

The Nature and Limits of Psychological Knowledge

Lessons of a Century qua "Science"

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ABSTRACT: *This article examines certain constraints on the character of the knowledge claims made by the psychology of the past century, as well as some "in-principle" constraints. A syndrome of "ammeaningful thinking" is seen to underlie much of modern scholarship, especially the inquiring practices of the psychological sciences. Ammeaningful thought regards knowledge as an almost automatic result of a self-corrective rule structure, a fail-proof heuristic, a methodology—rather than of discovery. In consequence, much of psychological history can be seen as a form of scientific role playing which, however sophisticated, entails the trivialization, and even evasion, of significant problems. The article emphasizes the deeper human context of the ammeaning syndrome, which is seen to lie in the "antinominal" structure of human experience: the circumstance—discerned by Kant in his analysis of those "antinomies of pure reason" that disenfranchise dogmatic metaphysics, but not generalized by him—that there is a class of questions which have intense meaning to all human beings but which "transcend the competence of human reason." The pervasiveness of such meaningful yet (strictly) undecidable issues in experience leads, in both informal and disciplinary contexts, to forms of cognitive denial that fuel such ammeaningful tendencies as the belief in the coextensionality of the undecidable and the meaningless, and the need to exorcize uncertainty by ensconcing inquiry in a spurious "systematicity." Against a background of such considerations, the article considers whether, after the century-long march of psychology under the banner of "independent, experimental science," the field actually is (a) independent and (b) a science.*

Recently I received a communication from APA, dated July 30, 1979, the first paragraph of which ran as follows:

As you may know, there is considerable interest and enthusiasm for a recommendation to the APA Council of Representatives to establish a "Psychology Defense Fund." Supported by voluntary contributions of indi-

vidual psychologists, State Associations, APA Divisions and others, the Fund would

"... provide funding for legislative and legal activities which focus on the definition, regulation and recognition of psychology as a science and profession, operating in the interest of promoting public welfare."

—Board of Directors Draft Minutes
June 14–15, 1979

The nature and limits of psychological knowledge are so luminously characterized by this quotation that I am tempted to conclude at this point. I hasten to add, only tempted! Throughout the 19th century (and indeed, before) an independent scientific psychology was vigorously invited. Toward the end of that century (in 1879, according to the myth occasioning the current centennial celebration) an independent, scientific psychology was institutionalized in the form of a laboratory and further consolidated some two years later by the founding of the first journal for the "new" psychology which, somewhat ironically, was entitled *Philosophische Studien*. And, as we are certainly aware, over the next 100 years an "independent, scientific psychology" has been enthusiastically enacted by a burgeoning work force that by now constitutes one of the largest groupings within contemporary scholarship. But the frenetic activity of the past 100 years has apparently left the issue in doubt. We are *now* impelled to achieve scientific legitimacy by *legislation*; moreover, we will not pay for any old act of Congress but only for one that burns in the message that we are "operating in the interest of promoting public welfare."

I am not a historian. But I have lived through

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a 40-year swath of psychological history from the vantage of a participant-observer whose arrogant construal of his calling has been to explore the prospects and conditions for a significant psychology. At some point near mid-career, I began to feel that my calling had rendered me a human and scholarly cipher in all respects save one: I had developed an uncanny connoisseurship concerning the fine structure and dynamics of pseudoinquiry, the seamy vicissitudes of the phony scholarship that has characterized so much of the "activity" in my own field, and indeed others, in this century. I became, in fact, the modest founder of a discipline given to the study of misfirings of the scholarly and creative impulse: the field soon to be widely known as the science of "cognitive pathology," the metatheory of which is "epistemopathologies."

Perhaps because of the unavailability of a "defense fund," I have been somewhat secretive about this new enterprise—which *does* have a large bearing on "public welfare." But two years ago, in the course of an intellectual autobiography I had been asked to present to Divisions 24 and 26, I permitted a brief glimpse of the noble architecture of this discipline. The glimpse apparently piqued curiosity, for after the talk representatives of the same divisions asked whether I would consider giving an "advanced course" in the new discipline on another occasion. That occasion has arrived. What could be a more appropriate one than the present centennial?

I shall, of course, have space only for a *précis* of the advanced course. But I hope to be able to develop the powerful theoretical structure of this new discipline sufficiently to exhibit certain constraints on the character of the knowledge claims made by the psychology of the past century, as well as some constraints on the character of psychological knowledge in principle. After that, I hope to close with a brief confrontation of the theme of the riotous celebratory activities at this convention. I shall ask whether, after the century-long march of psychology under the banner of "independent, experimental science," the field actually is (a) *independent* and (b) a *science*.

The Pathology of Knowledge

Decades of inquiry into the inquiry of others—and into germane processes inside my own head—have induced in me a sense of awe at the plenitude of our gift for the mismanagement of our own minds. It is perhaps the ultimate genius of the race!

If you be a psychologist or social scientist, test any systematic formulation of your choice (whether learning-theoretic, systems-theoretic, information-theoretic, cognitive-genetic, cybernetic or, indeed, phenomenologico-hermeneutic, or, just maybe, behavior-therapeutic) against the following "epistemopathic" peregrinations of the inquiring impulse. (Those who assign passing grades, I shall have to presume either the owner of the formulation under test or a first-year graduate student!)

1. Jargon and "word magic."
2. Single-principle imperialism.
3. Substitution of *program* for performance.
4. Tendency to make so restrictive a definition of the field of study as to render the study beside the point or, indeed, finished before begun.
5. Facilitation of progress by making a set of arbitrary and strong simplifying assumptions (e.g., imaginary "boundary conditions," counterfactual assumptions re mathematical properties of the data), proposing an "as if" model observing that set of restrictions, and then gratefully falling prey to total amnesia for those restrictions.
6. Tendency to select—usually on extraneous bases like amenability to "control" or to contemplated modes of mathematical treatment—a "simple case" and then to assume that it will be merely a matter of time and energy until the "complex case" can be handled by application of easy composition rules.
7. Tendency to accept on authority or invent a sacred, inviolable "self-corrective" epistemology that renders all inquiry in the field a matter of application of rules which preguarantee success.
8. Corollary to the preceding, a view of all aspects of the cognitive enterprise as so thoroughly rule-regulated as to make the role of the cognizer superfluous. The rule is father to the thought—and mother, too!
9. Tendency to persist so rigidly, blindly, patiently, in the application of the rules—despite fulsome indications of their disutility—that the behavior would have to be characterized as schizophrenic in any other context.
10. Tendency to accept any "finding" conformable to some treasured methodology in preference to "traditional" wisdom or individual experience, no matter how pellucidly and frequently confirmed the nonscientistic knowledge may be.
11. Epistemopathy No. 10, at a certain critical-mass value, results in the *total abrogation* of the criterion that knowledge should *make sense* and in an ultimate distrust of one's own experience. If a finding does make sense, one distrusts *it*.

12. An exceedingly strong reluctance to reinspect one's deeper epistemological and/or substantive commitments. This, in effect, is the theory of truth by individual consistency over time.

13. Ergo—a remarkable and telling disproportion between the attention given to the foundation commitments of one's work and that given to superficial or pedantic details of implemental character. One dwells happily within the "superstructure," however shoddy or worm-eaten the "substructure."

14. Tendency to buy into stable or fashionable profession-centered myths with a minimum of prior critical examination, to accept congealed group suppressions concerning bypassed problems or data; or alternate theoretical possibilities; or intrinsic (and sometimes patent) limits on the scope, analytic or predictive specificity, and so on, attainable in the field in question. Ergo, a disposition to become a "central tendency" creature, to hold in check (or happily suffer a reduction of) one's imaginative and critical resources.

The preceding sampling is necessarily a limited exercise in elementary cognitive pathology. My object here is to try to make plausible a large generalization that has come to inundate my mind. It is that there are times and circumstances in which able individuals, committed to inquiry, tend almost obsessively to frustrate the objectives of inquiry. It is as if uncertainty, mootness, ambiguity, cognitive finitude, were the most unbearable of the existential anguishes. Under these conditions, able and sincere inquirers become as autistic as little children; they seem more impelled toward the pursuit and maintenance of security fantasies than the winning of whatever significant knowledge may be within reach!

A little reflection will show that such passionately courted cognitive disutilities as I have noted are not exclusive marks of psychological inquiry, but are evident in all contexts of inquiry, both in and out of scholarship. I believe these perversities of cognitive function to be endemic to the human condition, but they have never been manifested more conspicuously (or disastrously) than in our dear century. This darkling hypothesis is not wholly idiosyncratic: It was shared by Bridgman (1959), whose last book, *The Way Things Are*, was animated by a "conviction that there is some fundamental ineptness in the way that all of us handle our minds" (p. 1).

My own epistemopathic observations have not been confined to psychology. Part of my professional commitment has been to philosophy, and I

have had a lifelong interest in the arts and humanities. Virtually all fields of cultural life—and too many fields of practical life—are, I think, close to an impasse: an impasse of objective, method, substance, value, and education! Things cannot get much better until we "put our fingers" on the particularities of these blockages. General diagnosis, free-floating existential screams, are not enough.

Localizing the particularities of such blockages against authentic cognition is, of course, an awesome undertaking. Not only are the psychological, historical, and sociological grounds for the ever-accelerating dispersion of epistemopathy vastly ramified, and intricately intertwined, but the cognitive pathologist cannot presume to be unafflicted by the disease that he or she seeks to cure. My own feeble efforts have thus far been concentrated on the discrimination of a syndrome that I call "ameaningful thinking" (the prefix has the same force as the *a* in words like *amoral*) and its detailed contrast to the increasingly rare process of "meaningful thinking" (cf. Koch, 1965). I have become so obsessed in recent years with the importance of precise and differentiated analysis of the meaning and referential field of the "ameaning" syndrome that it is meet, before going further, to air the suspicion that my own head may be dangerously afflicted with Epistemopathy No. 2 of my sample list, namely, "single-principle imperialism."

In this article, I hold myself to the merest sense of the distinction between ameaningful and meaningful thinking. My object here is to develop it only to a point that will enable me to proceed to the consideration of some recent speculations concerning the deeper human context of the ameaning syndrome.

Ameaningful thought or inquiry regards knowledge as the result of "processing" rather than discovery. It presumes that knowledge is an almost automatic result of a gimmickry, an assembly line, a "methodology." It assumes that inquiring action is so rigidly and fully regulated by rule that in its conception of inquiry it often allows the rules totally to displace their human users. Presuming as it does that knowledge is generated by processing, its conception of knowledge is fictionalistic, conventionalistic. So strongly does it see knowledge under such aspects that it sometimes seems to suppose the object of inquiry to be an ungainly and annoying irrelevance. The terms and relations of the object of inquiry or the problem are seen, as it were, through an inverted telescope: Detail, structure, quiddity, are obliterated. Objects of knowledge become caricatures, if not faceless, and

thus they lose reality. The world, or any given part of it, is not felt fully or passionately and is perceived as devoid of objective value. A meaningful thinking tends to rely on crutches: rules, codes, prescriptions, rigid methods. In extreme forms it becomes obsessive and magical.

The tendency of a meaningful thought to register its object as faceless, undifferentiated, psychically distant—to be, so to say, cognitively anesthetic vis-à-vis its object—I call “a-ontologism” (if the term may be forgiven). Its tendency to subordinate authentic and contextually governed analysis, discovery, or invention to blind application of an extrinsic method, I call “method-fetishism.” *A-ontologism* and *method-fetishism* may, in fact, be regarded as the definitive marks of a meaningful thinking.

On the other hand, *meaningful* thinking involves a direct perception of unveiled, vivid relations that seem to spring from the quiddities, particularities, of the objects of thought, the problem situations that form the occasions of thought. There is an organic determination of the form and substance of thought by the properties of the object and the terms of the problem. In meaningful thinking, the mind caresses, flows joyously into, over, around, the relational matrix defined by the problem, the object. There is a merging of person and object or problem. Only the problem or object, its terms and relations, exist. And *these* are real in the fullest, most vivid, electric, undeniable way. It is a fair descriptive generalization to say that meaningful thinking is ontologistic in some primitive, accepting, artless, unselfconscious sense.

Meaningful thinking in its “highest” forms—I do not mean highest relative to a population but relative to an individual ceiling—occurs with extreme rarity at best. As we know from the protocols even of highly creative individuals, its incidence can be maximized only by the most conscientious and delicate husbanding—by arrangements for work that strive to realize a most intricate concatenation of environmental and personal conditions. For *any* individual, the incidence of highly meaningful thought “episodes,” though rare, can be modified. If it is valued, meaningful thinking can be “sought” by learning, and causing to be realized, the circumstances that bear some probability relation to its occurrence. Highly meaningful thought episodes can be triggered only under special situational and neural conditions of the organism, some (but not all) of which are accessible to control.

The statistical incidence of highly meaningful thinking in populations—whether these be subparts of a society or culture, entire societies or cultures, or indeed, populations “defined” by historical epochs—is variable within limits. Lamentably, the nature of the phenomenon is such that its incidence can probably be made to decrease more easily than to increase. Thus, for any population, the relative incidence of meaningful or a meaningful thinking will be determined to a large extent by the values placed by the group upon one or the other. Such values will, of course, be embedded in the ideologies or rationales of knowledge-seeking behavior dominant in the group and will pervade all institutions and agencies that influence intellectual or scholarly style, habit, and sensibility.

The besetting cognitive problems of a culture, a subculture, or an era can thus be very much a reflection of whatever factors lead to the relative valuation of meaningful and a meaningful thinking. One must even face the possibility that cultures can arise which place so limited a value on meaningful thinking that many of its members are deprived absolutely of the possibility of achieving “high” orders of meaningful thought, relative to their capacities, or of discriminating such states—should they occur—as in some sense valuable or even different from a meaningful thinking. I believe that something very much like such a culture has arrived and that the culture in question is the world culture of the 20th century.

In prior writings, I have sought to delineate the contours of a meaning—and more generally to perform epistemopathic surgery—in a variety of connections. I have, for instance, critically considered *behaviorism* from many angles (e.g., Koch, 1961a, 1964, 1971, 1973, 1976b). Most of these analyses have been trained upon particular formulations and argued in detail. An early artifact of my disenchantment with behaviorism—a study of Hull’s systematic work (Koch, 1954)—is probably the most mercilessly sustained analysis of a psychological theory on record.

This body of work on the behaviorisms resists summary, but to convey the flavor of the cognitive-pathological enterprise, I can mention the following surgical efforts. I have tried to show the dependence of behaviorist epistemology on philosophies of science that had begun to crumble even before psychologists borrowed their authority and that are now seen as shallow and defective by all save the borrowers. I have given detailed attention to behaviorism’s garbled assumptions con-

cerning the workings of language and the nature of scientific communication; to the undifferentiated, rubbery character, impoverished range, and overblown intension of its major analytical terms ("stimulus," "response," "drive," "reinforcement," and the like); to the inconstant, Pickwickian, and (literally) incoherent discursive practices of its theorists and defenders—practices that render its typical argument forms a species of half-studied and half-unwitting double entendre.

I have in many writings (cf. Koch, 1959 [see Epilogue in Vol. 3], 1976a) performed extensive "epistemopathectomies" upon the large segment of the 20th century history of psychology that I have called the "Age of Theory." That happy interval commenced in the early 1930s and may, in modified form, still be with us to this very day. The mark of the Age of Theory, especially in its classic phase (circa 1930–1950), was that all activities were to be subordinated to production of a "commodity" called "theory" in a quite special sense defined by the Age. It is as if something called "theory" became an end in itself—a bauble, a trinket—of which it was neither appropriate nor fair, certainly most naive, to inquire into its human relevance. Indeed, most formulations of the era were based on animal data, and some haughtily claimed a restriction of reference to animal (usually rat) behavior. The overarching cosmology of this interval was based on a loose mélange of vaguely apprehended ideas derived from logical positivism, operationism, and neopragmatism—and it should be added *not* from these traditions in their full span but merely from a narrow time segment within the early 1930s. These ideas were construed as providing a formulary for the "construction" of theory. Certain epistemological and procedural agreements were absolutely regulative during most of the Age of Theory: in particular, such matters as the regulation of systematic work by the imagery of hypothetico-deduction, the prescriptive lore surrounding operational definition, the lore concerning the intervening variable, the belief in the imminence of precisely quantitative behavioral theory of comprehensive scope, certain broadly shared judgments with respect to strategic foundation data, and the belief in automatic refinement and convergence of theories by the device of "differential test."

Even in an ahistorical era such as the present, most psychologists will know something about these agreements, for some of them are still with us. Nevertheless, much of the rationale of the six-

volume project, *Psychology: A Study of a Science* (Koch, 1959, 1962, 1963), that I directed at mid-century was to test the official epistemology of the Age of Theory via an apposition of the creative experience of the many distinguished participating theorists with the stipulations of regnant canon law. The results made it possible for me to conclude that the study had subjected that body of law to vast attrition. In continued epistemopathic effort, I have succeeded—at least to my own satisfaction—in demonstrating the dysfunctionality of each statute in the Age of Theory code. But apparently not to the satisfaction of all!

A final context in which I have practiced epistemopathic surgery has been in relation to certain of the scholarly and creative mystiques that have been dominant in both the humanities and the arts in this century (cf. Koch, 1961b, 1969b; Koch, Note 1). I discern in these areas many analogues to the restrictive scientism and rule-saturated ideologies of the psychological and social sciences. I mention this line of interest only to demonstrate that I do not discriminate against psychology.

Despite the extravagant generality into which I am forced by a discussion such as this, I am, by nature and scholarly practice, a particularist. But there is no way of addressing the import of psychology's first century, within a single article, particularistically. My only recourse in the remainder of this article is to move even further away from the surface details of psychological history. I wish to discuss the human wellsprings of the ameaningful epistemopathy that I believe to be so evident in psychology. I propose to do this in artless and nontechnical terms that address humanity's predicament on this planet. I do not project anything so grandiose—indeed, in my belief insane—as the determination of the *range* of the knowable. Rather, I am groping toward certain constraints inherent in the human situation which would have to condition the form and texture of any knowledge that reflexively bears on human beings as subjects. Perhaps my groping stems more from hesitation or embarrassment than from the difficulty of discerning answers. For I am discussing matters within the ken of every human being but which are disquieting to contemplate or address. Indeed, they are matters in respect to which the history of disciplinary inquiry has to some extent been an evasion. It might almost be said that we are increasingly walled off from the matters I have in mind by the overconfident and often spurious knowledge claims disgorged upon the race by cer-

tain of the formal disciplines. It is fitting that so arch an introduction point toward a rather odd title. I turn, then, to a consideration of "The Antinomies of Pure Reason and the Antinomies of Impure Living."

The Antinomies of Pure Reason and the Antinomies of Impure Living

Some years ago, while visiting a small liberal arts college, I was asked to have lunch with the resident philosophers. In the formal discussion session that followed the meal, my first questioner was a young faculty member. His question was delivered in a tone that suggested an expectation of rapid—and final—edification. It was, "Dr. Koch, what is your solution to the mind-body problem?" I think I mumbled something to the effect that despite my Hungarian aura of omniscience, my mind was still open on the issue, and that though I considered it an important and meaningful one, I suspected it was undecidable in principle.

Later, it occurred to me that had the question been put to me some 30 years earlier, I would certainly have been able to untuck from my head a finalistic and confident response. I would have said that *because* the question was asked in ontological form (i.e., in what Carnap would then have called "the material mode of speech"), it was undecidable in principle and therefore meaningless. However, if the *intent* of this pseudoquestion could be extricated from its ontological housing and translated into "the formal mode of speech," then it would become the utterly manageable, and therefore meaningful, issue of the relations between the "language systems" of psychology and physiology. Of course, part of me—even then—was surely apprised that both of these languages were woefully asystematic, mixed, and programmatic and, moreover, that each of the languages was not a single language but rather a congeries of languages, each member of which was shared in the typical instance by one person. But that particular part of me did not speak to the rest of myself.

Nor did Immanuel Kant speak to me in an especially persuasive way in those days. In the course of his majestic construction of the critical philosophy, he had perceived that humankind is boxed in a curious way. He had discerned that there is a class of questions which human reason must necessarily confront but which are rationally undecidable. These, as every schoolchild knows, are the

antinomies of pure reason—issues such that a thesis and its contradictory antithesis can both be proved. The particular antinomies Kant considers (four in number) bear, in the usefully brief words of one commentator (Weldon, 1958, p. 81), on "the infinite extent and divisibility of space and time and also the existence of God and the freedom of the will." Post-Kantian sophisticates are fond of noting that the proofs are not formally unassailable, but the impeccability of the specific proofs has nothing to do with Kant's more general insight, namely, that there is a class of questions which are intensely meaningful to all human beings—questions over which many experience great anguish—which, nevertheless, "transcend the competence of human reason." They are meaningful but rationally undecidable in principle.

I should like to suggest that the class of such undecidable yet meaningful propositions is far broader than the four antinomies that Kant thought it necessary to develop in pursuit of his systematic objective—which, in the immediate context of the antinomies, was to demonstrate the inadequacy of *dogmatic* metaphysics and theology. Moreover, if metaphorical extension of the notion be permitted, it rapidly becomes evident that a very broad range of human concerns, and even processes, exhibit, as it were, an "antinominal texture." I should like to identify certain consequences of this widespread "antinomality" for human knowledge and also for some characteristics of psychological inquiry in this century.

First, I shall call upon Bertrand Russell as witness. The quotation from him may seem a bit long, but will repay your attention in better coin than I can mint. In one of his more inspiring moments, he gave the following definition of philosophy:

Philosophy . . . is something intermediate between theology and science. Like theology, it consists of speculations on matters as to which definite knowledge has, so far, been unascertainable; but like science, it appeals to human reason rather than to authority. . . . *Almost all the questions of most interest to speculative minds are such as science cannot answer*, and the confident answers of theologians no longer seem so convincing as they did in former centuries. Is the world divided into mind and matter, and, if so, what is mind and what is matter? Is mind subject to matter, or is it possessed of independent powers? Has the universe any unity or purpose? Is it evolving towards some goal? Are there really laws of nature, or do we believe in them only because of our innate love of order? Is man what he seems to the astronomer, a tiny lump of impure carbon and water impotently crawling on a small and unimportant planet? Or is he what he appears to Hamlet? Is he perhaps both at once? Is there a way of living that is noble and another

that is base, or are all ways of living merely futile? If there is a way of living that is noble, in what does it consist, and how shall we achieve it? Must the good be eternal in order to deserve to be valued, or is it worth seeking even if the universe is inexorably moving towards death? . . . To such questions no answer can be found in the laboratory. . . . The studying of these questions, if not the answering of them, is the business of philosophy.

Why, then, you may ask, waste time on such insoluble problems? To this one may answer as a historian, or as *an individual facing the terror of cosmic loneliness*.

We will skip the historian's answer and continue with Russell's "more personal" answer:

Science tells us what we can know, but what we can know is little, and if we forget how much we cannot know we become insensitive to many things of very great importance. . . . Uncertainty, in the presence of vivid hopes and fears, is painful, but must be endured if we wish to live without the support of comforting fairy tales. *It is not good either to forget the questions that philosophy asks, or to persuade ourselves that we have found indubitable answers to them. To teach how to live without certainty, and yet without being paralyzed by hesitation, is perhaps the chief thing that philosophy, in our age, can still do for those who study it.* (Russell, 1945, pp. xiii-xiv, italics added)

I invite you, in passing, to contrast these attitudes with the following statement by Schlick in the initial paper of the first issue of *Erkenntnis* (1930-1931), the international journal of the Vienna Circle:

I am convinced that we are in the middle of an altogether final turn in philosophy. I am justified, on good grounds, in regarding the sterile conflict of systems as settled. Our time, so I claim, possesses already the methods by which any conflict of this kind is rendered superfluous; what matters is only to apply these methods resolutely. (translated and quoted in Frank, 1950, p. 41)

Schlick's statement is far more characteristic of the dominant tone of philosophy in this century than is Russell's.

It can be seen from Russell's illustrations of "unanswerable" yet, in his view, meaningful and even pressing problems that they include equivalents of Kant's four antinomies but project a considerably broader class. But, if we consider the class of undecidable yet meaningful problems as manifested in the daily preoccupations and concerns of human beings, I think we will all see what we already agonizingly know: that the class is so large as to be nondenumerable in principle. For each of us, of course, there are homely analogues to Kant's four problems and to others cited by Russell; we may not sense them with the finesse of a philosopher, but we certainly feel them in the pit of our stomachs, starting in childhood! And there are

others over which we sweat and quake on a day-to-day, or perhaps minute-to-minute, basis.

It does not require an elaborate phenomenological method, but merely honesty, to perceive that very many of the questions—large or small, existential or actional, intellectual or practical—which agitate human beings are indeed meaningful (often intensely so) but undecidable. Moreover, a large fraction of the events, problems, concerns, ruminations, calculations, regrets, evaluations, assessments, projections, and anticipations that populate our existence, whether fleetingly or over a span equivalent to one's biography, are also characterized by something very much like an antinomial structure. I do not mean "antinomial" in the formal logical sense, of course. What I do mean is that all such moments or units of psychological activity, however configured, involve disjunctive oppositions of meanings, the propositional equivalents of which are not ultimately, or strictly, or even stably decidable. I think I am noting something other than the mere circumstance that decision and action are largely optative or largely determined by "extra-rational factors," or that problem solving, and more generally, the movement of cognition, is probabilistic. I *am* comprehending those things in what I say, but I am trying to convey that the residue of mootness, ambiguity, mystery, is appallingly large. Perhaps the only way to convey what I have in mind is through the cumulative impact of varied examples. These I cannot state in orderly echelons, for the "antinomies of impure living" are not deployed by philosophers. Consider, however, the following array:

Let us commence by noting that the child who experiences night sweats over a dawning sense of the word *eternity* is by way of discovering the Kantian antinomies, but let us leave aside further discussion of those overarching issues concerning origin, destiny, and purpose, which are torturingly with us throughout our sentient lives.

Consider now the enormous ranges of inherent ambiguity in the human condition suggested by, say, the unrecoverability of particular motives and, indeed, the principled impossibility of achieving a full motivational analysis of any action; the ubiquitous problems of self-sincerity, altruism versus egocentrism, guilt versus innocence, sinful versus good deeds, personal responsibility versus shaping or control from without; of whether, in particular instances or in general, one is loved or hated, liked or disliked, or perhaps regarded indifferently; whether one is beautiful or ugly or somewhere in between. Moreover, is one beautiful

by virtue of physiognomy or personality or both? When is one lying; when isn't one? When is one being lied to; when not? When is one being treated as an object; when as a person? Is it more desirable to project value, ideal, end state X or Y, or Z or . . . ? Is one (whether in general or in respect to particular endeavors) a success or a failure? If a failure, is it by virtue of having successfully sought failure, or by ineptitude, the fault of others, or just bad luck?

"Do I understand this equation, this line of poetry or prose, this view, theory, subject, person, event? Really understand, or merely think that I do?" "Do I really like X (e.g., any object of taste) or only think that I do because I should? As a matter of fact, should I, really?" "Should I wear X or Y today or are they both inappropriate?" "Am I showing favoritism toward one of my children, or is that child the one who needs special attention?"

"Can I sustain this performance? Am I doing brilliantly or did I lose it somewhere? Does the audience resonate to me or does it loathe me? If the latter, does it loathe my person, my ideas, or merely my words?"

"Sometimes I am convinced that they are about to fire me, but five minutes later the same evidence seems to mean that I am on the verge of being promoted."

The examples thus far have been drawn in a rather bold and structural way. Let me now enter the microstructure of a characteristic human rumination sequence and attempt to give something like the formal pattern of the excogitations that we develop around the small issues which preempt so much of our daily round:

"A said that B said . . . , but B couldn't have said such a thing. Or could he? I don't think A to be a liar, but I could be wrong. Is A trying to get closer to me by upsetting me over B's inconstancy, or is he really being protective? Or (on the other hand) is B trying to send me a message through A which B is afraid to deliver? But B has never been that kind of person. However, C might have said something to B that changed the way he feels, or maybe B has begun to change because of his relationship with D or that nasty pair, E and F. On the other hand, it's more likely that D is exerting a stabilizing influence on B, that is, on the assumption that D has not been subverted by E and F. But why should E and F, however coarse and vulgar, be so strongly set on changing B, or reaching B through D, when it must be clear to them that there is nothing B can do for them? On

the other hand, maybe they don't know that B has given up his connection with G, whom B could indeed have influenced in their favor. But I am not even sure that E and F knew that B ever did have a connection with G. Anyway, I'm not sure that E and F know B at all well or have any basis for wishing to influence him. Now, D, on the other hand, could be changing toward B, not at all because of the influence of E and F but because"

These examples are, I think, sufficient to make palpable the awesome dispersion of the antinomial, the problematic, the ambiguous, in human experience. It is no great leap to add that the attendant fear, trembling, and uncertainty are comparably awesome in scope and can, for most of us, at times, achieve an intensity that tests the margins of our sanity. It is no part of our talent to live at utter peace with these pressures—though there are graceful philosophies of faith that can be mitigative and that need not be presumed to be any the less warrantable than, say, the ungraceful philosophies of faith associated with the metaphysics of scientism. And there are other mitigative correlates of antinomiality, such as the fascination and intrinsic beauty of the experience of awe and mystery in relation to the universe. But there is no denying that the antinomial texture, the uncertainty of our situation, *can* generate a vast skewing effect on cognition, which can create epistemopathy and sustain ameaning. The ultimate "meaning" of ameaning is indeed that it is a fear-driven species of cognitive constriction, a reduction of uncertainty by denial, by a form of phony certainty achieved by the covert annihilation of the problematic, the complex, and the subtle.

Antinomiality, in sum, is at the basis of the endemic human need for crawling into cozy conceptual boxes—any box, so long as it gives promise of relieving the pains of cognitive uncertainty or easing problematic tension. This poignant human need, at any cost, for a frame, an abacus, a system, map, or set of rules that can seem to offer the wisp of a hope for resolving uncertainty makes all of us vulnerable—in one degree or another—to the claims of simplistic, reductive, hypergeneral, or in other ways ontology-distorting frames, so long as they have the appearance of "systematicity." Moreover, having climbed into our conceptual box, on one adventitious basis or another, we are prepared to defend our happy domicile to the death—meaning, in the typical instance, *your* death. It is not that we don't want you to join us inside (we would be delighted to accommodate the whole

human race); it's just that we don't want you tampering with our box or suggesting—by your location in another one—that there are other places in which to live.

The saving grace of the race is the ability of individuals, occasionally, to climb out of such boxes and look around: to see around the edges of our “received” concepts, our technical constructions, our formal belief systems. When the drive toward easy cognitive assurance remains unchecked and unmitigated, it can lead to something very much like mass insanity.

One might think that all I am doing is addressing the facts of human conflict, which are acknowledged in some form by all psychological theories. If I am, I am addressing them in a special sense and from a special incidence: I am talking about the kind of *cognitive* conflict that paralyzes in the sense that I *know* that I *cannot know*, but somehow am compelled desperately to strive to know. It is a mode or aspect of conflict that is not addressed in theories couched in a language of conflicting drives or needs, conflicting systems of personality, or competing responses.

What I mean by “antinomality” is the kind of conflict generated by a proposition that suggests its contradictory (or the domain of its contraries) as strongly as its own affirmation, at the moment of affirmation. Antinomality, in the sense in which I am employing this metaphor, creates a penumbra of uncertainty around the edges of sentience, such that one can rarely be sure who or what one really is, or indeed what (or which of a class of alternates) one is perceiving, cognizing, or doing. Even when the organization of our mental field seems clear and unambiguous, there is still a faint halo of mystery, but there is a vast gray area of occasions on which the organization “wants” to shift into its opposite or some range of alternates, or on which the field is shadowy or indistinct; and finally, there is that black area of interludes in which something like utter “problematicity,” chaos, strangeness, terror, and thus depersonalization supervenes. I am, if you will, talking of something like *metaphysical* conflict and saying that we are all born metaphysicians who are destined mainly to fail when we ply our craft. And I am saying that “conflict” of this sort is far more pervasive in our lives than we tend ordinarily to have the courage to admit, either to ourselves or to others.

When dwelling on the pervasiveness of antinomality, determinate and valid knowledge soon begins to seem a miracle—but no more so than our antinomial presence here on Earth is a miracle.

Einstein once wrote that “the most incomprehensible thing in the world is that the world is comprehensible.”

I think there are contexts of knowing in which the structures, and relations among disparate structures, in our mental field are defined so perspicuously, sharply, compellingly, as to make “verification” seem superfluous. And indeed, as most great discoverers have reported, nature often says “yes” to such visions when meticulously tested and sometimes continues to say yes over an unanticipated range of their consequences. Taking such occurrences as a prototype case of meaningful thinking (as I have previously tried to define it), one should note that approximations of this type of occurrence are within the range of all of us, both in daily living and in moments of “formal” or technical ratiocination. I think that much needs to be said about the human being’s capacity for discerning islands of order within the antinomial ocean in which we swim and (in the arts) for creating nobly ordered structures that can transcend or illuminate antinomality. Much needs to be said about such matters, but not in an article of finite length!

This much, however, has been implicit in all I have said: Meaningful thinking, as I have sought to define it, is precisely what cannot supervene when we lack the courage to live with our antinomial uncertainties; it cannot be invited by denial of our situation, but only by a kind of fascinated and loving, if ironic, acceptance.

It should now be noted that the 20th century has been far wiser than Kant—and, in dominant tendency, far wiser than the Russell who spoke in the quotation I cited. (There were many Russells over his long career; he, too, was far wiser over long stretches of it!) A conspicuous strand in the philosophy, especially the scientific philosophy, of the 20th century has been the view that all questions having presumptive cognitive content but which can be shown to be undecidable in principle are meaningless. They are, in other words, pseudoquestions—linguistically illegitimate question forms. Rational hygiene, therefore, dictates that the human race be freed of such illusory preoccupations. This is the view that received its sharpest (and most incantatory) expression in the various forms of the “verifiability theory of meaning” advanced by logical positivism, but is prominent as well in pragmatism, operationism, and all *consistent* positivistic and empiricist philosophies. Though not a dominant view in earlier centuries, it was clearly adumbrated in Hume and received

something close to its canonical formulation (though not application) in Comte.

In the philosophy of *this* century, unqualified forms of the verifiability theory of meaning began to wane along with the waning hegemony of logical positivism, but some would argue that its imprint was visible well into the 1960s in much of analytic philosophy. This smug and restrictive view of meaning is still, however, implicit in the thinking of most natural and social scientists, while in scientific psychology it remains a devout and irrefragable article of faith.

I should like to suggest that such a view of the range of the meaningful has had, and must have, crippling entailments for the character of the psychological enterprise. If empirical decidability (which, incidentally, itself cannot be *decided in advance*) is the criterion for bounding the meaningful, one then has a perfect rationale for selecting for study only domains that seem to give access to the generation of stable research findings. If any domain seems refractory to conquest by the narrow range of methods (usually borrowed from the natural sciences and mutilated in the process) held to be sacred by the work force, then, obviously, *meaningful* questions cannot be asked concerning the domain, and that domain is expendable. If one cannot achieve stable findings when the dependent variable is of "subjective" cast, then eliminate such data and concentrate on behavior! Indeed, why presume that mental events or processes exist? Why study the *subject* at all; why not study something else?

Such a view of the meaningful, then, dooms psychology to be an empty role-playing pursuit which, in the course of enacting a misconstrued imitation of the forms of science, gives free rein to every epistemopathic potentiality of the "inquiring" mind. Buttressed by such a view and by the anemic theory of science in which it is housed, psychology has felt justified in fixing upon totally fictional domains as its objects of study (i.e., on arbitrary and schematic models of the person, or even the organism, rather than on the actual entities, say, a *schematized* rat, or dog, or sophomore; or, perhaps, a telephone exchange, a sewage system, a servomechanism, a computer). A related strategy, of course, has been to select a dependent variable category (whether phrased in terms of "behavior" or in some other way) bearing a trivial relation to human—or even sophomore or dog—reality. Some games—even within scholarship—are relatively innocent; the game at issue poses a

severe threat to humankind because it links the authority of science with an imagery of the human condition that can only trivialize and obfuscate its beneficiaries.

Now psychology has presumed, throughout much of the century, that its task is the *prediction* and *control* of behavior (or, less frequently, some other member of a limited class of dependent variable categories, as, for instance, action, experience, cognitive change, attitude change, etc.). But one can well ask what such an objective might *mean* against the background of the antinomial and ambiguous human events of the sort I have sought to illustrate. Does "prediction" mean that we expect to derive, from some nomological net, the behavioral, experiential, or judgmental *outcome* of such episodes in the quasi logic of antinomiality as I have tried to analyze? Does it mean the capacity to generate a lawful technology that will give individuals the tools to resolve their antinomial "problems" with finality and precision? Does it mean a set of normative rules or maxims that will enable individuals better to resolve their disjunctive quandaries?

Or does prediction mean the erection of a scientific myth which uses the iconology of science to reassure people that their lives are not that complex, their situations not that ambiguous—and that, therefore, if they are able to understand the profound fact that they really are redundant concretions of dry hardware or wet software (or wet hardware or dry software), all they need do is happily percolate in a way determined by the laws of the particular kind of concretion that the lawgiver prefers.

It is incredible to contemplate that during a century dominated by the tidy imagery of prediction and control of human and social events, the perverse cognitive pathology housed in such imagery has not been rooted out. In fact, such notions have rarely been seen as problematic and still more rarely subjected even to perfunctory modes of analysis.

Coda: The First Century?

And now for some easy questions. We are celebrating the first 100 years of an independent, scientific psychology! It is appropriate to ask, (a) Have we been and are we now *independent* in the sense intended by those who celebrate the adjective, namely, "independent" of *philosophy*? (b) Is psychology a science?

We are of course independent in an institutional sense. We have our own university departments, laboratories, journals, professional organizations, and so forth. Are we *conceptually* independent of philosophy? In a word, *no*. That opinion will come as no surprise by this point in the exposition. Most of our ideas have come from the 26 centuries of philosophy preceding the birth of our partition myth and, of course, to some extent, from physics, mathematics, various biological sciences, medicine, the social studies, the nonphilosophical humanities, and yes, millennia of ordinary human experience.

Robinson (1976) has argued that 20th century psychology, even in its experimental reaches, is a "footnote to the 19th century" and is appraised, of course, of some large continuities between the 19th and not a few earlier centuries. Despite the curious size of the footnote relative to the text, I think him essentially correct. I presume he would agree that a footnote need not be merely ampliative, but can contain refinements here and there and even novelty. For even I believe that there have been some islands of penetrating thinking and research in this century.

Though many of us have generated a vociferous rhetoric of independence in this century (especially those of behaviorist persuasion), one and all have of necessity presupposed strong, if garbled, philosophical commitments in the conduct of their work. Psychology is necessarily the most philosophy-sensitive discipline in the entire gamut of disciplines that claim empirical status. We cannot discriminate a so-called variable, pose a research question, choose or invent a method, project a theory, stipulate a psychotechnology, without making strong presumptions of philosophical cast about the nature of our human subject matter—presumptions that can be ordered to age-old contexts of philosophical discussion. Even our nomenclature for the basic fields of specialized research within psychology (e.g., sensation, perception, cognition, memory, motivation, emotion, etc.) has its origin in philosophy. Let us note, also, that even during the period when the claim to independence was most aggressively asserted (the neobehavioristically dominated Age of Theory that I have already mentioned), we were basing, and explicitly so, our "official" epistemology on logical positivism and cognate formulations within the philosophy of science.

We should also bear in mind that there have been many psychologists in virtually every field throughout the century who have been explicit in their use of philosophical materials and in their awareness of philosophical origins. Within this subset fall virtually all of the 19th century "founders" (most of whom—including the newly rehabilitated version of Wundt's ghost—indeed continued to see philosophy as their *primary* vocation, even after the founding): the personalists, Gestalt and field theorists, phenomenological psychologists, transactionalists, and more recently, contextualists, pursuers of a motley plurality of Eastern philosophies, and so forth. And there have been seminal individuals, standing either alone or not easily assignable to broad movements, who have been explicit about their philosophical interests and dependencies. William James, John Dewey, Wilhelm Stern, William McDougall, Wolfgang Köhler, E. C. Tolman, Heinz Werner, Henry Murray, and James Gibson are names that rapidly spring to mind in this connection. I also seem to recall that half of this discussion is addressed to the Division of Philosophical Psychology, which I believe is a part—though a tenuous one—of the APA.

While on this topic, I should add that no clear line can be drawn between the concerns of philosophy and those of psychology, either historically or in the nature of the case. The ameaningful presumption that a clear line *must* be drawn has fostered much of the grotesquerie in modern psychology. I do not, however, wish to suggest that fuller and more explicit knowledge of our philosophical origins, and of the intertwinement of philosophical and psychological modes of analysis, will remove *all* of the blockages that have trivialized psychological thought in this century. For it is part of my position qua cognitive pathologist that one can find forms of epistemopathy in philosophy comparable to those I discern in psychology.

Despite the fact that this ancient tradition—which over history has been the font of every special field of scholarship—has produced many of the noblest achievements of the human mind, the philosophic impulse has at times proven extraordinarily vulnerable to the allures of a specious systematicity and comprehensiveness. For philosophy has also produced many of the kinds of conceptual boxes that promise cognitive reassurance too easily and too confidently. Some of these boxes—as in certain of the post-Kantian idealistic systems—are so expansive as to promote a kind of euphoric hyperventilation of the mind, while others—as in the

dominant positivistic philosophies of this century—are so constrictive as to promote a form of cognitive anoxia. There is also a quality of *style* in much philosophical writing that in my opinion puts both reader and writer at epistemopathic risk. This is the implicit assumption that the writer's formulation is *final*, even when the writer knows full well that its claims may be quashed (perhaps even by the writer) next week. This quality of “finalism” is certainly to be found among those *psychological* theorists who view their own work as preemptive, but is not quite so pervasively evident in psychological writing.

IS PSYCHOLOGY A SCIENCE?

I have been addressing this question for 40 years and, over the past 20, have been stable in my view that psychology is not a single or coherent discipline but rather a collectivity of studies of varied cast, some few of which may qualify as science, while most do not. I have written widely on this theme (e.g., Koch, 1969a, 1971, and especially 1976a), but must content myself here with a very brief statement of my position, sans the evidence and analysis on which it rests. You will be surprised, perhaps, to discover that my proposals are libertarian ones and not devoid of hope.

For some years I have argued that psychology has been misconceived, whether as a science or as any kind of coherent discipline devoted to the empirical study of human beings. That psychology *can* be an integral discipline is the 19th century myth that motivated its baptism as an independent science—a myth which can be shown to be exactly that, both by a priori and by empirico-historical considerations.

On an a priori basis, nothing so awesome as the total domain comprised by the functioning of all organisms (not to mention persons) could possibly be the subject matter of a coherent discipline. If *theoretical* integration be the objective, it should be considered that such a condition has never been attained by any large subdivision of inquiry—including physics. When the details of psychology's 100-year history are consulted, the patent tendency is toward theoretical and substantive fractionation (and increasing insularity among the “specialties”), not integration. As for the larger quasi-theoretical “paradigms” of psychology, history shows that the hard knowledge accrued in one generation typically disenfranchises the regnant analytical frameworks of the last.

My position suggests that the noncohesiveness of psychology finally be acknowledged by replacing it with some such locution as “the psychological studies.” The psychological studies, if they are really to address the historically constituted objectives of psychological thought, must range over an immense and disorderly spectrum of human activity and experience. If significant knowledge is the desideratum, problems must be approached with humility, methods must be contextual and flexible, and anticipations of synoptic breakthrough must be held in check. Moreover, the conceptual ordering devices, technical languages (“paradigms,” if you prefer), open to the various psychological studies are—like all human modes of cognitive organization—perspectival, sensibility dependent relative to the inquirer, and often non-commensurable. Such conceptual incommensurabilities often obtain not only between “contentually” different psychological studies but between perspectively different orderings of the “same” domain. Characteristically, psychological events—as I have implied throughout the discussion of antinomality—are multiply determined, ambiguous in their human meaning, polymorphous, contextually environed or embedded in complex and vaguely bounded ways, evanescent and labile in the extreme. This entails some obvious constraints upon the task of the inquirer and limits upon the knowledge that can be unearthed. Different theorists will—relative to their different analytical purposes, predictive or practical aims, perceptual sensitivities, metaphor-forming capacities, preexisting discrimination repertoires—make asystematically different perceptual cuts upon the same domain. They will identify “variables” of markedly different grain and meaning contour, selected and linked on different principles of grouping. The cuts, variables, concepts, will in all likelihood establish different universes of discourse, even if loose ones.

Corollary to such considerations, it should be emphasized that paradigms, theories, models (or whatever one's label for conceptual ordering devices), can never prove preemptive or preclusive of alternate organizations. This is so for any field of inquiry but conspicuously so in relation to the psychological and social studies. The presumption on the part of their promulgators that the gappy, sensibility-dependent, and often arbitrary paradigms of psychology *do* encapsulate preemptive truths is no mere cognitive blunder. Nor can it be written off as an innocuous excess of enthusiasm.

It raises a grave moral issue reflective of a widespread moral bankruptcy within psychology. In the psychological studies, the attribution to any paradigm of a preemptive finality has the force of telling human beings precisely what they are, of fixing their essence, defining their ultimate worth, potential, meaning; of cauterizing away that quality of ambiguity, mystery, search, that makes progress through a biography an adventure. Freud's tendency to view dissidents and critics in *sympomatic* terms—and to resolve disagreement by excommunication—is no circumscribed failing, but indeed renders problematic the character of his entire effort, not only morally but cognitively. One is tempted to laugh off the ludicrous prescriptionism of self-anointed visionaries like Watson, Skinner, and even certain infinitely confident prophets of the theory of finite automata, but their actual impact on history is no laughing matter.

Because of the immense range of the psychological studies, different areas of study will not only require different (and contextually apposite) methods but will bear affinities to different members of the broad groupings of inquiry as historically conceived. Fields like sensory and biological psychology may certainly be regarded as solidly within the family of the biological and, in some reaches, natural sciences. But psychologists must finally accept the circumstance that extensive and important sectors of psychological study require modes of inquiry rather more like those of the humanities than the sciences. And among these I would include areas traditionally considered "fundamental"—like perception, cognition, motivation, and learning, as well as such more obviously rarefied fields as social psychology, psychopathology, personality, aesthetics, and the analysis of "creativity."

Conclusion

And so—ponderous scholar and unrelenting epistemopathtectomist though I be—I find I have written a sermon. But a moral analysis of the past, by inviting a change of heart, is a surer bridge to a tolerable future than any confident methodological manifesto. I have been inviting a psychology that might show the imprint of a capacity to accept the inevitable ambiguity and mystery of our situation.

The false hubris that has been our way of containing our existential anguish in a terrifying age has led us to prefer easy yet grandiose pseudo-knowledge to the hard and spare fruit that is knowledge. To admit intellectual finitude, and to accept with courage our antinomial condition, is to go a long way toward curing our characteristic epistemopathies. To attain such an attitude is to be free.

REFERENCE NOTE

1. Koch, S. *A meaning in the humanities*. Presidential address to Division 10 at the meeting of the American Psychological Association, Washington, D.C., September 1, 1969.

REFERENCES

- Bridgman, P. W. *The way things are*. Cambridge, Mass.: Harvard University Press, 1959.
- Frank, P. *Modern science and its philosophy*. Cambridge, Mass.: Harvard University Press, 1950.
- Koch, S. Clark L. Hull. In W. K. Estes et al., *Modern learning theory*. New York: Appleton-Century-Crofts, 1954.
- Koch, S. (Ed.). *Psychology: A study of a science* (Vols. 1-6). New York: McGraw-Hill, 1959, 1962, 1963.
- Koch, S. Behaviourism. In *Encyclopaedia Britannica* (Vol. 3). Chicago: Encyclopaedia Britannica, 1961. (a)
- Koch, S. Psychological science versus the science-humanism antinomy: Intimations of a significant science of man. *American Psychologist*, 1961, 16, 629-639. (b)
- Koch, S. Psychology and emerging conceptions of knowledge as unitary. In T. W. Wann (Ed.), *Behaviorism and phenomenology: Contrasting bases for modern psychology*. Chicago: University of Chicago Press, 1964.
- Koch, S. The allures of a meaning in modern psychology: An inquiry into the rift between psychology and the humanities. In R. Farson (Ed.), *Science and human affairs*. Palo Alto, Calif.: Science & Behavior Books, 1965.
- Koch, S. Psychology cannot be a coherent science. *Psychology Today*, March 1969, pp. 14; 64; 66-68. (a)
- Koch, S. Value properties: Their significance for psychology, axiology, and science. In M. Grene (Ed.), *The anatomy of knowledge*. London: Routledge & Kegan Paul, 1969. (b)
- Koch, S. Reflections on the state of psychology. *Social Research*, 1971, 38, 669-709.
- Koch, S. Theory and experiment in psychology. *Social Research*, 1973, 40, 691-707.
- Koch, S. Language communities, search cells, and the psychological studies. In W. J. Arnold (Ed.), *Nebraska Symposium on Motivation*, 1975 (Vol. 23). Lincoln: University of Nebraska Press, 1976. (a)
- Koch, S. More verbal behavior from Dr. Skinner (Review of *About behaviorism* by B. F. Skinner). *Contemporary Psychology*, 1976, 21, 453-457. (b)
- Robinson, D. N. *An intellectual history of psychology*. New York: Macmillan, 1976.
- Russell, B. *A history of Western philosophy*. New York: Simon & Schuster, 1945.
- Weldon, T. D. *Kant's Critique of pure reason*. Oxford, England: Clarendon Press, 1958.