Chapter 13

Epilegomenon

§ 1. Looking Back

I use the word epilegomenon to mean looking back at what we have covered and looking ahead at what implications this material holds for future developments. The words epilogue, epitome, and summary do not adequately convey this dual connotation of the look back and the look ahead, and that is why the word epilegomenon is introduced. My purpose in writing this book has been to lay out the fundamental principles, definitions, explanations, and – above all – metaphysical foundations for a new science of mental physics. My vision for this new science is: (1) that it is to be a mathematical science as much as an empirical one; (2) that it be a science of the phenomenon of mind; and (3) that it be a quantitative as well as qualitative science able to be made as exacting as the sciences of physics, biology, and chemistry.

When Darwin published his *Origin of Species* he was putting forward what can and should properly be called the *first* word in the modern science of evolution. That he saw this work as the first word and not the last word for this new science comes through with abundant clarity in Darwin's own writings. This, too, is how I view this book. The book is a starting point of a nascent science for which there still remains a very great deal of work to be done. No one familiar with the history of physics would say that in the three hundred years between Newton and Einstein there were no fundamental discoveries made, no technically precise new ideas introduced, or no significant theoretical and experimental advances made. Quite the opposite is true, and so it will be and can be for mental physics in the years ahead.

Science can be described as the pursuit by systematic inquiry of truths about our own Nature, about the Nature of the environment in which we live our lives, and about *practically* improving living conditions for all us, for humankind. At its roots, it is not about papers, not about patents, not about honors, and most of all not about *us*, its practitioners. For science to be fecund, it must also be practical. Theory without reduction to practice does nothing to realize that which is the proper pursuit of science, and this means theory without practice is to be called *useless*. Regarding the success of this pursuit, two comments made by two men living two hundred years apart are relevant for our look back.

Historian Thomas Kuhn wrote in *The Structure of Scientific Revolutions*,

> Effective research scarcely begins before a scientific community thinks it has acquired firm answers to questions like the following: What are the fundamental entities of which the universe is composed? How do these interact with each other and with the senses? What questions may legitimately be asked about such entities and what techniques

> employed in seeking solutions?

The field of human inquiry into precisely these kinds of questions is called metaphysics. But the historical record of metaphysics in science has not been a good one and this can be laid at the doorstep of the natural human prejudice to construct systems of metaphysics centered up on ontology. All thorough doctrines of ontology-centered metaphysics have and must finally come to a point where the only way to anchor their principles is to invoke divine agency. Plato did this; Newton did this; Leibniz did this; Hegel did this. The very instant God is introduced into metaphysics, that metaphysics is exposed as unscientific because science can make no practical use of either God or miracles and still remain science. Metaphysics must itself *be* a science or science can have no use for it. Making the Copernican revolution and placing epistemology at the center of our metaphysics accomplishes this and does so without fear of having to eventually introduce divine agency; from the theory itself comes a *theorem* telling us it is *impossible* to introduce any element of divinity into it, that any attempt to do so is transcendent and utterly without objective validity of any sort whatsoever.

The second relevant comment was made two-and-a-half centuries ago by a man many consider to be one of the fathers, perhaps even *the* father, of modern chemistry. Antoine Lavoisier wrote in *Elements of Chemistry*,

> The impossibility of separating the nomenclature of a science from the science itself is owing to this, that every branch of physical science must consist of three things: the series of facts which are the objects of the science; the ideas which represent these facts; and the words by which these ideas are expressed. Like three impressions of the same seal, the word ought to produce the idea, and the idea to be a picture of the fact. And, as ideas are preserved and communicated by means of words, it necessarily follows that we cannot improve the language of any science without at the same time improving the science itself; neither can we, on the other hand, improve a science without improving the language or the nomenclature which belongs to it. However certain the facts of any science may be and however just the ideas we may have formed of these facts, we can only communicate false impressions to others while we want words by which these may be properly expressed.

These words were true when Lavoisier wrote them; they are true today. But as the ideas we use in science get closer and closer to that point where we are accustomed to calling them primitive, it does not at all do to rely upon the empty appeal to the so-called self-evidence of the idea, as Newton often did, or to a definition by fiat that is really nothing more than a thinly cloaked ontological prejudice, as often happens today. If an idea really is primitive, it can have none but a practical *Realdefinition*, and this is the case with all the primitive terms in Critical metaphysics. This even extends into the chilly basement where the words *reality* and *to-be-real* are kept in storage by scientists. Practical *Realdefinition* cements speculation to a foundation in experience, and for science this connection is propaedeutic to fecundity in the practice of science. This is why

such a considerable fraction of this book and the appended glossary of technical terms has been devoted to definitions making ideas *usable in their applications*.

One of the central findings of the theory is that all objective understanding ultimately must make its reference back to representation in sensibility. Consider in this light the charmingly appropriate utterance one often hears when a person comes to understand something: "That makes sense!" Complete reliance upon words-only discourse, the usual prejudice of philosophers over the ages, handicaps the conveying of knowledge. That is why in this book so many figures and illustrations are used. They are meant to be looked at, studied, reflected upon. They are part of the tactic of "making things make sense." The same is true for my occasional uses of metaphor and simile. Metaphor and simile are the shadows cast by inferences of induction and inferences of analogy. They are used to gain more benefit from the synthesis in continuity of the aesthetic Idea.

The primary method by which I was able to make this book so much more brief than its parent work, *The Critical Philosophy and the Phenomenon of Mind*, was my decision to devote almost no space to showing why the most common ontology-centered prejudices prevalent today must be discarded and a new foundation from Critique be laid to take their place. I did this not entirely without some misgivings; the hold ontology-centered pseudo-metaphysics has on our maxims of thinking, on our unquestioned beliefs, and on ideas we take for granted that really cannot be taken for granted is strong. This, I think, presents the greatest challenge for you, the reader, in comprehending this work. I rely upon the public and free availability of the older tome to supply readers who wish to do so with a tool for razing to the ground the old, failed prejudices when the need arises. Much the same can be said for the very detailed discussions there attending deduction of the principles of mental physics (as opposed to their mere presentation – the latter being the object of this book).

The Organized Being is born in possession of no copy-of-reality mechanism. Mind-brain is not some sort of camera recording impressions of the external world. No such mechanism is required and the supposition that we have one leads to consequences that can be tested, have been tested, and have been refuted. Our cognitions do not conform to objects that impress themselves on us. Instead, Objects conform to our power of cognition. Ultimately, this means our knowledge of Objects is produced by the power of mind in producing representations, and so what we can and do know about Objects is what we ourselves represent in them. This is Kant's *Copernican hypothesis* and it brings to an end the speculative excesses of empiricism without loss of those real contributions to science empiricism was able to achieve through naturalism.

The Organized Being is born with no innate objective knowledge of objects *as* objects, such as the rationalists once presupposed human beings to possess. The presupposition of our possessing

innate objective knowledge likewise leads to specific testable consequences, these consequences have been tested, and the rationalist hypothesis has been thereby refuted. No innate knowledge of objects is necessary for providing a foundation for human experience.

This does not mean the human being possesses no *a priori* knowledge of any sort whatsoever. The apriority required for human experience need not be a knowledge of objects but merely of particular capacities for knowing how to make representations and for knowing how to structure and organize these representations in such a way as to produce that unity of mind by which all of us are able to regard ourselves as one *whole and individual* person. Taken in the wide sense, knowledge is any conscious representation *or capacity for making* such a representation by or through which meanings are determined. Representation is the primitive activity of the phenomenon of mind and *a* representation is what is meant by the description "something in me that refers to something else." Representation is primitive; the only way to explain representation is by making a representation. As the fundamental primitive of the theory of mind, *Realdefinition* of representation can only be a *practical* definition made in terms of what representation does.

The empirical basis for representation theory is the phenomenon of human experience. Experience is the structured system of empirical knowledge understood through cognitions. The Critical theory proceeds with its deductions and developments by means of the uncompromising standard that *all* Critical principles and mind-objects meet the requirement of *being necessary for the possibility of experience*. This is what the word "transcendental" means. Experience is the structured system of all one's empirical knowledge. Understanding human experience in all its manifold diversity has always been the goal and purpose, whether explicit or implicit, in all of humankind's investments of efforts and resources put into every science and philosophy from their very beginnings in human history. No theorizing or speculation incapable of being connected with the possibility of real human experience can ever be scientific. Nothing in science can ever be founded upon the feeble appeal, "It *could* have happened this way" nor upon the excuse that we cannot presently dream up any other way to explain something. Were either of these legitimate arguments in science we could dispense with science altogether by appeal to the will of God and a general reliance upon craftsmanship.

Understanding and meaning spring from synthesis. The Critical theory's doctrine of method recognizes this and further recognizes that all acts of synthesis are precisely three-fold with two terms to be united by synthesis and a third term resulting from the synthesis. From this and from the character of human experience we come to the doctrine of Standpoints. In all knowledge is found: first, a theoretical Standpoint from which comes an understanding of ontology; second, a judicial Standpoint from which comes an understanding of understanding and its possibility; and,

third, a practical Standpoint from which comes the understanding of meaning in terms of real activity and the actual occurrences providing the aliments of experience.

From our epistemological center we come to understand Critical ontology. Here a fecund methodology is obtained through recognition that ontology deals with four fundamental kinds of Objects. First, there are the Objects of non-mental phenomena, and this is the province of the metaphysics proper of external objects we call Rational Physics. Second, there are Objects of mental phenomena, and this is the province of the metaphysics proper of Rational Psychology. Third, there is the unity of all objects of both types in a unified system-of-the-whole we call Nature. This is the province of the metaphysics proper of Rational Cosmology. Finally, there is the metaphysical *nexus* for the thorough-going coherence of all empirical knowledge as a system-of-what-is-real. The Object and substratum of this context is what we call Reality in general and this is the province of that wing of metaphysics proper Kant chose to call Rational Theology, despite the fact that this branch of Critical metaphysics has nothing to do with religion or with god-theory.[1] These four titles of Critical metaphysics proper give us the four reflective perspectives of understanding and judgmentation, each reflective perspective being a necessary part of the entirety of a system of knowledge in general.

It is from these basics that Kantian epistemology and the theory of mental physics proceeds to put together a general theory and architectonic for the phenomenon of mind. "Architectonic" means the scientific and systematic structuring of knowledge, and the fruit of this labor can be called the architecture of mind without losing sight of the fundamental fact that the classical mind-body division is naught but a mere logical division, a convenient tactic for understanding. The mind-body division only becomes a problem for science (or philosophy) when we either follow Descartes and the Divines by insisting on reifying this division into separate things, the meat and the soul, or we follow the materialists by insisting dead matter is the foundation of all things, including living beings. It should surprise no one that the materialists have not, cannot, and never will find a satisfactory answer to the question, "What is life?" If all things are

[1] In Kant's day, Rational Theology was the name given by rationalists of the Leibniz-Wolff school to attempts by philosophers to apply philosophy to religion and an understanding of God. Kant's Rational Theology was a refutation of their efforts, a proof of the futility of all such efforts to come to any actual knowledge whatsoever, and a refocusing of metaphysics away from speculations about divinity and to a focus on the real explanation of what is *practically* meant when we use the words "real" and "reality." For the scientist there is something uncomfortable and even objectionable to employing the name Rational Theology for the metaphysics of Reality. But is this really *more* objectionable than, say, basing the fundamental *laws* of physics on a concept of *lawlessness*? which is what every speculative recourse to a *reified* and transcendent *thing* called "probability" does when we take this concept out of its *purely* mathematical context and make it be a causal force in facet A. A "random event" is no less miraculous than the parting of the Red Sea and science should find recourse to explanation by means of a god of probability no less objectionable than recourse to any other sort of god.

corpuscles and interactions (bosons and fermions), "life" is nowhere to be found and we are left with no other *scientific* possibility than merely a dead universe comprised of dead matter. Why should any scientist continue allegiance to a paradigm leading inevitably to such a patently absurd consequence when another *scientific* recourse is available? The only answer to this is the feeble hope that somehow in the end it will all work out, and this is faith, not science.

And still we must recognize that, as much as is accomplished by the Critical system and the principles of mental physics, there is even more yet to be accomplished. Let us now look ahead.

§ 2. Looking Ahead

Thirty years ago I would not have given a hearing to the theory I now find myself writing about and proposing. My youthful attitude was one of scientific materialism with a strong seasoning of American pragmatism. I trusted in the prevailing paradigm and in the sufficiency of my training in science, technology, engineering and mathematics. "Mind" was to me nothing other than "what brain did" and I had confidence – because I had been taught to have confidence – that understanding brain would automatically mean understanding mind as well. Although there were facets I found disquieting and uncomfortable in the scientific doctrine I had been taught – particles that were also waves; things such as mass and charge that resisted all ontological interpretation and admitted to no understanding but a mathematical definition; time that depended on matter and motion; space that both was and was not a thing – I trusted in my pragmatic attitude that so long as the theory worked *in practice* there was no need to chase these paradoxes into the fogbank of philosophy, which I saw as nothing but an idle pastime whose practitioners were adept at nothing but asking perplexing questions they could not answer, and who seemed to be more concerned with eradicating the footsteps of their predecessors than in making any positive accomplishment. I was not a friend to philosophy in those days and accounted it a less meritorious occupation than poetry, which at least had its emotional charms to offer up.

I am a stubborn man. Only the experience of year after year, decade after decade, of research endeavors leading, one after another, to dry wells in my quest to understand brain-mind convinced me that the doctrine I was following actually did *not* work in practice and that it never would. It was only then, almost a decade and a half ago, that I reluctantly decided – with pronounced skepticism – to try another direction. That direction is the one I have set down in these pages and have given the name mental physics. The research required to come to the present state of this theory was not easy, but for me it has paid a handsome and thoroughly unexpected dividend by clearing up *all* of the troublesome paradoxes that vexed my days as a materialist. In comparing the consequences of the theory against findings from empirical

psychology, neuroscience, and physics, I have so far found not one single instance where this theory and empirical scientific experience part company. That is no guarantee for tomorrow, of course. But entire important scientific systems have been launched on much less evidence.

However, this work has also had the unpleasant consequence of uncovering a vista of how much more work lies ahead for mental physics. I am not confident that I have enough years of active professional practice remaining to me to see the accomplishment of more than a fraction of what I should like to see achieved. There is some very fundamental work that needs to be done on this new road, and this is what I remark upon in this final section.

I begin with mathematics. No science can claim to attain to a *quantitative* understanding of its topic and to a predictive capacity without the employment of mathematics. For the scientist, mathematics is a *language* by which we are able to state things very, very precisely and, as a result, bring out clear *testable consequences* of theory. But the Critical theory tells us that structural changes are required for mathematics. Put simply, in order for mathematics to be applied to the phenomena of Nature *with objective validity*, mathematics itself must be objectively valid in what it has to say about Slepian's facet A, the world of phenomena. This means nothing less than that the axioms of mathematics – or at least that part of Critical mathematics that is to produce the principal quantities of facet B – must themselves be objectively valid. This is not currently true. Existing axiom systems – e.g. the Zermelo-Fraenkel-Skolem system – contain axioms that are nothing else than transcendent ideas and which, therefore, can lead to nothing *true of Nature*.

The first quarter of the twentieth century was the time of the famous "crisis in the foundations" of mathematics. This crisis ultimately led to the final breaching of the walls of the last citadel of rationalism, the disillusionment among mathematicians that apodictic certainty about the world was not after all achievable through pure mathematics, and even the disappointment that apodictic certainty could not be entirely achieved even within mathematics itself (Gödel's theorems). Ever since then, mathematicians have been content to hide behind the curtain of formalism. Few mathematicians bother themselves with any philosophy of mathematics – indeed, mathematical education tends to actively discourage this. The mathematics community's institutional memory of the Crisis, if I may be permitted this metaphor, appears to be so painful that the issues raised during this period must be repressed and not talked about, as if the family tree of mathematics contained an ancestor hanged as a horse thief.

The actual situation is not so gloomy. It is true that a great deal of useful mathematics is and will always be resident in the hypothetical realm of secondary quantities. It is not true that all of mathematics is doomed to this realm. *Some* of mathematics' axioms *are* objectively valid. No one

yet knows how many such Critical axioms might be found. The foundation for Critical axioms – actual and objectively valid "truths about Nature" – is provided by the acroams of Critical metaphysics proper. Critical axioms can, and must, *be deduced from the acroams*. No mathematical axiom is primitive. Objectively valid science *needs and requires* principal quantities from mathematics, and principal quantities of facet B will come from Critical axioms *deduced* from nowhere else than the Critical acroams. Every professional mathematician I know is a seeker of truth; the Critical system provides a Diogenes' lamp to use in the search for truth. What has just been said here for mathematics holds with equal force and with equal need for logic and the logicians. We need a Critical formal system of a logic of *meanings*, not just a formal system of truth-statements.

Neuroscience in recent decades has found a need to extend its tent beyond its original confines in neurobiology. Neuroscience today numbers psychologists, mathematicians, biological and biomedical engineers, and even philosophers in its ranks because the fundamental *interdisciplinary* nature of neuroscience has come to be clearly recognized. This is an improvement and advance much to be applauded. Yet neuroscience is still the prisoner of the legacy of a strange mixture of positivism, materialism, and rationalism that managed to somehow form from the legacies of Boyle, Bernard, Wundt, Descartes, and Comte. Neuroscience still bends its knee to the royalist claim of dead-matter physics – the self-proclaimed queen of the sciences whose paradigm utterly excludes all objectively valid possibilities of dealing with psychological phenomena. This must change. The development of *empirical* mental physics provides the way for this change.

Empirical psychology is crucial to neuroscience. Yet present day psychology has been, with good reason, called a science undergoing disintegration. Eminent scientists, including psychologists, have even called into question whether such a thing as "a" science of psychology even exists. Psychology had the misfortune of being born in the heyday of positivism and it has paid the price for this ever since. It lacks a common paradigm agreed to by its community as a whole. It feels obligated to defer to the dead-matter physics of sensible objects in formulating its approach to *mental* objects that are by their very Nature forever beyond the reach of material physics. From time to time it questions whether its fundamental Object – mind – even exists. More than any other discipline, psychology has the most to benefit from the development of the science of mental physics. But this requires a not-insignificant amount of education, a very difficult process of breaking long habits of thinking born of pseudo-metaphysical prejudice, and a basic re-thinking of long-sanctioned but ontology-centered methodologies.

One contributor to the plethora of various mini-theories characteristic of psychology today is

surely the lack of commonly agreed-to definitions of mental phenomena. Consciousness, emotion, and motivation are but three leading examples of ideas where psychologists differ widely in their definitions. Instinct, impulse, thinking, idea, concept, and symbol likewise fail to find common ground. There can be little hope for real advances in the science so long as its practitioners do not even speak the same technical language. Here, too, fault must be found with many computational neuroscientists, who likewise fail to share a common technical vocabulary for the most common mental terminology. Definitions for the various Objects of mental phenomena must be made with an eye toward establishing the practical *Realerklärung* of our terms. However, this is possible only when the community likewise shares a common way of looking at Nature and such a way of looking is called *metaphysics*. Kuhn wrote,

> No natural history can be interpreted in the absence of at least some implicit body of intertwined theoretical and methodological belief that permits selection, evaluation, and criticism. If that body of belief is not already implicit in the collection of facts – in which case more than "mere facts" are at hand – it must be externally supplied, perhaps by a current metaphysic, by another science, or by personal and historical accident. No wonder, then, that in the early stages of the development of any science different men confronting the same range of phenomena, but not usually all the same particular phenomena, describe and interpret them in different ways. What is surprising, and perhaps also unique in its degree in the fields we call science, is that such initial divergences should ever largely disappear.

An implicit body of intertwined theoretical and methodological belief that is based on the personal and historical accidents of a person's life is what I call a pseudo-metaphysic. It is an unfortunate historical fact that pseudo-metaphysics has been the normal *modus operandi* in science ever since the days of positivism began in the nineteenth century. This was the era when philosophy ceased to be regarded as a science by scientists and philosophers alike and became a mere "humanities topic." The successes enjoyed by science in the nineteenth and the first half of the twentieth centuries is often pointed to by those who see no need for – and sometimes even see harm in – re-introducing philosophy into the academy of science. Positivism, they would say, *worked*.

But the positive contributions that can legitimately be credited to the positivism movement – the "disappearance of divergences" to which Kuhn alludes – did not come from that movement's lack of systematic metaphysics but, rather, from the fact that the attitude of positivism laid down a standard of *discipline* in the code of conduct for practicing scientists. In no small measure this discipline hounded out, exposed, and banished reliance upon occult quantities and qualities; by doing so, it kept scientists focused upon reproducible facts and discouraged flights of transcendent fancy and naked presupposition. Perhaps no one better illustrates the discipline the attitude of positivism imposed than Michael Faraday. In *Experimental Researches in Electricity*,

Faraday wrote,

> 1667. The theory of induction set forth and illustrated in the three preceding series of experimental researches does not assume anything new as to the nature of the electric force or forces, but only as to their distribution. The effects may depend upon the association of one electric fluid with the particles of matter, as in the theory of Franklin, Epinus, Cavendish, and Mossotti; or they may depend upon the association of two electric fluids, as in the theory of Dufay and Poisson; or they may not depend upon anything which can properly be called the electric fluid, but on vibrations or other affections of the matter in which they appear. The theory is unaffected by such differences in the mode of viewing the nature of the forces; and though it professes to perform the important office of stating *how* the powers are arranged (at least in inductive phenomena), it does not, as far as I can yet perceive, supply a single experiment which can be considered as a distinguishing test of the truth of any one of these various views.
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> 1668. But, to ascertain how the forces are arranged, to trace them in their various relations to the particles of matter, to determine their general laws, and also the specific differences which occur under these laws, is as important as, if not more so than, to know whether the forces reside in a fluid or not; and with the hope of assisting in this research, I shall offer some further developments, theoretical and experimental, of the conditions under which I suppose the particles of matter are placed when exhibiting inductive phenomena.

In his polite and gentle way, Faraday is pointing out that it is not the occult quantities of speculation that matter in positive science but only practical considerations of the *Existenz* of the phenomena under study. This is *discipline* in science.

But positivism in science is dead now. It died in the latter half of the twentieth century and nothing else has arisen before now to take its place. With its passing also passed the habits of scientific discipline the movement enforced. An hypothesis is a scientific guess *based on facts*; mathematical expressions, no matter how elegant, are not *facts*. The objects of mathematics are, one and all, supersensible objects of ideas (*noumena*) and a *noumenon* is never a fact; it is a point of unification for a *theory* of facts. In one strange way the bursts of brilliant insights by an Einstein, a De Broglie, a Feynman, or a Gell-Mann have had a harmful side effect in science. These men each had the daring to set forth a raw speculation that carried with it testable predictions, and each enjoyed the good fortune of having those predictions confirmed experimentally. Their successes, if not encouraging others to likewise engage in unsupported speculations, at least removed the disciplinary stigma that had attached to speculation during the era of positivism and perhaps even plays an imputable role in producing a modern tolerance for the unethical practice of scientists *marketing* their ideas to the lay public and the funding agents by allowing an impression to be left that science knows more than the research actually tells us. This disturbing development has risen into view gradually over the past quarter-century; it is nothing but latter day snake oil salesmanship. To promote *teaching* unproven hypothesis *as fact* to public school children – e.g., "the universe originated in a big bang" – is reprehensible.

Discipline and the calming of over-enthusiasm is especially important in a science of mind. The Objects of mental phenomena, one and all, are supersensible objects. When we look at a brain scan or record a pattern of neuronal action potentials, what we *see* is not a thought, an idea, an emotion, or a motive. It is brain activity. The theorem of emergent properties tells us these signals are co-determined with mental representations, but it does not tell us specifically how the ensemble of signals is related to mental representation. Information, the common substance in biological signals of *soma* and mental representations of *nous*, is itself a *noumenon*.

Present day neuroscience places, I think, an altogether unwarranted over-reliance upon statistics. Not only does a statistic *not* prove a causal relationship; a great number of statistics painstakingly measured by neuroscientists really confirm nothing. It is often the case that correlation coefficients are so dismally low that any astrologer can show as good a correlation between occurrences of street crime and "the aspects of the wandering stars." The great downside of statistical analysis is that it can be used to torture the data until it tells us whatever we want to hear. This is a practice that, unchecked, will someday make science disreputable.

The inherently intelligible Nature of the logical divisions of *nous* and *psyche* make scientific metaphysics – I mean a doctrine of metaphysics that is itself *a science* – indispensable. Philosophers must again become scientists. Kant wrote that there is a definable hierarchy in metaphysics. At the core is transcendental philosophy – the epistemological methodology of Critique. In the next ring is Critical metaphysics proper, the Rational Physics, Psychology, Cosmology, and Theology that ground ontology. Next comes the *applied* metaphysic, the metaphysic devoted to a particular science that serves to make an epistemologically sound bridge between Critical epistemology, ontology, and Logic and the practice of the particular science for which it is developed. Kant's *Prolegomena to Any Future Metaphysics* is not a Reader's Digest version of *Critique of Pure Reason*; it is the propaedeutic pre-treatment of the work needed to develop applied metaphysics for the special sciences. The work of developing *scientific* doctrines of applied metaphysics for psychology and for neuroscience is not yet complete. (The same is true for all the sciences labeled "social" sciences – as if these are not just as much natural sciences as biology or physics or chemistry; every science must *be* a science and there can be nothing "unnatural" about *any* discipline that aspires to claim the title of science). Metaphysicians have a great deal of important Critical work waiting to done, and they must do it as scientists.

And so it is that I call *The Principles of Mental Physics* a first word and not a last word. The labors that must come next will be long, rigorous, and as painstaking as has been the development of every other science. There is more than enough work to do here for everyone. And let this remark stand as the last word for this book.