a paradox that systems of psychology flourish as they do on American soil. Psychology, especially in the United States, has risked everything on being science; and science on principle refrains from speculation that is not permeated and stabilized by fact. Yet there is not enough fact in the whole science of psychology to make a single solid system.

No one knows this better than the psychologists themselves. They see with the eyes of familiar association not only the undeniable poverty of their science, but the flimsiness and shoddiness of much of the material they are asked to accept as genuine fact. Psychologists are continually looking upon the work of their colleagues and finding that it is not good. And with little hesitation, or with none at all, they expose the weaknesses and flaws they discover.

One can hardly cross the threshold of the lively young science without suspecting that all is not peace and harmony under its roof-tree; that the bands of workers one encounters there represent not only a necessary division of labor but a state of internal strife. Perhaps the most assertive of the warring groups is composed of the younger students of animal and comparative psychology, most of whom pride themselves on being hard-headed and realistic and on having discarded the airy nothings of a psychology that deals with minds. They wish above all else to be severely scientific,

and some of them seem convinced that they can best realize this ambition by resembling as closely as possible their near neighbors, the physiologists. They are for the most part confident and resolute young men, strong in the faith that by probing into the depths of matter and muscle, they are digging at the roots of things.

A less aggressive group, but one that is no less assured, no less conscious of the integrity of its science, is composed of the experimental psychologists. To these psychologists the term "experimental" is applied not in the sense of including all who conduct research by the experimental method common to natural science in general, but in the special and esoteric sense of designating those who are in the line of descent which derives more or less directly from the world's first active psychological laboratory, that founded by Wilhelm Wundt in Leipzig. Experimental psychology in this sense refers to a particular discipline, developed in Germany, and championed in the United States chiefly by one of Wundt's English pupils, Edward Bradford Titchener. Its typical representatives are the "trained introspectionists," who believe that the true task of psychology is the examination of consciousness. Their work, they are convinced, requires special training and extreme care, and because of the elaborate apparatus they have devised for their assistance, they are sometimes referred to as "brass-instrument psychologists." They represent the established aristocracy of a generation ago. Theirs is the psychology, they are willing to maintain, that has stood and will stand the test of time.

Both these groups look somewhat askance at a third set, those occupied with the testing and measuring of mental traits. For in the workrooms of the mental-testers there is little of the paraphernalia of the older sciences—few brass instruments to suggest the austere dignity of physics, no white rats to suggest the substantial actualities of biology.

There is an abundance of quantitative data, however. For perhaps more than any other single group of psychologists, the mental-testers have developed the mathematical mode of thinking that science finds so congenial; and operating with curves of distribution, correlation coefficients, and more recondite statistical devices, they have undertaken the task of measuring intelligence and other complex mental traits, and of acquiring as much information about them as quantitative treatment will yield.

Closely associated with this group, in fact not clearly distinguishable from it, are the workers in applied psychology. Among them are those who attack the problems of commerce and industry—the selection of employees, the management of personnel, the elimination of industrial fatigue, the most effective methods of advertising, and the lighting and ventilating of factories. Here too are the clinical psychologists, who work in schools, in juvenile courts, in child-guidance clinics, and in institutions for the feeble-minded, the psychopathic, and the insane, attempting, by contributing to a better understanding of the persons under their care, to help them to make their adjustments to life. In applied psychology, too, are the educational psychologists, occupied not only with the many problems of learning and teaching, but more particularly of late with the attempt to measure the capacities and aptitudes of pupils, and the effectiveness of various educational procedures.

These groups, none of which is sharply delimited, together with other groups even less clearly defined and many independent individuals, make up the roll of psychologists. But however imperceptibly each group may merge into the others, all along the line, from the most correct of the experimental and animal psychologists to the newest and crudest of the mental-testers, the workers question the value and validity of the work of other groups. More than that, they

question the validity of the work of others of their own group. No one can criticize an animal psychologist as can another animal psychologist; the most pointed attacks upon mental-testers come from other mental-testers. One who is himself engaged in the tricky business of prospecting for facts, knows—and knows with especial conviction as regards his own field—how rarely they are extricated from the matrix of faith and hope and conjecture in which they are embedded, how often they disappear into mere illusion, and how small their value is likely to be, if they survive at all, as compared with their apparent worth in the excitement of discovery. Naturally such a person does not look with immediate credulity upon every large nugget of possible knowledge that a fellow-worker offers as fact. He accepts it only when he has thoroughly assayed it by submitting it to all the critical tests he knows.

All this is a tremendously good thing for the young science of psychology. For anything that emerges from this treatment as a fact, making its way against the opposition of very earnest, very belligerent, very persistent criticism, must have at its core the streak of stubbornness that makes a fact a fact. If intelligence tests, or the laws of learning, or *Gestalten*, or conditioned reflexes survive the manhandling of their active critics, it will be because there is something there in the same sense that there was in the stone that Dr. Johnson kicked in his motor refutation of Bishop Berkeley; because they offer effective resistance to human violence and human cleverness.

And, fortunately, the vigor of the new science expresses itself not only in feuds but in industry. In one respect at least, the clashing groups are alike; they are all relentlessly industrious. With almost incredible diligence they count the errors of their rats, compute coefficients of correlation, and record judgments of lifted weights. And the outcome of all

this industry and of all this criticism is the occasional establishment of a fact, or what is far more frequent and almost as good, the overthrow of a dogma.

Furthermore, in the course of the struggle there has grown up a vast respect for science as such. In the presence of the older sciences, psychology feels something of the awe of the novice for the master, something of the abashed admiration of the *nouveaux riches* for an established aristocracy. It feels too the same anxious concern lest its mode of life fail to conform to the standards of the caste, and in its very zeal for maintaining those standards it is sometimes betrayed into a swaggering superiority to the practices it has so recently learned to scorn. But the swagger is compensatory and superficial. For the brash young science, like so many brash young things, is acutely aware of its shortcomings. It looks from its rough graphs and dubious correlations to the elegant precision of physics and doubts whether all is well. For beneath its bluster there is a desire for solid fact and sure technique. The arrogant intolerance it sometimes displays toward anything on which the seal of science has not been set, is in part at least a jealous concern for the integrity of its knowledge, not wholly unlike the fine scorn of Bacon for the pretensions of the Aristotelians of his time. For in the few years of its existence, psychology has acquired not only diligence but the skepticism that for science is the beginning of wisdom. It knows that it knows little and that that little is tentative. Psychology can point to no imposing storehouse of facts; it knows that its greatest virtue is its determination to follow the scientific method, and that at its best, it attempts to push that method into a region which hitherto the inquiries of science have not penetrated. Above all, psychology is aware of a great need for the factual substance of which a science is so largely made, and it has learned

to look with disapproval, almost with dread, on speculation that is not steadied by the ballast of fact.

Then why all the system-making? Why does psychology, which is trying so hard to be a science, build structures of speculative thought that it cannot hope for years to verify by established fact?

Briefly, because it has reached a place where such a procedure is all but inevitable. No one can state at present the precise circumstances that stimulate thought—"thought" is used here to denote the reflective and creative activities of the intellect as contrasted with observation and experimentation—but the general conditions are sufficiently well known to make it plain that psychology has not fallen into intellectualistic ways without provocation. It has been subjected to three of the most powerful stimulants to thought: increasing knowledge, grave concern, and persistent doubt.

Knowledge sometimes stimulates thought, but the right amount of it must be present—neither too much nor too little. If a person were in possession of *all* the facts on a given topic, his thought about it would automatically cease. His problem would be solved; the occasion for thought would no longer exist. The educated adult does not have to think when he answers the questions: How many are seven times five? What is the chemical composition of water? What are Newton's laws of motion? The knowledge is either in his possession or is readily accessible. At one time, in the history of the race if not in that of the individual, those questions occasioned a great deal of thought, but at present they simply stir up, more or less readily, the appropriate associations. Similarly, one does not think if he is in possession of *none* of the facts. Most of us, probably, think very little, if at all, about fluxions or uncialis or the current political intrigues in Montenegro. In most of us the relevant facts

are absent and we therefore lack the very materials with which thought operates. This is doubtless the reason why most of us do not think more about Einstein's theory of relativity, at least about its central concepts. True, there are some aspects of the theory about which we do think; we contemplate it as a revolutionary idea, as a brilliant intellectual feat, as a discovery that demands a revision of fundamental ways of conceiving the physical universe, as another indication of what mathematical thought can accomplish. But that is partly because we do know something about revolutionary ideas, intellectual feats, revisions of fundamental concepts, and the potency of mathematical reasoning. We can go in good spirits as far as this knowledge carries us, but it does not carry us far enough; we know there is something beyond. In fact, the interest that Einstein's theory has set up is an excellent illustration of the degree of knowledge which is likely to stimulate thought. *We know* that there is something stirring; we do *not* know exactly what. Our curiosity is piqued; we have a start; we feel an impulse to go the whole way. And the fact that the impulse does not lead us to acquire sufficient knowledge of physics and mathematics to carry us to complete comprehension, indicates not that the impulse to think has not been aroused, but that it is not sufficiently strong to make us remove the obstacles, or else that the obstacles are too much for us. Not that thought ceases when it reaches the limits of knowledge; it ekes out knowledge with creation; it tends strongly to complete the unfinished picture somehow—anyhow. A little learning is a dangerous thing precisely because it gets creative thought started, and creative thought, though it may sometimes lead to truth, sometimes leads to ridiculous or perilous falsehood.

2) But thought, of course, is not merely an affair of the intellect. Concern, too, is important. We think about the

things we care about, and probably do our freshest and most vigorous thinking on matters that bear most directly on our personal concerns. Hence the bulk of the world's best thought—considering now the thought of mankind in general, not that of a few distinguished thinkers—is probably on such topics as how to carry through some cherished enterprise, what friends and rivals are doing, and how to achieve some sort of salvation, temporal or eternal. The thought that makes the greatest stir in the world is that which has some bearing on the fate of man and his affairs. The Copernican theory arrested attention not so much because it demanded a new view of the universe as because the new view of the universe demanded a new view of man, now no longer the center of the stage. And Darwinism is interesting chiefly because of its implications for humanity; because it presents man not as an object of special consideration, but merely as one of the many forms that protoplasm has assumed in a world not specifically made for any of them. Any question that men see as involving their own welfare has a good chance of stirring up thought, though the quality of the thought is of course determined by other conditions than the nature and magnitude of the feeling involved.

Thought is also related to action, and through action to doubt. We think what to do, particularly when our old ways of doing things are interfered with, or when we discover that they no longer serve. It is then that we doubt, and doubt—the discovery that what has seemed adequate may no longer be adequate—is the signal that a new adjustment must be made. Perhaps in a perfectly adjusted animal thought would be superfluous. But when something goes wrong, thought may be useful and is likely to occur. When a man's motor stops, he tries to understand it; when his work is going badly, he considers the situation; and when his

Weltanschauung is altered so that he sees himself no longer in a cherished rôle, but in one that is ridiculous or insignificant, he is plunged into the *Sturm und Drang* of an intellectual agitation of even greater proportions. Doubt means that a new adjustment must be made, and in the working out of human adjustments thought is often, though not invariably, involved.

There is an abundance of instances outside the field of psychology which show these conditions at work. It is no accident that the great rationalistic systems of Descartes, of Leibniz, and of Spinoza were formulated after the Renaissance had reaped its first harvest of knowledge and doubt about matters closely linked with human happiness and salvation. It is especially interesting that the distrust of medieval intellectualism itself produced an intellectualistic response. Bacon, critical as he was of the rationalistic methods of the Middle Ages, left his mark on science not so much by employing the new method he advocated as by following one far more like the old method he scorned. The *Novum Organum*, though it is a plea and a program for the inductive method, is not itself a good illustration of that method. It is a reflective analysis of what ought to be done if scientific knowledge is to be attained; not the outcome of a systematic accumulation of observed and recorded cases, both positive and negative, of problems actually undertaken by human thought. Even the critical empiricism of Locke and Hume was achieved less by the actual observation of the mind at work than by a retrospective and reasoned analysis of the intellect concerning the pretensions of which those authors were so skeptical. Empiricism discredited the exaggerated claims of the intellect by an examination of those claims which was far more intellectual than empirical in method.

And so it is not surprising that psychology, which, accord-

ing to its professed code, ought to settle down to the sober acquisition of fact, has indulged at times in riotous thinking and has produced systems of thought for which the factual proof is admittedly lacking and will be obtainable only in the remote future. For psychology is surrounded by the conditions of such thought. Its facts are numerous enough to be suggestive, not numerous enough to be conclusive; its doubts are legion; its subject-matter is close to the personal interests that do not exist for pure science but which are peculiarly likely to arouse the concern of human beings. In these circumstances it is as natural for a psychologist to fall into speculation as it would be for a physicist to fall toward the center of the earth if the center of gravity of his body were not between its points of support.

But what is the bearing of all this on systems of psychology? Fundamentally, that they are to be regarded as productions of living creatures, working in the midst of doubt, concern, and incomplete knowledge, to achieve better adjustments to the particular circumstances that surround them. The nature, the function, and the limitations of systems are all inherent in this manner of conceiving them.

This means, for one thing, that systems of psychology must not be regarded as altogether impartial and unemotional constructions, determined solely by logic and evidence. On no account is it wise to consider systems apart from the particular situations that give rise to them—from the traditions, the conventions, the standards, the prejudices, and at times the rank personal feelings which constitute their background. The most common origin of systems is dissatisfaction with an older system, the disruption of a scientific *modus vivendi*; and the disruption of a *modus vivendi*, involving as it does the disorganization of habit and emotion as well as the stimulation of the intellect, can hardly give rise to

an altogether calm and disinterested activity. The regular response to the discovery that one's way of life has failed is to try another way, in spite of the fact that the new way must be based on incomplete knowledge, as was the old. Perhaps the purely rational method of meeting the situation would be to suspend judgment until all the evidence is in, but to suspend judgment indefinitely is a highly sophisticated procedure, not always appropriate to the rough and ready pioneering ways of a new science. Actually scientific progress has often been achieved by accepting wrong or partial or tentative answers on the basis of the available data, and correcting the answers as more data came in. Psychology, at least, has had little success in arresting its thought in mid-career; it has answered its questions by producing systems, each of which is to its adherents a foreshadowing of the truth and a program of action—at once something to work by and something to work for. A system of psychology, therefore, is not only a basis of procedure but a basis of morale. Perhaps to the adherents of a system the justification for its acceptance is to be found in something like Vaihinger's philosophy of "as if." But the person who observes and studies the system must see it as the psychologist sees the activities of a rat in a maze: as a set of varied and complex performances that are more or less effective means of reaching a goal.

This means in turn that systems of psychology are to be regarded not as statements of scientific knowledge, but as tools by which scientific knowledge is produced; not as accounts of scientific fact, but as means of acquiring scientific fact. They are the scaffolding within which the structure of the science of psychology is being erected, as necessary as the scaffolding and as impermanent; not to be identified with the structure itself, which however could not exist without it. They are the tools by which knowledge is

extracted, but as different from knowledge as are the instruments from the ore that they expose. They provide zeal for the work, but are as different from work as inspiration is from production. They offer a specific and sometimes glamorous program of action, but the program is not to be confused with accomplishment. It is difficult to know which to emphasize more: the indispensability of the instrument or the fact that it is an instrument.

Perhaps the former, considering the temper of psychology at the moment. For psychology, with its determined devotion to the scientific method, becomes at times almost bitterly anti-intellectualistic. It recognizes, of course, that speculation plays a legitimate part in scientific thought, that the distinction between observation and speculation is not absolute, and that the two are really complementary. But its active attitude is not so calmly rational. Perhaps because of the recency of the separation of psychology from philosophy, perhaps because of an acute sense of need for observed facts, many psychologists regard speculation with suspicion and distaste, almost with resentment and dread. For many of them are still somewhat afraid of being metaphysical, and by being metaphysical they mean, whether rightly or wrongly, spinning theories out of the head without verifying them by fact. What they fear, of course, is not thought, but thought that runs away from fact, beyond the reach of fact. But all thought runs ahead of fact; it is the very nature of thought to do so; and the difference between scientific thought and "mere speculation" is the difference in the relation of the creations of thought to the facts by which they must be tested. Thought that keeps its line of communication with fact open and active is scientific thought; that which fails to do so is "mere speculation."

No system of psychology can or does claim at present that it is established by fact. Neither does any system pro-

ceed in total indifference to fact. The simple truth is that psychology does not at present possess enough facts with which to test its systems. Its need of facts makes it disparage speculation; its lack of facts makes it resort to the practice, and it does so at times with a bad conscience.

And so again the question arises: Why does not psychology turn from its systems and devote itself to collecting the facts it so sorely needs? The answer to this question is the justification of systems: that without the systems few facts would be forthcoming. For scientific knowledge does not merely accumulate; it is far more likely to grow about hypotheses that put definite questions and which act as centers of organization in the quest of knowledge. As a matter of historical fact, science has not grown by following the method Bacon described—that is, by the steady amassing of data and the emergence of generalizations. Bacon himself said that mere accumulation is not enough; but not even the watchful and systematic accumulation Bacon outlined, with its careful comparisons of positive and negative cases, and its notations of varying degrees of quality in varying circumstances, has actually been the source of most of the insights of science. More often than not, the insight precedes the systematic evidence; is tested rather than suggested by it; is, indeed, the occasion for the acquisition of the evidence. Frequently the victories of science are won through the use of conjectures not yet established by fact, conjectures that become the basis of active and ingenious research especially directed toward that particular body of evidence which will prove or disprove the point at issue. Guesses on the basis of inadequate evidence have proved to be powerful and, in actual practice, indispensable tools, which science regularly employs.

It is for this reason that systems figure so prominently and so pertinently in contemporary psychology. A system

may fulfil its function by proving itself either right or wrong, or, as is far more likely to be the case, by proving itself partly right and partly wrong. The very errors of systems, especially if they are clean-cut and decisive, may further the cause of science by revealing mistakes that need not be repeated. Systems give form and definiteness and direction to an enterprise that without them would be vague and aimless; and more, they provide interest and zest for the venture. For science does not live by facts alone, nor even by facts and hypotheses alone. It needs the joy of combat and the hope of achievement, and evidently at times even the spice of malice and the excitement of running with the pack; and for psychology at present this means schools and systems.

Considered from this point of view, as programs of action and as bases of morale, systems may be regarded as significant symptoms of the condition of psychology in particular places, at particular times, and in the hands of particular sets of workers; as indications of those aspects of psychology which are probably receiving *more* than their share of emphasis in a given set of circumstances. Not that it is in the least regrettable that overemphasis should occur. It attracts attention to important issues, it stimulates criticism, and it is almost certain to be counteracted by overemphasis in the opposite direction at other times or at other places. For the development of science cannot be regarded as the work of one man or of one group of men; science is a vast social enterprise in which an individual's most valuable contributions may be his brilliant mistakes.

It is from this point of view, then, that systems of psychology will be considered in this study; not as right or wrong, not as more or less complete approximations to knowledge, but in terms of their influence on the actual development of a science of psychology. They can best be

understood not as statements of scientific fact, not as summaries of existing knowledge, but as ways and means of arriving at knowledge, as temporary but necessary stages in the development of a science, as creations of workers who, in a confusing and sometimes depressing enterprise, must keep not only their poise but also their verve. For it can hardly be repeated too often that science does not proceed in the light of reason alone, but like other human enterprises is a muddled adventure working itself out

"as on a darkling plain
Swept with confused alarms of struggle and flight
Where ignorant armies clash by night."