INTRODUCING PHILOSOPHY PRAGMATIST STYLE: AN ESSAY

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TOPICAL OUTLINE

Introduction: How Philosophers Typically Find Their Career Path, and How the Pragmatic Way Differs

I originally wrote this introduction as an appendix, and I placed it there out of deference to the reticence to talk about such matters in introductions to philosophy. But for a pragmatist in the tradition of George Mead and John Dewey, it should come at the beginning.

What I claim here is that the typical path to a philosophy career tends to mask all debts that the individual owes to others who have helped him or her along the way -- it is made to appear that the individual has accomplished everything by himself or herself, usually with only the recognition of one principal mentor -- whereas pragmatists insist on the fact that all intellectual advances are made within supportive groups, all the way back to families of origin. In the process, I argue that philosophy departments (I'm thinking mostly

about departments in universities in the USA) would do a better educational job if they de-emphasized a record of outstanding individual achievement in favor of broader standards of achievement. This is, obviously, an argument in favor of greater inclusiveness, but I make it here in the name of pragmatic activism, of likely benefits for society in general.

Bertrand Russell is rare among philosophers in having written an autobiography. And among the many philosophers I have known in a long career and in many different types of departments, I know of only one -- David Norton, long-time colleague in the Philosophy Department at the University of Delaware, now deceased -- who regularly invoked his past in his classes and in his writings. For most of the philosophers I have known well, it's as though they had no past, certainly no past beyond the work they did in graduate school with a particular mentor; even there, the past is typically reduced to the intellectual problem on which they worked together, with themselves as manifesting some sort of disagreement or separation that marked their originality as they started out on their academic career.

For an American Pragmatist in the tradition of Dewey and of Mead even more so, that would appear to be odd, even indefensible. This is because, in that tradition, a person's philosophy is never uniquely his or hers; it is usually only a small step forward in an evolutionary history that stretches all the way back to the beginnings of human thought -- and beyond that, to non-human communication, back to the very beginnings of evolution.

Even at the point where most philosophers begin, if they dwell on the matter at all -- that is, with their graduate school work with a particular (usually identified as a particularly gifted) mentor -- Mead would emphasize the intellectual culture of the mentor, his or her mentors and the school of thought represented by them, where individual creativity or originality shows up against a background that the group takes for granted. The originality of the budding young philosopher (as is true, in a different sense, of budding young scientists; see Robert Merton's "On the Shoulders of Giants") is recognized not only by the mentor but by others sharing that school of thought -- including its disagreements with other schools of thought. Randall Collins shows in his "sociology of philosophies" -- he says it is the essence thereof -- that the same dynamic is operative in a wide variety of cultures, so-called Eastern as well as Western, from their origins up to the beginning of the twentieth century (the point at which he thinks he must stop for lack of adequate evidence for more recent philosophical schools). And all such schools of thought involve outstanding symbolic practitioners who are thought to have achieved the goals, and the rewards, of that particular approach, or to have vanquished opponents in a definitive way.

Actually, in my experience, few philosophers are willing to reflect to any great extent even on their experiences in graduate school. They just want to go on about their work, like the scientists whom many of them emulate, solving their particular set of problems and advancing their particular careers.

Since this is so, and displaying my own reticence about doing an intellectual autobiography of my own philosophical development, what I will do here is talk about the typi-

cal development of the average philosopher -- as I have come to know philosophers individually -- or the average student who takes up a philosophy major (in the USA) or a philosophy "career" (carrera in the Spanish version of a university specialization, which I also know reasonably well).

Most philosophers I have known have been academic oddballs -- we used to call them "nerds," but each era has its own similar expression to describe the stereotype -- from a very early age. They stood out from the crowd, for instance in high school, not for athletic success or success with girls, but for their ability to do well in school, to get high grades, even to win intellectual awards. I have never done a survey in the years I have thought about this, but my hunch is that a very high percentage of academics who end up as philosophers were valedictorians when they graduated from high school. Some have been known almost all their lives, among their peers, as "professor" (that was one of my personal nicknames), or "egghead," or something similar. It's almost as if they have been destined or fated to be philosophers -- or mathematicians, or theoretical physicists or something similar.

And the same thing shows up in their university careers. Along with future scientists and engineers, philosophers seem to choose their major or their career very early on; they gravitate to particular kinds of professors, sometimes taking classes with a particular professor as often as the rules of the university allow.

I am stereotyping, I know, but the reader should bear with me. Making fun of my friends and colleagues is not my goal. I want to look at the path the typical philosophy major (to the extent there is such) takes, as he or she goes on to graduate school, but also at the path that led to the stereotypical behavior from the earliest school years to high school and university and graduate work in philosophy.

I begin at the beginning. Most philosophers I have known -- there are some exceptions, of course -- have been praised within their families for their braininess. They were praised, early on, for reading well and much. Some, though I really have to stretch to say this (given the lack of hard evidence I have), seem to have thought of books as their best friends; at least many say that books have been their friends all their lives. They have also excelled at test taking, a skill that is increasingly praised these days in public schools but that has always been praised in private schools. I suspect that they have also, from their earliest years, been favorites of their teachers, especially of particular teachers who are known for fostering academic excellence. There are some studies of this phenomenon, though the focus is the academically gifted in general (not those who end up as philosophy professors), and the studies demonstrate at least anecdotally a high percentage who have had special teachers somewhere in their school years who have influenced them either to choose their academic career path or to do well in it.

In talking with colleagues in philosophy departments -- not focusing on particular philosophers' backgrounds but drawing inferences from what they say about their grad school work -- I have found that an overwhelming percentage of them continued these patterns, with their strong reinforcers, right into graduate school. They were now praised

to an even higher degree for their braininess, for their ability to please particular professors and be admitted into their study groups or to go immediately into work that will lead to a choice of thesis topic. Many have not had close friends in grad school, except for their mentors and professors of like mind. If they marry in graduate school, it is often to a fellow high achieving grad student, or at least to someone who nourishes and supports them through the years needed to complete a highly specialized thesis. (This, of course, is true of almost all academic spouses in whatever field.)

If all of this is even approximately true to some degree, then philosophers ought to have a very long list of acknowledgments at the beginning of their published theses -- or the books and articles based on them. I have worked for many years in a non-philosophy department where this is the laudable tradition. Furthermore, the list should include librarians and other support staff as well, though this is less commonly acknowledged -- while granting institutions are often acknowledged, naming the institutions rather than particular people who have supported them. And as a matter of course it ought to include influences all the way back, to the extent that early influences are thought to have influenced a particular candidate for a doctorate in philosophy -- in particular to parents and spouses or friends.

Why is all of this important for the American Pragmatist philosophers? Well, for Mead in the first instance, it was important because it underscores his view that all individualistic epistemologies (Mead runs through a standard list and finds them all to be individualistic, beginning with the Pragmatists' bete noire, Descartes) fail to explain what they claim to explain; Mead takes particular pains to show that Bertrand Russell's "logical atomism" is a psychological impossibility: no scientist could begin with individual atomic units and build up a scientific account of anything, much less of everything, because atomistically unitary individual perceptions, to start with, simply don't exist, can't exist, within a "world taken for granted."

But Mead's project was grander than that. He was arguing that individualistic behaviorism (so like Russell's logical atomism) does not provide an adequate scientific explanation of human behavior. He (and his editors) called his alternative social behaviorism. It's intended to be a social-scientific/social philosophy account of human behavior that is scientifically adequate. (Compare Flyvberg's *Making Social Science Matter*.) Mead's thought was taken up by an important school of sociologists at the University of Chicago -- the best known branch is called Symbolic Interactionism -- but those sociologists didn't concentrate as much as Mead himself did on human linguistic and cognitive behavior, on linking this sort of theorizing to then-nascent brain physiology.

But my own aim here is different; I want to help the student who is starting out in philosophy, or to help older individuals rediscovering philosophy later in life, to see that the paths to a philosophy career are numerous. Not everyone is going to display the characteristics of my stereotype, and it is better that some do not. It might also be good if some who do follow the pattern learn that there are other possibilities for them as well. On the other hand, while recognizing debts to a great many influential persons and

groups, we should not go to the extreme of blaming these others for the way philosophers have turned out -- though there clearly are cultures, and I would list our own in particular, that do encourage academic narrowness and forgetfulness of the past, including one's own.

One thing I have not mentioned up till now is that a good number of people used to come to philosophy careers beginning with a ministry degree, or at least after studying for the ministry or for one of the so-called "helping professions" such as counseling or clinical psychology. This was particularly true up to the sixties of the last century in the USA, and remains true to some extent today. Both Dewey and Mead were strongly influenced by their religious backgrounds. (See Feffer, *The Chicago Pragmatists and American Progressivism*, who says it had a determining influence on their future thought, however far they later strayed from those backgrounds.) But this was widely true in the first half of the twentieth century.

Mead is, for me, the best example of what that sort of background -- or in general a background in which it is thought good to try to make our world a better place in which to live -- can do to change the image of the stereotyped entrance into a philosophy career. And how it can change that career, once entered into.

A small number of academic philosophers in today's universities in the United States share my view that philosophy as a profession ought to be activist -- that philosophers ought not think of their "service" work, in the usual academic triad of teaching, research, and service, as an add-on. My view, defended elsewhere, is that active work to make the world we live in a better place ought to flow seamlessly from a philosopher's philosophizing -- as it did for Mead in Chicago and for Dewey on the national scene in the USA. And the reverse is true as well: many of the most important issues that philosophy ought to deal with flow from problems in the real world that call out for philosophical intervention.

In one of Dewey's books, *Reconstruction in Philosophy*, he argued that all the major philosophers in the history of Western thought -- up to the beginning of the twentieth century -- always were, as they should have been, involved with solving the problems of their historic cultures. Mead was less ambitious, but his *Movements of Thought in the Nineteenth Century* emphasized the same thing for that momentous century.

There is a chronicler of the radical change in early twentieth-century American philosophy, of its "academic professionalization" and abandonment of the role of "secular preachers," Bruce Kuklick in *The Rise of American Philosophy* (1977). Rather than summarize his views -- though they seem to me to be well documented -- I would just suggest that the interested reader consult his book.

Next I want to claim two things here, (1) that students need not come to a philosophy career in the usual way -- that students with broader interests than the typical philosophy major today, even students positively turned off by philosophical academicism, should be welcomed by philosophy departments; and (2) that stereotypical philosophy majors can

change their ways, can broaden their outlooks to think about and help do something about real-world social problems.

Richard Rorty doubts that this can happen today. He thinks graduate education in philosophy has gone so far down the academic-analytical road that there is no possibility of a return to the ways of the nineteenth and earlier centuries. And it's not just that academic philosophy mentors will remain stuck in their ways; they are likely to resist actively and passionately any return to the old ways. So if I'm going to make my case here, I should recognize that it's an uphill battle.

The first step is attitudinal. Typical young philosophy students, in the stereotype above, are highly competitive. They compete for grades, and they compete for academic honors. The attitudinal change I'm suggesting won't necessarily change that. But like those who enter into a philosophy career based on one or another of the helping professions, or whose parents have been members of those professions, those who think of philosophy as linked to social problems will be likely to compete in those terms as well as in terms of grades and academic honors. Mead went so far as to say that the ethic of genuine philosophy must be altruistic. He defined ethics as the community working together to solve its problems -- and he was thinking more broadly than of the academic community and academic problems.

I have argued that we should not talk about an obligation to be altruistic, though in some sense that would be a good thing; it's rather a matter of being sensitive to the problems vexing our fellow citizens, and recognizing that we have an opportunity to do some good.

For the last few decades in the USA, there has been a movement among philosophers to get involved in what is often called applied ethics -- ethics in medicine and health care, engineering ethics, even journalistic ethics, among many others. Almost always, in my experience, those who have been drawn to these fields were drawn there first by a desire to help people in professional fields outside of philosophy. They recognized the need for ethics work in medicine or health care; they recognized the ethical problems vexing engineers and people in business careers or in government today; and they thought they might have something to offer to help the people in these professions.

For me the saddest part of this movement has been when these altruistic motivations all too soon got bent in the direction of "academic respectability" -- when these applied philosophers often got caught up in the academic game of career advancement, to the detriment of their earlier altruistic motivations. (I'm not denying that applied philosophers can do both -- advance their careers and help people out in other professions -- but it's a shame when careerism undercuts altruism.)

Another kind of other-orientation I have seen, and welcomed, among more actively-inclined philosophers in recent decades, has been among environmental philosophers. There is academic environmental ethics, I admit, and some of it gets pretty esoteric, but a high percentage of the environmental philosophers I have known feel deeply about

environmental problems facing contemporary society.

Others have been deeply involved in political causes, often radical political causes. One hot button issue today for philosophers who think this way is so-called globalization, in particular its negative influence on workers and their families in the economies of developing nations or regions.

My point is that young people drawn to a career in philosophy shouldn't have to deny their interest in these social issues, or, worse, give them up entirely in order to pursue a traditional academic career in, say, analytical philosophy(traditional during only one century).

The second main point I would make is that society has a right to expect this of philosophers. And people outside philosophy do expect more of philosophers. I worked for decades with both engineers and health care professionals, before ending my career working mainly with environmentalists and professionals in that field -- along with the citizens they worked with outside their professions -- and, almost universally, they welcomed applied ethicists. (They were, on the other hand, dismayed if these applied ethicists turned around and played academic games with them.) Especially in a democracy, there seems to be an expectation -- a sort of social contract -- that experts will actually apply their expertise to help the society that supports them.

In our society in the twentieth century this expectation did not often extend to philosophers -- or if it did it was only to applied philosophers -- on the general assumption, widespread in our culture, that philosophers were mostly esoteric specialists talking only to one another. But adding the one exception for applied philosophy shows that, even in the midst of an academic century like the twentieth, there were some expectations that philosophers might be able to help society solve its vexing problems.

For at least these two reasons -- an attitudinal change is possible, and it will meet social expectations if it comes -- I would argue that philosophy departments, in the twenty-first century, ought to welcome students with broader social interests than heretofore, and that students who have followed the stereotyped path into philosophy should be encouraged to broaden their perspectives.

At the very least, any department open to philosophy pragmatist style should do so.

For my part, I was lucky in my philosophical career. I started it at an institution not only open to broader interests -- the Aquinas Institute of Philosophy in River Forest, Illinois (this doctoral program wandered elsewhere later, to Dubuque, Iowa, and most recently to St. Louis, Missouri) which primarily trained students for the Roman Catholic priesthood in the Dominican Order -- but one that also encouraged students to think about public service. In my Thomistic philosophy days, I didn't have a mentor in the usual sense -- the Aquinas Institute authorities pretty much let me go my own way in writing a thesis that I had outlined for myself before arriving there -- but I was strongly influenced by two of my Dominican professors, William Wallace (then and later a world-

renowned expert on pre-Galileo science) and Raymond Nogar (author of books like *The Wisdom of Evolution* that pushed Thomism to the limit in accommodating modern science, in this case evolutionary biology and anthropology).

For me, in that setting, moving from a focus on philosophy of science to philosophy of technology was a natural development -- from science to applied science to technology (in the now-outdated terminology of the time). I was finishing up my doctoral thesis at the institute on the discovery process in science. (It was later published as *Logic and Scientific Inquiry*, in 1968.) My thesis (and it should always be remembered that a doctoral thesis is exactly that, a thesis to be defended) was that plausible reasoning is the key to understanding the discovery process in science. No one today doubts the fundamental importance of probability and statistics in the whole range of contemporary sciences, but every application I know of in real-world science involves non-certain, plausible reasoning.

While writing my thesis, I grew increasingly interested in the social aspects of the discovery process, especially as described by the American Pragmatist philosopher, George Mead. (See in particular his “Scientific Method and Individual Thinker," in his *Selected Writings*, 1964.) There is a dynamic interplay, Mead says, between creative scientists and the groups within which they operate, but which also support them. Mead goes so far as to say that any epistemological account -- and he discusses all those known to him at the time -- that does not reflect the fact that creativity depends on communities of knowers is doomed to failure. In a famous phrase used later by sociologist of science Robert Merton, "We see further because we stand on the shoulders of giants." Yes, in science there are creative individuals, but their very creativity depends on their interaction with mentors. (And that was certainly true for me, with mentors like Wallace and Nogar.)

Further reading of the American Pragmatists quickly revealed that this was no genius insight on Mead's part. Beginning at least with C. S. Peirce and continuing with William James -- with forebears all the way back to Descartes' own era among thinkers such as Giambattista Vico -- the Pragmatists had recognized that Descartes' epistemological problem was a self-defeating pseudo-problem. Once we recognize that creativity is only fostered in groups, it becomes clear that fears on the part of individuals that they are being deceived by evil geniuses can only gain traction in groups.

All of us as graduate students in post-Cartesian settings (even my fellow students and myself in a Thomistic philosophy institute) may have perceived Descartes' as a real problem, but our fears could only be taken seriously by mentors who had taken their own doubts equally seriously (my mentors didn't) -- and promised great rewards if the students could "solve the problem." Even Descartes' own problem could only deserve to be taken seriously among a group of like-minded anti-Scholastics. And those with more serious problems on their minds -- scientists, engineers, businessmen, ordinary citizens, and so on -- cannot afford the luxury of universal doubt.

Once freed of the "epistemological problem," we are free to pursue serious discover-

ies. And it makes no difference whether the discovery is made within a so-called pure science community, or in applied or (what was then called) mission-oriented science, or in an engineering or technological community. So it was an easy step for me to turn my attention to technology, especially in the context of the late 1960s and early 1970s, when there were widespread critiques of the role of technology in the Vietnam War (we in the USA will recall John McDermott's famous article, "Technology: The Opiate of the Intellectuals," *New York Review of Books*, 31 July 1969), and widespread interest in environmental issues (recall the first Earth Day in 1970).

From that time on, for over 25 years, I devoted myself mainly to editing the books associated with the Society for Philosophy and Technology. I did publish a book of my own, *Social Responsibility in Science, Technology, and Medicine* (1992), and I ended up chronicling 30 years of controversies in SPT. These efforts, and others of a more activist sort along the way, seem to me to have flowed naturally from that initial professional orientation.

Transition: All that said, why write an introduction to pragmatist philosophy? Why not just produce my version? If there is an excuse, it's because I've never been satisfied with standard introductions to philosophy, precisely because none of the ones I've read introduces philosophy pragmatist style. And there is a difference.

Furthermore, I've chosen to write this in an essay format. Why not do a thorough and complete introduction to all the nuances and subtleties of pragmatism, or at least of American Pragmatism, or at the very least of one or another particular version of pragmatism American style? (Larry Hickman, with others, has already done that for Dewey in the form of anthologies.) If I were to do that, I'd choose a philosopher others might relegate to the second tier, George Mead, friend and to some extent protege of Dewey when he started the department at the University of Chicago in the mid 1890s.

Though Mead is often overshadowed by Dewey, I have three reasons for preferring him. When Dewey left Chicago, Mead was the unquestioned leader among the group of pragmatist philosophers left behind; in many ways he was more original and clearer in his formulation of the approach to philosophy that he and Dewey shared; and in the intellectual life of Chicago at the beginning of the twentieth century Mead was as much of a cultural force in the community as he was a leader in the department. (See Feffer, *The Chicago Pragmatists and American Progressivism*.) Dewey, of course, became equally activist on the national stage (see Westbrook, *John Dewey and American Democracy*), but Mead's activism in a newly-industrial Chicago with a multitude of social problems at the time is, in my opinion, a model to be followed by pragmatists anywhere in the world. (And, as was true of Mead in his own lifetime, the people influenced by his thought were sociologists as often as philosophers; see, as well as Feffer, Bulmer, *Chicago School of Sociology*, 1984; Collins, *Sociology of Philosophies*, 1998; even Flyvberg, *Making Social Science Matter*, 2001.)

Why not, then, do an introduction to Mead's philosophy? For one thing, a few of them already exist -- though they tend to be as difficult for the beginner in philosophy (or sociology, in some versions) as Mead's own often tortured writing style. (See, for only a couple of examples, Joas, *G. H. Mead*, 1985; and Baldwin, *George Herbert Mead*, 1986.) And I did not want to add to that list.

Instead I have chosen, as I said, to do an essay -- an introductory essay at that -- aimed at either beginners in philosophy or those who have already been introduced to philosophy in a preliminary way but who know little to nothing about the special nature of pragmatist philosophy, Dewey and Mead style.

In doing so, I use what to some may seem an odd source and method: *The Great Ideas*, volumes 2 and 3 of *The Great Books of the Western World*; and to some extent I borrow those authors' "syntopical method" (see volume II, pp. 1219ff; or, more briefly in the preface, volume I, p. xxx). This source and method would seem more than just odd to most pragmatists. What is distinctive about the approach is that the authors treat their set of great books as timeless masterpieces of Western culture, and the syntopical approach allows them to place side by side, as one example, Greek Skeptics and Montaigne -- as though era and cultural background mean nothing, something anathema to pragmatists. However, as I have said, my philosophical beginnings were in this tradition -- not only my undergraduate but even my graduate school professors in Thomistic philosophy referred to it as "the perennial philosophy" -- and, though I later switched my allegiance to the more dynamic and culture-sensitive pragmatism, I still fall back on one or another version of this approach, especially its Aristotelianism, when I feel the need.

I start, as so many introductory texts do (as also does *The Great Ideas*), with the Greeks. Since I started the venture, I have reacquainted myself with sources that go even farther back in history -- even into prehistory -- where I have re-learned, especially, the debts of the Greeks to Egyptian thought, to the cultures of the ancient Near East, to India and so on. But, ultimately, I use the Greeks (and indirectly their sources) only as a foil to show how a pragmatist -- this pragmatist -- how I would offer a different slant on the bland fare that is usually presented in introductions to philosophy.

Why limit myself to an essay? Well, it could end up being something more than an essay; it could even become a proper book. But you have to start somewhere, and I've chosen to start with no more than an essay. I hope someone will find it helpful in that form.

As I say, I start where most introductions to Western philosophy start, with the Greeks -- but I add a pragmatist twist.

Part One: Science versus Metaphysics, with Practice as a Middle Ground

For most people who are not philosophers or who haven't had an introduction to philosophy at the university level (some do get introduced to it in high school in the USA; more in a country like Spain), Western philosophy begins with Plato. Except possibly for Socrates, Plato's teacher, Plato is the name you will hear more than any other if you ask, Do you know anything about philosophy? If Socrates pops into their heads first, it will be all about having to drink poisonous hemlock, as a kind of martyr for thinking strange thoughts or being different. If Plato is the first person to come into someone's head when asked, it's likely to be Ideas with a capital I that come to mind; and this will usually signify, for the respondent, otherworldly ideas, something strange or metaphysical.

Once you probe a little bit, however, Greek thought does not begin so much with metaphysics as with religion, a religion of gods and goddesses, from mighty Zeus on down -- or with Homeric legends or stories. Some people will have heard of the great Greek playwrights, Aeschylus, Sophocles, and Euripides, of the great Greek tragedies in which the gods and goddesses play important roles. In that respect, Greek culture is not too different from the other cultures that surrounded it, from Egypt through the countries of today's Middle East to the "barbarian" lands of the north (in the Greek view) and on to India and the East.

For my purposes here, what makes Greece stand out from its neighboring cultures is that a handful of thinkers, in different parts of the Greek lands and separated from one another by at least a few centuries, tried to make sense of mythological goings-on in something like a modern "scientific" sense. Rather than just accept or celebrate a story of the origins of the world or of their culture, they thought deeply about how the world, and different cultures within human society, came to be; about what the origins of our world were. So, for good or ill, that's where the modern science (with its allied science-based technology) that dominates our culture got its start.

Among the small group of thinkers in Greek lands, Socrates and Plato enter the picture at a relatively late date -- somewhere around the fifth century before the Christian Era (BCE) as we count things. And for at least two centuries before the two of them began to think their big thoughts, there were other Greek "naturalizers" -- thinkers trying to make literal sense of mythical accounts of beginnings -- who are usually called pre-Socratics.

In one sense this term is clear and straightforward: they were philosophers and they lived and wrote before Socrates. But in another sense it isn't very helpful. Among these thinkers there was a great variety of approaches, and it's a little misleading on my part to describe them all as trying to make "literal" sense of myths and legends. To many readers of the texts they left behind (some of them only fragments of texts, and most students read them only in translation), they are likely to seem pretty remote from literalism, much less from proto-science. But this is an essay and I'm telling a story with a

point of view.

In deference to the popular view, then, and because it makes for a better story, I begin (1) with Greek metaphysics set against a background of myth and religion. Only in the second place (2) will I look at the thinkers who are best known for trying to make literal sense of myths and metaphysics in what has come to be seen as proto-science. After that (3) I will spend some time on a similar sort of contrast -- between the tradition and reason-based revisions of it -- in ethics and politics. Then (4) I will introduce practice, day-to-day life in Greek culture, something the American Pragmatists would say is missing in most of what will have been said under the other three headings.

My method here is straightforward. The aim is to rephrase ideas and arguments that may not seem clear or intelligible to those without a background in traditional philosophy, so that they become clearer or more intelligible. Sometimes I will do the rephrasing myself; other times I will quote someone else trying to do the same thing. I have found in a long career of teaching that students do not always appreciate the effort, and find the rephrasings to be as unintelligible as the originals (when they have access to the originals, at least in translations -- themselves already an attempt at making the less intelligible more intelligible). I would actually prefer that the reader have some original texts at hand, with which to compare my (or others') rephrasings, to see if they help or not. But in an essay like this one, I'm betting on the rephrasings as making enough sense for a faithful reader to follow the thread of what is actually a long and complicated story. So the story is the thing, and I hope it makes a good read for at least some readers.

The story begins where most introductions to Western philosophy begin, with a kind of centuries-long discussion among Greek thinkers about how to translate traditional views into something approximating "reasonable" or "rational" views (two terms that are, paradoxically, part of the debate).

1
Metaphysics from Parmenides to Plato, Aristotle, and Skepticism

1. Parmenides

Some histories of Greek thought begin, not with Homer but with Hesiod and his sometimes quite literal-sounding accounts of the Greek gods and goddesses. For purposes of our account here, however, it's only a short step from Hesiod to the first major pre-Socratic thinker I take up here, Parmenides. He may have had forerunners; it seems clear that his way of approaching the issue shares much with Pythagorean thought (see next section, on proto-science), and that with Egyptian thought, and so on.

But what Parmenides is famous for in the history of Greek thought is his saying, that, if gods and goddesses or any other beings have certain qualities (later philosophical and theological writers would associate them with spiritual beings or with the spiritual being who is God, where the singular is important) -- qualities of immateriality, immortality, and so on -- if so, then there can only be One (usually capitalized): "Being is One," Parmenides said, "and not-being is just that, not being -- or nothing."

The first time modern university students come across this claim, it appears to be a hard saying; it seems clear that, all around us, there are a multitude of beings, including us as individual selves. So what could Parmenides, who wrote what appear to be riddles in mythical-sounding language, possibly have meant? And why would anyone take him seriously, not just others among our handful of Greek thinkers but everyone in at least the Western philosophical tradition ever since? But, in fact, ever since Parmenides, Western metaphysics has wrestled with a small group of questions, almost always including this one, usually labeled "the one and the many" -- but also "sameness and difference," questions about universality and particularity, or the other-worldly and this-worldly, and so on.

"Sameness and difference," as one example, refers to aspects in which things are the same or different: same or merely similar colors? Same or merely similar seasons each year? Or, more particularly, exactly how are two things the same or different? Universals are general, like dictionary definitions; particulars are the concrete individuals or groups to which those definitions refer -- where the problematic issue usually has to do with what "refer" means here. I take it that the meanings of "other-worldly" -- sometimes spiritual or immaterial -- and "this-worldly," or material, are fairly clear, but philosophers have managed to make the distinction less than clear in a great variety of ways.

So this is a good place for us to begin, rather than with trying to figure out exactly what Parmenides meant when he said that being is one and non-being is nothing (or something like that).

And the issue is important, and not entirely esoteric. Once you accept a split, in a literal account of origins, between the other-worldly or the spiritual and the this-worldly or the world of material beings -- between God the creator, in the classical formulation, and his creatures -- you are forced to think about the spiritual or eternal or unchanging and the material or temporal world of changing things. The seasons change; plants -- and humans -- grow, flourish, and die. But God in his heaven remains eternally the same. How can this be? And why should we "scientific" people in the twenty-first century pay any attention to such a stark dichotomy? However, the problem is important for anyone who wishes to think "logically" -- and Parmenides is often given credit for being the first Western thinker to formulate something like the fundamental principle in logic, the so-called Principle of Non-Contradiction: a thing cannot both be . . . -- substitute whatever you want in this spot -- and not be that at the same time (and it is usually added, "in the same respect or under the same aspect"). Black can't simultaneously be white, nor up be down, nor death be life, and so on -- without contradicting ourselves in what we are claiming.

I say this is not esoteric because it simply must be accepted, even by the most scientific among us. Among the Greeks at the time of Socrates and Plato, Euclid -- he of plane geometry fame -- was saying that a line cannot be a succession of points. If a point is dimensionless (even if it is so arbitrarily or by definition), and a line is unidimensional, then no accumulation of dimensionless points will ever add up to a dimensional line; to say that this could happen would be to contradict ourselves, to say that the non-dimensional is simultaneously dimensional, under the same aspect. Lots of ways to fudge the issue have been developed over the centuries, and you don't even have to turn for this to non-Euclidean geometry; Isaac Newton's (or Gottfried Leibniz's) "calculus of variations" already fudges the issue. But the importance of not contradicting yourself if you want to think logically remains important. It's even important for non-Euclidean geometers or followers of Karl Marx (who claim that the world is shot through with contradiction).

Okay, so it's important, in trying to think logically, to avoid contradicting yourself. But how do you go from that to what is often called Metaphysical Monism -- in the extreme, the idea that Parmenidean Being is a single universal reality, with the plurality of non-beings no more than "appearances" (= limited manifestations) of or within Being? If Parmenides' famous saying gives students fits, it gets worse when that gets translated into metaphysical monism as a way of solving the so-called "appearance and reality" problem.

Still, it can make sense to some students, after their first negative reaction, to wonder about appearance and reality. Could it be that God is really the only reality, and that the multitude of creatures have no more than the appearance of reality -- that, in one version, creatures are no more than "ideas" in the "mind" of God? To some religiously-minded students, this makes even more sense when we think that God is omnipotent as well as omniscient: if creatures are ideas in the mind of God, then by that very fact they "appear" to be real. One should recall that Parmenides started out with the notion that Being covers all the attributes of "the divine world": that it is eternal rather than temporal; that God is both omniscient and omnipotent; and so on.

In my limited experience teaching Greek philosophy, I have seen more than a few students buy into this interpretation; and if they go further in the history of philosophy, they sooner or later run into George Berkeley's view -- "to be is to be perceived" -- that what others call real beings are no more than instantiations of ideas (after all, all we can know, we know through ideas); or into Hegel's Absolute Idealism -- which some people interpret along the lines of manifold creatures being no more than appearances within the unfolding Absolute.

Is all of this no more than logic-gone-mad, an interpretation of the realities of everyday life governed by the non-contradiction rule of logic? Possibly. But for many people, and we should think especially of "mystical" views often associated with Indian and other non-Western systems of thought, individual humans are thought to share in something like a totally-harmonious Universal Being.

For many people today, who are skeptical of god-talk or of metaphysics in any form, this seems to be the illusion that is metaphysics. But, as I will show shortly, something not unlike this view -- in the thinking of the Pythagorean brotherhoods of Greek culture (which almost certainly had forebears among the Egyptians, if not elsewhere) -- was the foil against which something like modern scientific thought achieved its first formulation.

So what is the American Pragmatist response to all of this? I will mention briefly at the end of this part that they would react negatively to the split between ordinary people, especially ordinary workers and craftsmen, and philosopher-geniuses like Parmenides. But even at the philosophical level, we will see them react negatively to any implication that there is a separate immaterial or spiritual world that these geniuses somehow tap into, and that thinkers like Parmenides, however brilliant their ideas, have some kind of superior knowledge. For one example, though not in ancient Greece but in ancient Egypt, the first great Egyptian architect, mathematician, and physician, Imhotep, would ultimately be divinized, turned into a god. But the Pragmatists, and Mead in particular, would point out that we do not need divine inspiration or great intuition to know something like Parmendes' true and necessarily true law of non-contradiction. It certainly took a genius somewhere -- and as historical shorthand we can assume that was Parmenides -- to come up with the insight. But just as surely he had to do so by solving some real-world problem; among the early Greek thinkers, that was the problem of how to capture a world in perpetual change (among the Greeks, usually associated with the thought of one Greek philosopher, Heraclitus, who preceded Parmenides) in a formula that would not change, in some kind of immaterial, unchanging knowledge. And the solution Parmenides came up with was that you can't, if you want to be logical in your thinking: the changing and the unchanging are categorically distinct. Like many thinkers in that era, he opted for the unchanging as more "divine," as would the next thinker we turn to, Plato. But the American Pragmatists would say -- we will see them say -- that that was an unnecessary step; we can take advantage of Parmenides' insight without assuming that there exists an immaterial world, let alone that it is superior to, or even distinct from, the material world.

So now we turn to the best known champion of the immaterial world in the history of Western philosophy, that is to Plato.

2. Plato on Ideas

So now we turn to the thinker in Western thought who is most commonly thought of -- even by those who know nothing else about Greek philosophy -- as being the source of the whole tradition. One phrase has it that, "All of Western philosophy is just a set of footnotes to Plato."

Plato makes a fateful distinction, between sensing and imagining, then adds to this a further distinction, separating formal demonstration, as in geometry, from what he and others call wisdom. In a famous passage from *The Republic*, Plato ascends, by a kind of thesis/antithesis ascent, from other types of knowing to wisdom.

Here is one famous – and fateful -- passage from the *Republic*: "Are you satisfied, then, said I, as before, to call the first division science, the second understanding, the third belief, and the fourth conjecture or picture thought—and the last two collectively opinion, and the first two intellection, opinion dealing with generation, and intellection with essence, and this relation being expressed in the proportion: as essence is to generation, so is intellection to opinion, and as intellection is to opinion, so is science to belief, and understanding to image thinking or surmise?"

And here is a standard clarification: as unchanging essence is to change as found in the process of generation, so is unchanging intellection to fickle opinion, and as unchanging intellection is to fickle opinion, so is unchanging, demonstrative science to changing belief(s), and changeless understanding to fickle image thinking or surmise.

And here is one famous commentator on Plato, I. M. Crombie, trying to explain this text:

"The Line

Socrates is pressed to develop what he has said, and he seems to agree to do so. In what he says however he appears to abandon for the moment the relation of goodness to the other forms in order to talk about the relation of forms to physical things. We shall see when we come to the simile of the Cave that the reason why he does this is that it is necessary to understand something about the relation of forms to physical things in order to understand Socrates' account of how it is possible to come to know the nature of goodness.

The 'simile' of the Line is in itself very simple. Socrates tells us to imagine a line divided into unequal segments, with these segments themselves subdivided in the same ratio. This is the entire matter of the simile, and it amounts to a geometrical expression of a proportion holding between four terms, a, b, c, and d, such that a:b::c:d::a + b:c + d. In effect, then, we are told to bear in mind this formula. Socrates proceeds to explain his purpose in asking us to do so by fitting values to his variables. To c he assigns a sub-class of visible things, namely living creatures, plants, and man-made objects, and to d he assigns the shadows or mirror-images of such objects. This seems to mean that certain terms (namely a and b) stand to each other in the relation in which a swan, for example, stands to a reflection of a swan on a pond's surface. Before assigning values to a and b, Socrates gets Glaucon to agree that the line has been sub-divided in such a way that the ratio between image and original is identical with the ratio between 'the opinable', and 'the knowable'. This seems to me to mean that the relationship which holds between image and original and which is being said to hold between the as yet unidentified terms a and b is also identical with the relationship which holds between 'that in which one can have belief' (vulgar common natures) and 'that which one can know' (forms). It is in fact being asserted, almost in passing, that vulgar common natures are as it were images of forms. As we have seen, it is not clear whether this is to mean that the shapes (for example) of physical things are not perfect embodiments of such general terms as circu-

larity, or whether it is to mean that common-sense understandings of such general terms are always imperfect apprehensions of them—or both.

Socrates now proceeds to assign values to a and to b. In the case of c and d he did this by specifying two kinds of objects of sight and one expects that in the case of a and of b the assigning will be done in a similar way, namely by specifying two kinds of objects of thought. However what Socrates in fact specifies for a and b is two levels of thought. He tells us that b is that level at which a man proceeds to extract consequences from 'hypotheses' or things which he has taken for granted, at which he has to make use of sensibles in the manner in which a mathematician makes use of diagrams, and at which he is unable to 'give account' of the things which he takes for granted. This level, he indicates, is the level of thought of the mathematician. Finally a is that level at which a man treats the things which are taken for granted at the b level as no more than starting points, and at which he travels 'upwards' to 'a starting point which is not taken for granted' . . ., making no use of sensibles and discoursing of nothing but forms. Finally, Socrates gives names to the four states of mind which correspond to his four terms ('intellectual apprehension', 'thinking', 'perceptual assurance' and 'conjecture' might serve as translations); and he tells us that as these states of mind stand to each other with respect to 'clarity' . . . so the things with which each is related . . . stand to each other with respect to 'genuineness'.

The message of this 'simile' seems to be roughly as follows. Just as physical things are superior to shadows in point of 'genuineness', and just as seeing things is superior to seeing shadows in point of clarity, so 'knowledge' is superior to 'belief', and so, within the sphere of abstract thought which is loosely covered by the term 'knowledge', unhypothetical thought is superior to hypothetical. This is so, presumably, both because 'knowledge' is 'clearer' than 'belief', and unhypothetical thinking 'clearer' than hypothetical and also because the objects (in some sense of the word) of 'knowledge' and of unhypothetical thinking are more 'genuine' than those of 'belief' and of hypothetical thinking, the latter indeed being as it were images of the former in each case. . . ."

This seemingly innocuous division was to set the history of Western philosophy on a fateful course for over 2,000 years – placing certainty and necessity at the top of the list of ways to say we "know" anything. For Plato, the best, the most philosophical knowledge -- or wisdom -- that humans can have is the knowledge of Ideas.

Plato's distinction is so commonplace that most people would have difficulty denying that there are these four different "ways of knowing," though they might want to break individual ways down into further subdivisions. Some beliefs we can be sure of – Plato thought they were mainly mathematics and philosophy – and others we easily doubt: for Plato these were beliefs based on our fallible sensations, including memories and imaginative projections. What is distinctive about Plato's view, which turned out to be so influential in later Western philosophy, is his elevation of philosophy to the highest pinnacle and his denigration of the popular opinions that non-philosophers hold, saying they merely think they know. (This would also be the point of Plato's "myth of the cave," also in the *Republic*, which gives a dramatic picture of this account.)

As we will see further on, C. S. Peirce also makes a four-kind distinction among ways of “fixating belief,” but for him the pinnacle is the scientific way. (Peirce is more open-minded than Plato would seem to be, admitting some validity for other views, each with its own defenders and defenses -- including Peirce's version of Plato's way of fixating belief.)

Without going into the matter in detail, I would go so far as to say that, between Plato and Peirce, many Western philosophers accepted one or another version of a knowledge four-pole – though with varying candidates for which mode of knowing is the best and provides the greatest certainty. Think about Galileo’s four characters in his famous "dialogue." Descartes, as we will see in part two, might seem to have just two: indubitable knowledge and ignorance; but Descartes was trained in scholasticism, which may have led him to something like this: true indubitable philosophy + math/analysis + science + ignorance. Bacon had four "idols of the cave." Kant had critiques of pure reason, of practical reason, and of judgment, as well as a “metaphysic of morals” (admittedly, among other things). Hegel had only three principal items, thesis/antithesis/synthesis, but we should remember that for him each synthesis then amounts to a thesis, and so on. And Marx, who said he was standing Hegel “upright,” transforms these into class conflicts and historical resolutions, but he usually lists four historical types of societies. And so it goes.

John Dewey castigates this long line of thinkers for being involved in a hopeless "quest for certainty." Dewey’s own anti-epistemological analysis of knowing as a social endeavor, however, includes its own four stages, if not poles. In G. H. Mead’s more schematic version of the Dewey view, scientists begin (1) with a “world taken for granted”; (2) an individual out of step with the rest of the scientific community finds something challengeable in that given worldview; in a successful next step (3), he or she enlists the community in a search for a solution to the problem that step two represents; (4) if the search is successful, the community of scientists are satisfied – though they know their new world-taken-for-granted will generate its own challengers. And there is a fourth step even when the science community does not find a satisfactory solution: it might, for example, involve a sort of perpetually open question, or the elevation of a certain kind of lack of closure to a different intellectual level. (This is Mead’s pragmatic explanation, eschewing any innate or a priori account, of how we come to the sort of certainty to be found in formal sciences such as logic and mathematics -- as, above, with Parmenides.) What Mead and Dewey would join Peirce in arguing for is that this movement from problematic situation to resolution ought to be the preferred mode in other areas of inquiry; it is, they think, the way creative thinkers think in all fields. So the model doesn't just refer to the scientific community, but to any group of thinkers, however mundane, if it is open to novelty.

3. Aristotle's "Moderate Realist" Reinterpretation of Plato's Ideas

Aristotle, as we will soon see George Gale argue, accepted a version of Empedocles’

four elements for what we might call the states of matter. He also used, along with the Greek physicians, the idea of four temperaments. In addition, he counted four main virtues – later called prudence, justice, fortitude (or courage), and temperance (or moderation of appetites); and in addition there were, for him, four "intellectual virtues" paralleling Plato (above): practiced intuition, skillful judgment, ability in demonstration (as in geometry), and wisdom. And if we count background or scene as a sort of basic pole, drama was subject to a four-part analysis in Aristotle's interpretation: beginning, middle, and end of dramatic action, on a stage or against a scene or background. (Modern followers of Aristotle on art might add a fifth element – character or character development – but for Aristotle that would lead back into his four temperaments, as above.) He may even have had other four-poles as well.

The most basic of these is Aristotle's adaptation of Plato's four kinds: opinion, imagination, (geometry-like) demonstration, and wisdom. Aristotle's versions take at least two forms.

One, describing so-called intellectual virtues or good mental habits, has (in one translation) "practical technique," "scientific understanding," "apperceptive intelligence," and "wisdom" – to which this translator (Wheelwright, p. 225) adds a fifth: sagacity. But the last is usually translated as prudence, and is more commonly listed among the four moral virtues as their intellectual accompaniment and guide. Setting prudence (*phronesis*) aside for the moment, I might redo Wheelwright in language I would prefer, listing four good intellectual habits as (1) skillful philosophizing – which in Aristotle covered an amazing range from metaphysics through what we would call natural science to ethics, politics, and art; (2) cultivated intelligence, especially in discerning the axioms or principles to be used in philosophizing or in mathematics; (3) skill in demonstrating theorems or other conclusions as following from axioms or principles; and (4) the ability to make things skillfully, where once again the range is immense, from intellectual tools to the arts in the broadest sense, from music or dance to making pots.

Note that here Aristotle does not hold the same opinion that Plato does about sensation, imagination, and the opinions people base on them; he thinks lower levels of knowledge than what can be demonstrated mathematically or philosophically – say in the arts – can be a matter of practice and good habits and the kinds of knowledge associated with them.

In another version, Wheelwright, translating a part of Aristotle's *Metaphysics* (book six), talks about "the three main divisions of science" as "primal (or divine) science" (metaphysics), the science(s) of nature (physical sciences), and mathematics; but to this is immediately added a discussion of "the accidental" as covering all knowledge claims that cannot be scientific/demonstrative in Aristotle's (or Plato's) sense – and which correspond to Plato's "opinion," above, and which Aristotle deals with in several different ways in different works.

In this passage, Aristotle is closer to Plato in downplaying less-than-demonstrative sciences, but his treatments of "the accidental" as not subject to scientific or epistemic knowing show a level of sophistication not found in Plato's disparagement of sense

knowledge and “mere” opinion.

Two comments: and first, someone might say that Aristotle was fascinated by four-pole analytical schemes (as I said, he has others). Why all these fours in Aristotle? Was he just the major predecessor, after Plato, of the four-pole thinking that is so prominent in the history of Western thought? Or, more likely, did he just take Plato’s four ways of knowing, adapt them to his own approach, then systematically apply the approach to all manner of knowledge areas? This is the most common interpretation. And I agree. Aristotle is nothing if not systematic.

The second comment would reflect Dewey's view that, no matter how much more flexible Aristotle was than Plato, he was still a victim of the fateful "quest for certainty" that dominated Western philosophy after Plato. There were, however, doubters of this tradition already among the Greeks (and Romans following them), and I turn to them next (though briefly).

4. Greek Skepticism

I shouldn't, after all, leave the impression that, even apart from the proto-science we will be looking at next, there were, among Greek thinkers, no other challengers to religion and metaphysics -- whether challengers to Plato or Aristotle or to other phil-osophers. The best known were to be found among a group known as the Skeptics:

> "In the Hellenistic period when the mainstream of Greek philosophy divides into a number of Roman schools of thought, the skeptical position receives what is perhaps its fullest and most explicit statement. But in the writings of Lucian and Pyrrho, to take two examples, it is . . . what Lucian calls 'the warfare of creeds' [the conflicting schools of Greek philosophy], which occasions universal doubt. . . . Pyrrhonism states the traditional denials of the skeptic in their most extreme form. The senses are entirely untrustworthy. Reason is both impotent and self-deceiving. Men possess no knowledge or science. No truth is self-evident; none can be demonstrated." (*The Great Ideas*, I, p. 270.)

The American Pragmatists may have been skeptical about traditional metaphysics and religion, but they did not go this far. Their belief in an admittedly-fallible science, in the service of social improvement or meliorism, would not allow them to go that far.

2
Science Forerunners among the Greeks: the Pythagorean Roots of Empedocles' Pluralism; Euclidian Geometry and Archimedes; Plato, Aristotle, and the Atomists

1. Empedocles on Four Elements

Empedocles seems to have started the proto-scientific reconstructing of origins in "serious" philosophy, by which I mean the earliest stages of Greek natural philosophy that led, ultimately, to modern natural science – and so is taken seriously not only by historians of philosophy but also by historians of science. Earth, water, air, and fire – beginning in order from the bottom up, in the Greek view. Most educated people today will have heard of the scheme, whether they know anything more about Greek thought or not.

But who was Empedocles, and where did he come up with the scheme?

It is difficult for most Western university professors, like myself, to understand the meaning of "brotherhood," as in "Pythagorean brotherhood"—the original intellectual home of Empedocles. It's true that I can get help; I have a friend, for instance, who is an expert on comparative religious systems, but also on popular religion throughout the world. His particular specialty is Asian religious thought and movements, and he could send me to dozens of Western studies of, for example, Buddhist monasteries. I could even consult, on my own, books such as Martin Colcutt's masterful Five Mountains: The Rinzai Zen Monastic Institution in Medieval Japan (1981).

Still, it is difficult to really get inside the heads, into the collective mentality, of brotherhoods. And, I suspect, the same will be true for many readers of this essay. But it is necessary if we are going to understand Empedocles and his four-pole system of earth, water, air, and fire—of earthy, watery, airy, and fiery elements or elementary materials.

The best source on Empedocles that I know remains the introduction to early Greek philosophy by John Mansley Robinson (1968). Unlike others who plunge directly into Empedocles' system of explanation using the four elements (for example, George Gale's *Theory of Science: An Introduction to the History, Logic, and Philosophy of Science*, 1979, which I will use in a moment) to render intelligible in modern terms the system of elements inaugurated among the Greeks by Empedocles, Robinson begins elsewhere. "The Purifications," Robinson says, "is a religious work concerned with the fallen estate of man" (p. 152). The book is in the verse style of many other early Greek authors, but especially of those associated with Pythagorean and other brotherhoods. Robinson cites reports that Empedocles "was censured by the members of the order for revealing the teachings of Pythagoras in his published writings" (p. 151).

The *Purifications* is a verse tale of a god exiled from the world of the gods to live in our world of growth and decay, waking and sleeping, rest and motion, speaking and silence,

majesty and defilement. But more important, it is a story about how to escape this world into a purified world-of-the-past in which all creatures were tame, including wild animals living alongside humans, and there was no bloodshed—especially no shedding of blood in the ritual sacrificing (and eating) of animals. There (maybe now by following their example?) the purified "may rise by degrees to higher forms of existence: 'Among beasts they are born as lions . . . and in the end they live among men on earth as prophets, poets, physicians [healers], and princes. Thence they rise up as gods, exalted in honor'" (p. 155).

According to Robinson, Empedocles' other book, *On the Nature of Things*, still reflects the author's commitment to Pythagorean teachings (and verse style), but "it is strongly marked by the [contrary] influence of Parmenides" (p. 156).

Parmenides had denied flatly that there is any truth in the opinions of mortals; for the opinions of mortals are based upon the fluctuating evidence of the senses, and upon this no reliance can be placed. In part Empedocles admits the charge. Our means of grasping the truth are indeed limited, and the miserable state of man described in the *Purifications* cannot fail to blunt the edge of his thought. Moreover, we live but a short time at best, and come in contact with but a small portion of the whole. So much must be admitted; our knowledge is but a mortal knowledge. But such as it is, it rests upon a weighing of the testimony of the senses. Hence [according to Empedocles] we ought not to withhold our confidence from any of the organs of sense, "but perceive each thing in the way in which it is clear" (p. 157).

Robinson then introduces the main focus of his chapter on Empedocles: "Now the senses show us a world made up of four great masses—earth, air, fire, and water: [in Empedocles' own words] 'Hear first the four roots of all things: shining Zeus, life-bearing Hera, Aidoneus, and Nestis, who with her tears waters the mortal spring" (p. 157). Robinson adds another quote:

> At one time it [the world?] grew to be one only from many: fire and water and earth and the boundless height of air; dread Strife too, [separating] these . . ., and Love [bringing them together]. . . .
>
> For one is begotten and brought to ruin at the coming together of all things, and the other grows up and is dispersed as these are scattered again. And these never cease changing places continually—at one time all coming together into one through Love, at another each being [torn] apart again through the hostility of Strife (p. 159).

And another, which gives Empedocles' account of the formation of the world order:

> Come now, and I will tell you first of the beginning—of all the things which now we see, and how they came to be manifest: earth and billowy sea, damp air and the Titan ether, binding his circle around everything (p. 163).

Robinson then quotes a later author, Aetius (a follower of Theophrastus, who was a follower of Aristotle; see Robinson, p. 311):

> Empedocles says that ether was first separated off [from an initial vortex], fire second, and after that earth. From the earth, as it was sharply constricted by the force of the rotation, water gushed forth, and from this in turn air ascended in the form of vapor. The heaven arose from the ether, the sun from the fire, terrestrial things being compressed from the other elements (p. 163).

Here we almost approach a naturalistic explanation in the modern sense, an account stripped of the language and style of Empedocles' actual verse poem. So we might as well go all the way, and attempt to understand an Empedocles-based four-element system in a linguistic style that takes modern science as a model.

This is what George Gale, in *Theory of Science* (1979), attempts in the following. (It's too long a quote to try to indent the whole thing, so I have simply indicated attribution by using quotation marks at the beginning and end.)

"The Elements and the Ancient Tradition

Modern chemistry was created when Antoine Lavoisier revolted against the accepted paradigm in 1775. . . . The paradigm against which he rose was called the phlogiston theory. It had been successfully used for the greater part of a century, and moreover, combined principles from older traditions, some of which had been around since the time of Aristotle, 2100 years earlier. Given this long vitality, it is clear that we are going to have to go far back in time in order to fully understand what Lavoisier was in revolt against. We cannot fully understand what Lavoisier's revolution was in favor of unless we first fully understand what it was not in favor of. This long trip, however, will not be a terribly tedious one, since along the way I can point out some things about our ordinary way of thinking which should both surprise and amuse you. With no further ado, let us begin the trip in the time of Aristotle.

As I mentioned earlier, the Greeks were the first Western thinkers to propose full-blown naturalistic theories as explanations of natural phenomena. Moreover, Aristotle himself had proposed an epistemology which paid special attention to empirical observation—as would any good biologist. What I have not yet described to you is how these features of Greek science fit into their cultural whole. The details are fascinating.

The Greeks from the very first had been intrigued by the problem of understanding and explaining the natural phenomena of change. Since they were an agricultural people, allowed to live mostly outdoors by their temperate climate, they could not avoid being exposed to the patterns of natural change. They were well aware of the changes of the seasons, and of the changes of the days, weeks, and months; and finally, they were especially well aware, as we all are, of the changes represented by biological growth, development, and decline. One of the first of the Greek thinkers, a man named Heraclitus,

gave an analysis of the world which still has the ring of truth about it today. In terms of what the senses could observe about the world, Heraclitus claimed, "All is change," by which he meant that no natural phenomenon was stable, permanent, and unchanging. He used the analogy of existence as a river into which one could never step twice. That is not all there is to Heraclitus' views: He also believed in an underlying order—a logos or a "logic" of change—but this point was often neglected by his critics. Relative to the empirical world we can still see the sense of Heraclitus' metaphysical claims: Life really does often seem to be nothing but changing, unstable phenomena.

Heraclitus' views about the world of change did not go unchallenged. Another Greek philosopher, a man known as Parmenides, focused upon a different reality as his fundamental element. Parmenides studied human thought and its relation to the world. He noted that our concept of existence, of what it is "to be," was unchanging. This is expressed by language in the statement "Being is"—that is, "Whatever is, is." What we see here is an idea in fundamental opposition to Heraclitus' idea that the main element of the world as we see it is change. On the one hand, Heraclitus perceived the world and saw only change. But on the other hand, Parmenides looked at our conception of reality and saw, in opposition to Heraclitus, that existence is unchanging. The apparent clash between these two views of the world (even though it is based upon a bit of a misinterpretation of Heraclitus) set the problems to be solved by all later philosophers and scientists. From this confrontation between two very different theories about the world developed a complete conceptual system, which formed a paradigm for a tradition that functioned, lived, and grew for almost 2000 years. Let me describe it for you. But first a word of caution.

What I am now going to give you is a composite story of the development of a philosophical view. I have put together parts from a number of different (sometimes, I must admit, even opposing) views held by various ancient thinkers and their schools. I am sure many of my colleagues in history and philosophy will object loudly to such a procedure. After all, the views of one man are his views, and deserve to be assigned to him personally, and not mixed up with those of his colleagues and critics. This is certainly true. But if I adhered strictly to this precept, the text you are now reading would be about three times its present length. Moreover, the story I will tell is not entirely a creation from my own imagination—all parts of it did occur. And moreover, regardless of the historical inaccuracy of any of the precise details of my constructions, the composite itself eventually produced a theory not unlike the one I am going to construct. In order to be somewhat scholarly, however, I will identify the origins of thoughts which are significant parts of my reconstruction of the ancient theory. Doing it this way will preserve the essential coherence of the ideas, without entirely diluting them with the necessary tedium of professional scholarship.

The Hidden Structure

The pluralist and atomist schools accepted Heraclitus' analysis of empirical nature as being essentially involved at all times in a process of change. At least, they thought, this was true about our ordinary, everyday observations of the world. On the other hand, these

thinkers were quite clear about the validity of the point made by Parmenides. Human thought did refer to a stable, unchanging reality. These schools ultimately postulated the existence of an unchanging reality underlying the observable world. To use Jacob Bronowski's happy phrase, they conceived the world to have a "hidden structure" of "atoms" or "elements." Plato's analysis focused even closer upon our concepts of the world. He discovered that the idea of a frog, of an oak tree, or even the idea of the most changing of all things, fire, was an essentially permanent mental object. And the representatives of ideas—words—also did not change overnight, or even over a generation. After all, new dictionaries are not needed daily. This idea of unchanging mental objects is an important advance. When we juxtapose the stability of language against the point raised by Heraclitus that only change is real, the tension becomes immediately clear. According to the two themes in this juxtaposition, the world's metaphysical ultimates are: (1) changing physical phenomena and (2) unchanging mental phenomena. Thus, these two totally disparate entities are the only real objects of the universe. But the ultimate impact of this analysis comes only after we are inevitably forced to conclude that there exists a close relation between these contrary objects; namely, the unchanging objects of language apparently name, or refer to, or represent, the always-changing objects of nature. We cannot avoid this conclusion. Language, after all, is about the world. But how can this be, how can a set of permanent objects refer to a set of evanescent objects? As we reach this point in thought, we realize, as did all these thinkers, that the world and our place in it is far more complex than it may appear. This realization of complexity led to a solution which adopted some of the ideas of all schools, in particular those of the pluralists and atomists.

The logic of the solution is inexorable: If the language and thought are stable, but the ordinary observable world is not stable, then language and thought are not about the ordinary observable world. The world must have a hidden structure, and it is this underlying hidden structure which guarantees the stability of the set of objects referred to by language. In this move from ordinary observation to postulation of an unobservable but real underlying world, the ancients introduced the Western intellectual community to what I earlier called "reductionism," the philosophical view which hypothesizes that ordinary, everyday objects may be conceptually reduced to their fundamental constituents, and that talk about these higher-level observational objects may be logically translated and reduced to talk about lower-level conceptual objects. An example of reductionism is the common assertion that "Human beings are in reality only worth 98 cents, since that is the value of the chemicals which constitute us; after all, we are, in reality, metaphysically speaking, only a batch of various chemicals, since all our organs, tissues, cells, and so on can be reduced to their constituent chemicals." Although this assertion needs to be corrected for inflation, it is still clear that it exhibits a particular view about what human beings really are, namely, chemicals, as opposed to what they appear to be, namely, organs, tissues, etc.

Different schools held varying views about the details of the reduction of ordinary objects to their fundamental objects. In general, however, the logic, or style, of all the moves is typical. We start from the idea that our ordinary observational and perceptual processes are central features in any solution to the problem of finding the hidden struc-

ture which is the ultimate referent of language. What we then attempt to do is to find the underlying fundamental features of perception, and to see how these correspond to everyday observation. Thus, the perceptual system is focused upon them, in an effort to isolate the basic functions and data which are present in human sensation. From this analysis is developed a systematic account of the most fundamental data which humans could get from perception. The final belief was that the ultimate level of the observational world is the "hot," "cold," "wet," and "dry." This belief may sound strange, but it is not really strange. If you ask "What can we observe?" one usual answer is chairs, tables, houses, trees, and so on. But this answer must be rejected, since these observables are always changing even while our concepts of them remain the same. There is, however, another plausible answer, although it somewhat distorts the normal sense of the term "observe." If we ask "What can we observe?" in a context which involves noting fundamental data produced by the senses, then we can say that we observe sights, sounds, colors, and so on, with our sensory organs. This is the kind of answer that many ancients gave to the question "What can we observe?" In the fundamental sense, according to this theory, what we can observe is things presented to us as clusters of complexes of sensations of hot, cold, wet, and dry. All other sensations and ideas are derivative upon these four basic qualities. "Snow," for example, might be compounded out of many sensations, primary among which would be sensations of wet and cold.

But the ancient philosophers did not leave scientists locked up in their own minds, observing sensations as though they were a TV program of hots, colds, wets, and drys. Rather, these philosophers believed that certain real, ultimate physical features of the natural world corresponded strictly to these observable qualities. In the details of this view, which was propounded first by the pluralist philosopher Empedocles, there were four types of basic physical structures, each linked to two of the basic qualities. Thus, hot and dry were the observable counterparts of the basic structure "fire." (See Fig. 3-1.) In one sense, the qualities "hot" and "dry" constituted fire. But in another sense, more significant for our account, "hot" and "dry" were the perceptible parts of the fundamental structure "fire." "Cold" and "wet" were the perceptible aspects of "water." And so it went for all four. These four basic structures—air, earth, fire, and water—were Empedocles' elements, as they later were to serve Aristotle as well. It was from these basic elements that all other objects, such as rocks, frogs, and even people, were formed. In this way the contradiction between the stability of language and the instability of the world was relieved: The usual observable world of growth, seasons, etc., was unstable, but the underlying structure was not.

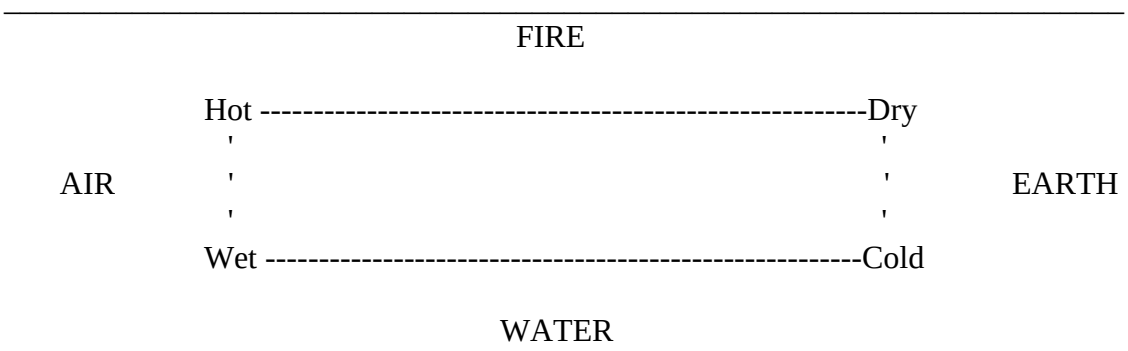


Figure 3-1. Physical entities are located on the points of the rhombus, and sensible qualities are located on the points of the rectangle. Each physical form corresponds to the concatenation of two sensible qualities. Fire, for example, corresponds to the qualities hot and dry, but underneath, in the hidden structure, was the permanent, unchanging world of the elementary forms air, earth, fire, and water.

A word about terminology here. In what follows, I will persist in calling air, earth, fire, and water "forms." By "forms" I simply mean the ultimate patterns, or orders, or structures, which exist in the physical world. This usage is somewhat controversial. Plato had been the first to use the term "form" in a metaphysically significant fashion. He used it to refer to those objects which provide the patterns for the things of the natural world. But from this point on, we must turn our eyes to Aristotle, who used the term somewhat differently. The "form" of something was also its "pattern," which can range in meaning all the way from the simple shape of a rock to the essence of a living being (not unlike the way in which the genetic code of a human being is in some strong sense its "form"). In the most restricted interpretation of ancient thought, the hot, cold, wet, and dry were the ultimate forms in which objects could appear. But certainly, at least in a physically meaningful sense, the elements—the fire, earth, air, and water—of which a thing are composed are its forms, that is, the things from which it can be conceived to be formed. It is this primitive sense of "form" which I think is relevant here. Thus, while Aristotle did not himself provide the analysis I will now give, I believe it is fair to push his concepts to the point where they include just the sort of elementary description I will give you. The importance of all this from the point of view of "paradigm" and "tradition" is easy to see: We are still under the influence of Aristotle's view today. The concept of the "form" of something has passed from the technical philosophy of Aristotle into the ordinary thought processes of us all. Let me give a couple of examples of this.

Formulae

Everyone is familiar with the concept of "formula." A formula is a sort of road map, or a detailed description of how something is organized or produced. Formulae, especially

in science, are taken to reveal the most intimate hidden structures of things. Hence, we have chemical formulae of water, gasoline, and most importantly, Coca Cola. Think how intimate and significant the formula of Coca Cola is: It reveals the secrets of the substance. This shows us the reason why the formula for Coca Cola is so closely guarded. If you ask yourself, "Where did the concept of a 'formula' come from?" the answer should already be obvious. "Formula" is the symbolic representation or description of the forms which make up a substance. Thus, if a substance is constituted by air, earth, fire, and water, then the formula of that substance will be the list which describes the various ratios in which air, earth, fire, and water are combined to make up that substance. Hence, even in the very concept of a formula, we are presupposing the ancient theory which asserted that every object consisted of ratios of the elementary forms. Note one other important thing, however. Since there was a correspondence between the sensible perceptual qualities hot, cold, wet, and dry on the one hand, and the physical elements air, earth, fire, and water on the other, it follows that the scientist could give a formula in terms of either set of entities, either physical or sensible. This possibility will be of importance to our understanding of how the ancient—especially in its Aristotelian aspects—theory was later developed into the paradigm used in alchemy."

End of long quote. Gale then goes on to trace out how the four elements were used in medieval alchemy, and this is followed by a similar reconstruction -- equally interesting -- of the four elements as they show up in Hippocratic medicine, and continue right down to the present in some versions of four psychological temperaments. But this much is enough to give an idea of how Empedocles' ideas can easily be translated into language more suited to our scientific age. A brilliant reconstruction, in my opinion, but the American Pragmatists would be too committed to modern science -- chemistry rather than alchemy for example -- to view the reconstruction as more than a sort of anthropological museum piece. However, Gale's view is that it is a good way to introduce the recent philosophy of science notion of "paradigms" in the history of science, and I obviously go along with him to that extent or I wouldn't have included such a long quote. I believe such a rephrasing in modern terms is a good model of what I try to do in this essay.

2. Euclid, Archimedes, and Aristarchus

a. Euclid

Almost certainly every reader of this essay will recall vividly his or her encounter with Euclidean geometry in high school. Euclid was a member of the circle of people associated with Plato's Academy, and Plato held him and other mathematicians of the time in high esteem. As a reminder of what many might like to forget, here goes:

> "The basic principles, as Euclid expounds the science [in his *Elements*], seem to be threefold: definitions, postulates, and axioms or common notions. The axioms are called 'common notions' because they are truths common to other branches of mathematics as well as to geometry. The common notions are called 'axioms'

> because their truth is supposed to be self-evident. In contrast, the postulates are peculiar to geometry, for they are written as rules of construction. They demand that certain operations be assumed possible, such as the drawing of a straight line or a circle, or the transposition of a figure from one portion of space to another without alteration of its form or quantity.
>
> "Euclid's definitions include the definition of a straight line and a circle. His first two postulates, therefore, seem to ask us to assume that space is such that these defined geometrical objects exist in it as they are defined; or, in other words, that objects corresponding to the definition have geometrical reality. But there are many definitions -- of a triangle, of an equilateral triangle, of a parallelogram -- for which Euclid states no postulate demanding that we assume the geometrical reality of the object defined. Hence before he undertakes to demonstrate the properties of these figures, he finds it necessary to prove that they can be constructed. Until they are constructed, and the construction demonstrated, the definitions state only possibilities to which no geometrical realities are known to correspond in the space determined by Euclid's postulates.
>
> "In his first constructions, Euclid can employ only the definition of the figure itself, his axioms, and those postulates which permit him to use certain mechanical devices -- the straight edge and the compass, which are the mechanical equivalents of his postulates that a straight line can be drawn between any two points and a circle described with any radius from any point upon a plane. When, for example, in the first proposition of Book I, Euclid thus demonstrates the construction of an equilateral triangle, he has proved the geometrical existence of that figure, or, in other words, its reality in the space of his postulates." (*The Great Ideas*, II, p. 49.)

Clearly, once they had started down that route, the Greeks quickly became good at reasoning in a fashion that would persist into modern science. And there may well have been mathematical geniuses in other cultures, such as the Egyptian culture which the Pythagoreans and Plato admired; I mentioned Imhotep among the Egyptians earlier, and the Greeks admired him enough to turn him into one of their gods as well, Asclepius (the Romans' Aesculapius).

b. Archimedes

Another key figure in this circle of thinkers was Archimedes, he of the "force of a lever" fame (among other things): "As Fourier tells the story of 'rational mechanics,' the 'discoveries of Archimedes' begin the science. 'This great geometer,' he says, 'explained the mathematical principles of the equilibrium of solids and fluids. About eighteen centuries elapsed before Galileo, the originator of dynamical theories, discovered the laws of motion of heavy bodies.'" (*The Great Ideas*, II, p 87.)

Again, though we have no record of their producing "dynamical theories," Egyptian

architects building their pyramids, as well as similar monument builders in many parts of the world all the way back to the early Stone Age, must have had at least a working knowledge of the sorts of calculations that would later establish Archimedes as the "first great geometer" in terms of dynamics.

c. Aristarchus

It is probably enough to cite only the title of this Greek astronomer's most famous book -- *On the Sizes and Distances of the Sun and Moon* -- and to say that he came surprisingly close to modern figures. (See Thomas Heath, *Aristarchus of Samos: A History of Greek Astronomy*.) In this case, it is all too clear that many ancient cultures had close observers of the stars and planets, though it is not as clear that they were able to calculate the sizes and distances of heavenly bodies.

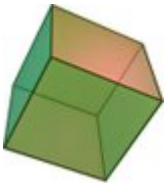
In general, it is safe to say that the ancients, in many cultures, had mathematical and at least astronomical (usually debunked as astrological) thinkers and maybe even geniuses. The fact that I put the "astrology" reservation in parentheses suggests that many historians of science pay more attention to the fact that ancient geometers and mathematical measurers of the heavens related their calculations to religious and cultural phenomena than to the often-amazing accuracy of their astronomical calculations. I believe we should not make that mistake; we should respect calculations that foreshadow modern calculations, no matter the cultural matrix in which they were made. This is part of the Pragmatist emphasis I offer at the end of this part, focusing on the everyday life of the Greeks in ancient times -- which should be paralleled by investigators of other ancient cultures. Their astronomical calculations were typically made by a small minority of priests, but they ruled the lives of ordinary people -- and connected them to the universe in ways that reflected nature, agricultural cycles, and so on. The Greek natural philosophers may have been different from other ancient cultures in trying to relate mythical accounts to what we would call rational explanations, but they too lived in a culture still dominated by traditional beliefs.

And the same was true for the most advanced thinkers of the "rationalizing" Greek schools, to which I turn now.

3. Nature in Plato, Aristotle, and the Atomists

a. Plato

Plato, in his dialogue *Timaeus*, used a version of Empedocles' four-element scheme for the study of nature -- though he concentrated on structures, more or less like building blocks, using the so-called Platonic Solids. (Later, Buckminster Fuller, among others, acknowledging Plato as a source, turned similar ideas into what Fuller called "architectonics," culminating in his famous geodesic domes.)

				
Tetrahedron	Hexahedron or Cube	Octahedron	Dodecahedron	Icosahedron

According to the Wikipedia online encyclopedia, "The Platonic solids feature prominently in the philosophy of Plato for whom they are named. Plato wrote about them in the dialogue *Timaeus* *c*.360 B.C. in which he associated each of the four classical elements (earth, air, water, and fire) with a regular solid. Earth was associated with the cube, air with the octahedron, water with the icosahedron, and fire with the tetrahedron. There was intuitive justification for these associations: the heat of fire feels sharp and stabbing (like little tetrahedra). Air is made of the octahedron; its minuscule components are so smooth that one can barely feel it. Water, the icosahedron, flows out of one's hand when picked up, as if it is made of tiny little balls. By contrast, a highly un-spherical solid, the hexahedron (cube) represents earth. These clumsy little solids cause dirt to crumble and break when picked up, in stark difference to the smooth flow of water. The fifth Platonic solid, the dodecahedron, Plato obscurely remarks, "...the god used for arranging the constellations on the whole heaven."

Another important aspect of the natural philosophy of Plato is to be found in his Academy, where all the Greek mathematicians -- such as Euclid -- and proto-physicists were welcomed and discussed. (See Friedlander, *Plato.*) Aristotle even complained that too much of Plato's philosophy was influenced by mathematics.

Still, it remains the case that Plato is much better known for his metaphysical theory of Forms or Ideas (section 1, above) than for his natural philosophy or foreshadowings of modern experimental science. Best, in this respect, just to give him credit for the people he surrounded himself with in his Academy. One student, we should recall, was Aristotle, and he was much more of a natural philosopher.

b. Aristotle's Four Causes and Natural Explanations

We have already seen -- in the rendering of Aristotle's version of Empedocles' four

elements, by George Gale, that I quoted at length earlier -- something of Aristotle's approach to explanations in the philosophy of natural processes. But Aristotle is more famous for his "four causes" or four modes of causal explanation -- through matter, form, agent, and end -- than for his proto-science (except in biology). So I look at that first.

Here is Philip Wheelwright's version of the matter-form four-pole (from Aristotle's Physics):

"Knowledge is the object of our studies, and we can hardly be said really to know a thing until we have grasped the 'why' of it—i.e, until we have grasped 'the factors that are most directly responsible for it' (prote aitia). Clearly, then, this must be our aim also with regard to the phenomena of becoming and perishing and all forms of physical change, so that having grasped the underlying principles we may employ them in the explanation of particular phenomena. |

[1. Material factor.] In one sense, then, 'the reason for anything' (aitia) means the material out of which an object is generated and which is immanent in the generated object: e.g., the bronze of a statue, the silver of a bowl, and also the genera to which such materials belong.

[2. Formal factor.] Next, it may mean the form (eidos) or pattern (paradeigma), i.e., what the thing is defined as being essentially; and also the genus to which this essence belongs. Thus the ratio 2:1 is a formal condition of the musical octave. Generally speaking, number and the factors that make up the definition of a thing are what constitute its formal condition.

[3. Propelling factor.] A third meaning is the immediate source of change or of cessation from change. In this sense a man who gives advice acts as 'determining agency' (aitia) [on him who receives it], a father on his offspring, and generally speaking whatever produces or changes anything on the product or on the thing changed.

[4. Telic factor.] Finally the reason for anything may mean the end (telos) or purpose for the sake of which a thing is done: e.g., health may be a determining factor in going for a walk. "Why is he taking a walk?" we ask. "In order to be healthy": having said this we think we have given a sufficient explanation. Under this category must also be put all the intermediate steps which the agent must take as means to the end—e.g., taking off weight, loosening the bowels, also drugs and surgical instruments, as means to health. All these are for the sake of an end, although they differ in that some are actions to be performed while others are instruments to be used.

Thus we have enumerated the various ways in which one thing can determine another."

Aside from failing to note that too much of Aristotle's "telic form" is described here in anthropomorphic terms – for Aristotle, all sorts of things have telic forms, including celestial bodies, change in its broadest sense, even what we would think of as totally inert objects such as the earth – Wheelwright's translation pretty well captures the spirit of

Aristotle on this most basic point. It is a point, however, that is often misunderstood, with later Aristotelians and critics alike thinking (and speaking) in terms of a material such as clay being molded into shapes or forms by an artisan with a purpose in mind. Aristotle does talk about the material factor here that way, but for him the four "factors" (in Wheelwright's translation) are the four basic ways of explaining anything – if it can be explained "epistemically." Clay does explain what kinds of ceramic vessels can be made, but so does steel determine how sharp a sword can be, and a riverbed explains where a river will flow. In Aristotelian explanations, the formal and telic factors simply refer to different times: the intrinsic "goal" of the orbit of a celestial body is simply to go round and round, but that is also its form – though some medieval Aristotelians talked about such orbits as having external (e.g., divine) or anthropomorphic purposes as well. And, finally, agency should not be thought of exclusively in mechanical terms, in terms of one body pushing or pulling another; note Aristotle's example of a father's influence on his sons or daughters (which we should not think of in terms of modern genetics).

What is most interesting to me is that, if well understood, this is still a useful four-pole scheme today, even in our scientific culture. I once had a professor (William Wallace, an expert on medieval and early modern science, mentioned earlier as a mentor), who could translate almost any modern scientific explanation into one or another of Aristotle's four types.

Nonetheless, we should not push this too far. It remains clear that early modern science got its impetus by rejecting Aristotle's multiple-cause explanatory system in favor of one that emphasized the dynamics of mechanical pushes and pulls -- though modern science has never done without periodic tables and genera-and-species trees in biology or star charts in (observational) astronomy, among other derivatives of Aristotle's non-mechanical explanations. But it is also true that, even in the biological sciences, in which he (and his followers; he had a school just as advanced as Plato's) excelled, Aristotle made many mistakes that would later be corrrected, not only in experimental biology but even in systematizations of genera and species, family trees, and the like. Dewey may have gone too far in treating Aristotle's "quest for certainty" as on a par with Plato's -- John Herman Randall (see his *Aristotle*) is just one recent interpreter to be more understanding toward Aristotle -- but there remains much in Aristotle's body of natural philosophy (or proto-science) writings which the Pragmatists would find deficient, even on Aristotle's own terms.

c. The Ancient Atomists

George Gale, above, has already mentioned the Greek Atomists in his reconstruction of Empedocles' account of the four elements. But their view deserves a section of its own here, because the four elements and atoms are not the same.

The leading Greek Atomists were Leucippus and Democritus, followed by the Roman philosopher Lucretius. Here is one brief version of their view:

> "According to the Greek Atomists, matter is not infinitely divisible. 'If nature had set no limit to the breaking of things,' Lucretius writes, 'by this time the bodies of matter could have been so far reduced . . . that nothing could within a fixed time be conceived out of them and reach its utmost growth of being.' There must then be 'a fixed limit to their breaking' -- a limit in physical division which ultimately reaches units of matter that are absolutely indivisible. Lucretius calls them 'first beginnings . . . of solid singleness, . . . not compounded out of a union of parts, but, rather, strong in everlasting singleness' -- the 'seeds of things,' or atoms. The Greek word from which 'atom' comes literally means uncuttable. . . .
>
> "In the Greek conception of atom and element, the difference between them lies in [the] distinction between quantitative and qualitative indivisibility. The atom is the least quantity of matter. It cannot be broken into quantitative parts. The elementary body is not atomic. It is always capable of division into smaller units, but all of these units must be of the same kind as the elementary body undergoing division.
>
> "The element is indivisible only in the sense that it cannot be decomposed into other kinds of matter, as a mixed body can be decomposed into its diverse elements. The atom cannot be divided in any way. . . . Different kinds of matter occur only on the level of compounds and as the result of diverse combinations of atoms. . . .
>
> "When their analysis reached its greatest refinement, the ancients recognized that the earth, air, fire, and water of common experience do not actually have the purity requisite for [true] elements." (*The Great Ideas*, I, pp. 402-403.)

Only atoms, the utterly indivisible units of matter, have that purity. Nowadays, of course, we talk about subatomic particles down to an exceedingly fine level of division and subdivision. But in that we are talking about experimental physics, not the natural philosophy of the Greeks. Still, they deserve credit for introducing the idea of ultimate units, not on the basis of experimental science, but on the basis of clear thinking.

Atomism is thus a further step along the path first trodden by Empedocles, his effort to make sense, in literal terms, of how the world came to be as it is. And many modern interpreters of Greek science find the atomists -- however much still natural philosophers and not experimental scientists -- far more congenial than either Plato and his Academy or Aristotle and his somewhat more experimental Lyceum. (See Whyte, *Essay on Atomism.*)

In Greece, not only traditionalist educators in the "Greek way," but also Plato, Aristotle, and other philosophers were as interested in ethics and politics as they were in origins. However, where the philosophers differed from the traditionalists was, to continue my thread here, in trying to develop *reason-based* ethical and political systems -- not necessarily trying to undermine the old ways but at the very least trying to put these aspects of life on a sound basis.

1. Paideia, the Traditional Education of the Greek Upper Classes

Werner Jaeger's famous book, *Paideia*, discusses in great detail and at great length the ways in which Greek citizens were raised -- educated though not exactly in classroom settings -- to take their "natural" places as leaders in Greek society. In many ways the phases of this education closely parallel the phases in Plato's education of the Guardians in *The Republic*. But except for the fact that these young men (almost exclusively) had tutors -- Aristotle, for example, was a tutor for Alexander the Great -- education, in the schooling sense that we have known it in the West ever since, only began with Plato's Academy, Aristotle's Lyceum, and other schools of that late date in Greek history.

The difference lies in the teaching methods. The Greek philosophers all relied on thinking, on reasoning in various fashions; the traditional tutors relied exclusively on tradition, on the classical legends and stories of heroism, on the way the great families raised their sons to be leaders.

2. Socrates on Ethics

As Plato presents Socrates in his dialogue *Euthyphro*, Socrates confronts his interlocutor, supposedly an educated man in the Greek tradition, with a conundrum: are acts good because the gods say so, or do the gods say so because the acts are good in the first place? The two go round and round, but ultimately Euthyphro throws up his hands in despair, and just says they're good because tradition says so.

This is usually interpreted as the Socratic way of showing up human (ironically, including his own) ignorance of the Form or Idea of the Good that makes a good thing so.

Aristotle interpreted Socrates as saying that all one needs to do to be good is to know what the Good is. Aristotle's point, when he makes this probably erroneous claim about Socrates, is that knowing what to do isn't enough to be good; it takes practice. But whatever the truth about the historical Socrates or about Socrates as presented in Plato's *Dialogues*, a view of ethics as knowing what you need to know to be a good person has been a powerful argument down through the centuries ever since the time of Socrates and Plato. And Socrates, as the martyred challenger of traditional views, is taken as the embodiment of the ideal of challenging unclear traditions with "dialectically-established" clear ideas -- in this case of right and wrong.

On this point, I side with Aristotle about the need for practice (see Nussbaum, *The Fragility of Goodness*), but it seems necessary, historically, to recognize the long history, right down to our own times, of the ethics-means-knowing the good tradition. But in the context of this essay, it is also well to point out that the American Pragmatists are hostile to that tradition. They're much closer to Aristotle on the point, and possibly still closer when it comes to Aristotle's views on politics, as we will see in a moment.

3. Plato on Ethics and Politics

Plato's ethics, to the extent that his approach can be said to differ from the ethics of Socrates as presented by Plato in his *Dialogues*, can be summed up most easily in terms of his treatment of the topic in *The Republic*. And there the ideal of the perfectly balanced and "just ruler," as opposed to the tyrant -- who rules over a well-ordered and harmonious hierarchy of social groups or classes -- is taken to be the exact parallel of the "just man" (Plato is more open to including women than most of his contemporaries) in harmonious balance, with Wisdom ruling over intelligence, and the two ruling the passions and emotions.

This ideal of happiness as inner harmony, including the rule of reason over the wild "baser" appetites -- along with the ideal of a harmonious state as one in which each member (group or individual) of a society knows his or her place and is happy to be there -- is one with wide appeal. Some people say Plato borrowed it from Indian or other non-Greek cultures.

The extent to which this kind of ethics and politics differs from the ideals of Greek culture, inculcated in the young by their elders using *paideia* (in Jaeger's account), lies not so much in content as in the manner of presentation. If nothing else, Plato's *Dialogues*, and perhaps most especially *The Republic*, are presented as arriving at the view by reasoned discourse, not just by internalizing a traditional way of life. Nonetheless, critics (see, for example, I. F. Stone in *The Trial of Socrates*) are quick to point out that Plato seems less likely than his hero Socrates to challenge traditional views.

4. Aristotle's Ethics and Politics

Perhaps as well known as Aristotle's "four causes" is his approach to ethics in terms of the virtues. Nearly everyone has heard of the version associated with Thomas Aquinas and theologians within the Roman Catholic tradition, where the “cardinal virtues” are said to include courage, temperance (moderation of appetites), justice, and prudence -- along with a whole host of particular virtues aligned under these. But this is the order in which they were already presented in Aristotle’s *Nicomachean Ethics* (books five and six).

The Basic Works of Aristotle (pp. 929-931) gives this outline of “the virtues and

vices": "A. Courage. B. Temperance. [C – G are various specific cases of moderating appetites.] H. Justice . . . ," to which, then, is added "intellectual virtue," where we find "practical wisdom" (more commonly "prudence") as a special virtue that accompanies the moral virtues. Vices are discussed alongside the virtues that they distort.

In book six, Aristotle has prudence do double duty, as the intellectual accompaniment of the moral virtues and as one of five intellectual virtues. But the special role of prudence in Aristotelian ethics should be emphasized here.

To do so, we have to pause to try to understand what "virtue" means for Aristotle. Some people try to capture the sense by talking about "excellences" of character in virtuous (as opposed to vicious) persons, and that does help a little. But Thomas Aquinas helps a little more by starting with habits or learned, settled dispositions to behave in one way or another. A virtuous person in this sense has learned good habits, whereas a vicious person has picked up, and settled into, bad habits.

But who is to say what is a good or a bad habit? Both Plato and Aristotle pretty much accepted the views of their Greek contemporaries on this point, but Aristotle went to great pains to describe good habits as a mean between excess and defect: courage lies between an excess of foolhardiness and the defect usually called timidity (sometimes just called lack of courage).

For Aristotle, it is important to recognize that young people don't automatically know where the mean lies, nor do they have the wherewithal to follow it; they have to learn, often enough by making mistakes, whether going too far or not far enough in managing a particular kind of behavior is good for them -- in the courage example, the behavior typically means soldiering.

Aristotle thinks the young can be helped along by teachers or mentors, but somewhere along the line, if they are going to develop good habits, they are going to have to learn for themselves how to "hit on" the mean, as some translators put it. And this is where prudence, probably just as well translated as practical wisdom, comes into play. Prudence or practical wisdom, however, must be learned in the same way the moral virtues it guides are learned -- by practice, by making mistakes or at least risking doing so. There is -- contrary to a number of ethical systems, especially religious ethical systems that claim to derive their views from Aristotle -- no recipe book that will tell you what to do in every instance. (See Martha Nussbaum, *The Fragility of Goodness*.)

Another example of the Aristotelian approach can be seen in dealing with alcoholic beverages: not everyone has the same tolerance level, and each person must find his or her mean between teetotalism and repeated drunkenness of a vicious sort. Like most Mediterranean cultures, the Greeks accepted drinking wine as a way of life; but as far as we know they hadn't yet come to the view that habitual drunkenness can be a disease and not just a vice.

The list of particular "moderation" or "temperance" virtues in Aristotle's *Nicomachean*

Ethics is long, and goes far beyond just moderation in eating and drinking. You have to find your own middle ground in terms of managing money, and even in social life with friends, as well as, for another example, in studying.

It's a little more complex when Aristotle turns to the virtue of justice, of acting habitually in a way that will be recognized by society as just or fair. But the principle is still pretty much the same: when it comes to social rewards, we shouldn't be overeager for more than we really deserve, but we should also show a healthy ambition; we should pay debts in exact measure, not cheating those we deal with nor going overboard in, for instance, how much we pay back on a loan. (Generosity, on another hand, is recognized by Aristotle as virtuous.) And so it goes.

However, the problem when it comes to justice is that "dealing justly" has many different contexts -- when dealing with those richer or more powerful than oneself, or the reverse; or with public authorities; etc. -- and almost every single context has a different sort of mean. Moreover, there are different kinds of political systems, and what counts as a just distribution in each type is different: in some kinds of strict communist systems, absolute equality for all is demanded; whereas in others there are different measures, say for the particularly rich and powerful or the especially poor and needy; and some cultures decide everything on merit; and so on.

Aristotle, who like a good proto-scientist collected all the political constitutions of the Mediterranean states that he knew, was nothing if not pragmatic in how he counseled citizens of these different kinds of states.

In his *Politics*, Aristotle discusses oligarchy or rule by the gifted (in money, status, or any of several other things); democracy or rule by those without these special gifts (especially without money); and a society/polity with the middle class dominant – to which he adds tyranny, into which either oligarchy or mob democracy can degenerate.

Here is J. H. Randall on Aristotle's *Politics* (though I have added the numbering):

"Aristotle distinguishes five main varieties of [1] democracy, and four of [2] oligarchy, the two chief principles of political organization, depending on the varying combination of the 'parts' of the polis, or social classes. Both democracy and oligarchy are in a condition of unstable equilibrium; each has a natural tendency to be pushed to its extreme, oligarchy to government by an oppressive faction, democracy to rule by the mob. Both thus tend to degenerate into the worst of all forms of government, [3] tyranny, which is also the least likely to be successful or to endure. Hence the statesman governing either a democracy or an oligarchy finds his chief task to keep it from following out the logic and the natural process of degeneration of its particular form.

"In consequence of this analysis, Aristotle judges that the best practicable form of government for most states, assuming no more than the common run of moral excellence and political skill, will be [4] a judicious mixture of the democratic with the oligarchic principle. It will be what he calls politeia, a 'polity' or constitutional government, and

may lean either toward a moderate democracy or a moderate aristocracy."

If there is anything to fault Randall for here, it is in putting too much emphasis on politeia or constitutional governance as best. Aristotle was a political realist, and his political analysis is intended to schematize the types of actually existing states (and empires) with which he was familiar.

One final word on ethics and politics in Aristotle: he does not make a very clear distinction between them, even though he wrote different books for each. As we have seen, behavior following the shifting guidelines for justice (above) would pretty much equip a citizen for good citizenship, as it would a good leader for a particular society. Some interpreters of Aristotle even subsume his ethics under his politics: what is most important for all is the virtues of good citizenship (or political leadership), while courage and moderation are conducive to good citizenship. And prudence is important in finding the means all around, for leaders, for citizens, for everyone in terms of moderation and courage in defending one's society against enemies, internal or external.

Some people characterize Aristotle's ethics and politics as all too reasonable -- may-be even conventional or conservative -- but it's hard not to admit that his approach is an attempt to be reasonable in this difficult arena. Nonetheless, it's not a system of ethics and/or politics that the American Pragmatists would find congenial. Many recent femi-nists have castigated Aristotle fiercely over his acceptance of the Greek subordination of women (less true, in a sense, for Plato), and the Pragmatists would side with them on that point. As we will see, whereas the most liberal interpretation of Aristotle's ethics and politics would put him in the center of the political spectrum, the Pragmatists tend strong-ly toward the left, often toward socialism. (This would not be true of William James.)

5. The Stoics

The Roman Emperor Marcus Aurelius was strongly influenced not only by Greek culture but by Greek philosophy; in this case his Stoicism -- here taken to be an approach to ethics -- is a kind of reaction to Platonic and Aristotelian (and other versions of Greek) rational ethics. Stoicism in its various forms stands mainly for the view that we can't do anything about injustices in the world, nor can we really control what Plato viewed as our "baser appetites"; so the only ethical stance is to be strong in oneself and personally avoid injustices and passionate excess -- to be, in a word, stoical in the face of the ills that might trouble you.

This is clearly a caricature and no adequate account of what Marcus Aurelius or any other member of what is sometimes referred to as the "Stoic school" of ethics had to say, or still has to say to us today. But once again the idea that it is reasonable to be stoical in the face of things you can't change has had echoes in Western thought ever since Greek times. And of course it has echoes in Buddhism and other non-Western traditions.

And it is one more way of trying to fashion a reasonable ethical (and political) system

rather than just do what has always been done, based on unchallenged tradition.

I'm not aware that the Pragmatists had much to say about Stoicism (capital S), but they would certainly not advocate stoicism (small S) when it comes to community efforts of societies to improve themselves. As I will argue in part four, activist politicking to improve society is a viable (in my opinion the best) interpretation of the philosophical legacy of American Pragmatism.

4
Practice, the Missing Ingredient: Greek Drama; Politics and the Sophists Reconsidered; plus the "Mechanical" Arts and Crafts

Finally here, I take a quick glance at what life was really like in the Greek culture against which this myth-versus-reason drama unfolded -- where up to this point the rationalizers of the myths have had the upper hand. The American Pragmatists, as I will show later, would question whether this should be the case. John Dewey, in *Re-construction in Philosophy*, says that, from the beginning, all philosophers have been, directly or indirectly, responding to the real social problems of the cultures in which they lived -- and, he adds, that is as it should be.

a. Greek Drama

> "'Folly, eldest of Jove's daughters,' says Agamemnon in the *Iliad*, 'shuts men's eyes to their destruction. She walks delicately, not on solid earth, but hovers over the heads of men to make them stumble or to ensnare them. Time was when she fooled Jove himself.' Agamemnon concludes the story of Jove's befuddlement by relating how in his rage Jove 'caught Folly by the hair and swore a great oath that never should she again invade starry heaven and Olympus, for she was the bane of all. Then he whirled her round with a twist of his hand, and flung her down from heaven so that she fell on the fields of mortal men.' . . .
>
> "Whatever the forms or aspects of folly, and however the wisdom it implies or opposes be conceived, one thing is clear throughout the tradition of western thought. No one who can separate true wisdom from folly in disguise places anything but the highest value on it [wisdom] in the order of human goods.
>
> "The final utterance of the Chorus in *Antigone*, that 'wisdom is the supreme part of happiness'; the Aristotelian doctrine that 'the activity of philosophic wisdom is admittedly the pleasantest of virtuous activities' . . . the statement by Plato [that] 'the human race will not see better days until . . . the stock of those who rightly and genuinely follow philosophy acquire political authority' . . . -- all these express the tribute which pagan antiquity pays to wisdom in human life and society."

In *The Great Ideas* (the quote is from volume II, pp. 1108-1109), this is about all you will find on Greek drama. The authors say (II, pp. 1285ff) that they have tried, in relating everything to ideas, to place "narratives under ideas and topics . . . on the logic of example" -- though they recognize that, "To say that the whole of the *Iliad* can be cited under a topic on the relation of men and gods, or that particular scenes or episodes can be cited under topics dealing with honor or pride or love, is not to say that the poetic meaning of the *Iliad* can be exhaustively comprehended by such references." So in order to give a really good idea of Greek drama and its impact on the daily lives of Greek men and women of the classical period requires another approach. I would say to consult at least Robert Graves, *The Greek Myths*. I need also, here, to refer back to Werner Jaeger's *Paideia*, cited above under traditional Greek morality and the inculcating thereof in the young male leaders of Athens and other Greek city states.

b. The Sophists Given Their Due

What follows is a traditional account of the so-called Sophists, based on how they are presented in Plato's *Dialogues*. A more favorable account, recognizing especially their contributions to dialogue in Greek democracy, is referenced next.

> "As they appear in Plato's dialogues the sophists are obviously impressed by the kind of information which fills the *History* of Herodotus [see Jaeger's *Paideia*, above] -- information about the great diversity of human beliefs and practices which anyone could discover for himself if he traveled, as Herodotus did, from people to people, observing their institutions and collecting their legends. Herodotus himself does not explicitly draw the skeptical conclusion, yet his own suspended judgment on many matters betokens a turn of mind made cautious by the impact of contrary opinions and conflicting customs. . . .
>
> "The critical temper of the Greek sophists, and of an observer of men and manners like Herodotus, reappears later in the questionings of Montaigne -- sharpened somewhat by his acquaintance with the Roman skeptics." (*The Great Ideas*, I, p. 270.)

To be fair to the Sophists, the positive points made here are reinforced in I. F. Stone's *The Trial of Socrates*, where the sophists are made the democratic heroes, with Socrates and Plato the villainous defenders of Greek aristocracy.

c. The Mechanical Arts and Crafts in Greece, and Their Practitioners

Here is *The Great Ideas* on the "mechanical" arts (a term favored by Aristotle) in Greek life. As presented by those authors, as usual, there is no sense of the real life of Greek artisans, of farmers including those who would later be called *campesinos* or *paisanos* or, in a different culture, "peasants" -- many of whom were either enslaved foreigners or ordinary workers at too low a social level to be counted as citizens in Greek

democracy -- a democracy scarcely distinguishable from oligarchy, except for the ideal of citizen involvement in governance that would characterize later democracies (and republics).

> "In the first great conversation on art -- that presented in the Platonic dialogues -- we find useful techniques and everyday skills typifying art, by reference to which all other skills [including intellectual skills] are analyzed. . . .
>
> "The Promethean gift of fire to men, which raised them from a brutish existence, carried with it various techniques for mastering matter -- the basic useful arts. Lucretius, writing in a line that goes from Homer through Thucydides and Plato to Bacon, Adam Smith, and Rousseau, attributes the progress of civilization and the difference between civilized and primitive society to the development of the arts and sciences. 'Ships and tillage, walls, laws, arms, roads, dress, and all such like things, all the prizes, all the elegancies too of life without exception, poems, pictures and the chiseling of fine-wrought statues, all these things practiced together with the acquired knowledge of the untiring mind taught men by slow degrees as they advanced on the way step by step.'
>
> "At the beginning of this progress Lucretius places man's discovery of the arts of metal-working, domesticating animals, and cultivating the soil. 'Metallurgy and agriculture,' says Rousseau, 'were the two arts which produced this great revolution' -- the advance from primitive to civilized life." (*The Great Ideas*, I, pp. 64- 65.)

Unfortunately, these authors do not stop there; they add immediately, "The fine arts and the speculative sciences complete human life. They are not necessary -- except perhaps for the good life." After which, most of *The Great Ideas* turn out to be about the pursuit of "the good life," not the useful arts -- the province of slaves and the lower classes. (See Medina; also, for this whole section, Flaceliere, *Daily Life in Greece in the Time of Pericles*.)

The American Pragmatists would say that philosophers neglect the problems of everyday life at their peril. Dewey is especially critical of Plato and Aristotle as starting the fateful "quest for certainty" in the history of Western philosophy. But a pragmatic philosophy does not demand that we go that far; it is enough to say that philosophizing must be related to real problems of real people -- and some of the Greek thinkers may have been doing just that. But the Pragmatists would only approve of those who did, and to the extent that they did.

Part Two: Radicalisms in Philosophy and How Pragmatism Differs

Introduction: What Does Radicalism in Philosophy Mean? Four Answers Plus Pragmatism

The term "radical" appears in philosophy most often within political philosophy to describe the "radical left" or the "radical right." But as I will use the term here, it applies to four main ways in which philosophers have attempted "to get at the root of," or uproot something or other. In one sense, we have seen this as the basic theme in the Greek beginnings of Western thought. In a variety of ways, these thinkers were all trying to get at the truth of origins, to arrive at one or another literal rendering of how things came to be in contrast to poetic or dramatic or mythical-religious accounts of origins. But the four ways I have in mind all fall within the scope of what has come to be called Modern Philosophy.

The first of these ways is that of Rene Descartes in his method of "universal doubt," which he aimed at the knowledge claims not only of medieval Scholastic philosophers, but at their forerunners all the way back to the Greeks -- though he was a partisan of views similar to those of the Greek Atomists.

The second "radical philosophy" I will take up here is the usual counter to Descartes and Rationalism in histories of Modern Philosophy -- namely the empiricists' claim to have a better guarantee than the Rationalists of the truth of statements, especially scientific theories, a guarantee in terms of what we can see, hear, smell, etc. -- in the things we can know directly using our senses. I will take Francis Bacon, David Hume, and John Stuart Mill to be the best examples of this radical challenge to the Rationalism especially of Descartes.

The third way I take up is really two ways: Kant's "critical" philosophy aimed principally at undermining metaphysical thinking, whether metaphysics proper or ethics, both among Scholastics and among other forerunners within Modern Philosophy; and Hegel's post-critical attempt to resurrect metaphysics on the basis of a so-called Absolute Dialectics -- which leads him to downplay the significance of the newly powerful "mechanical" natural sciences at the end of the eighteenth century and the beginning of the nineteenth century.

My fourth "radical philosophy" is, then, the standard radical political philosophy, especially the radicalism of Marx.

Finally, in a fifth place, I talk about the major impact the introduction of American Pragmatism ought to have had on all the previous four -- but, for various historical reasons, didn't actually have that impact.

> "Descartes . . . identifies the human mind with the rational soul of man. In the dual nature of man, he says, 'there are certain activities, which we call corporeal, e.g., magnitude, figure, motion, and all those that cannot be thought of apart from extension in space; and the substance in which they exist is called body. . . . Further, there are other activities, which we call thinking activities, e.g., understanding, willing, imagining, feeling, etc., which agree in falling under the description of thought, perception, or consciousness. The substance in which they reside we call a thinking thing or the mind, or any other name we care, provided only we do no confound it with corporeal substance, since thinking activities have no affinity with corporeal activities, and thought, which is the common nature in which the former agree, is totally different from extension, the common term for describing the latter." (*The Great Ideas*, II, p.175.)

In another place, the authors of *The Great Ideas* tell us what the substance that is the thinking mind thinks, and how we can avoid errors in our thinking.

> "The problem of the criterion of truth is sometimes closely connected with the problem of the causes of error. Descartes seems to pass by natural steps from one to the other. Having decided that 'the things which we conceive very clearly and distinctly are all true,' he reminds himself that there may be 'some difficulty in ascertaining which are those that we distinctly conceive.' The mystery of error looms large for Descartes because it seems to him that the human intellect, being created by God, must have a kind of natural infallibility, the infallibility of an instrument designed by God for knowing the truth, not for ignorance or error.
>
> "'If we did not know,' Descartes reflects, 'that all that is in us of reality and truth proceeds from a perfect and infinite being, however clear and distinct were our ideas, we should not have any reason to assure ourselves that they had the perfection of being true.' But once we have 'recognized that there is a God . . . and also recognized that all things depend upon Him, and that He is not a deceiver,' we can infer that whatever we 'perceive clearly and distinctly cannot fail to be true.'
>
> "What, then, is the source of our errors? 'I answer,' writes Descartes, that they depend on a combination of two causes, to wit, on the faculty of knowledge that rests in me, and on the power of choice or free will.' . . .
>
> "The trouble lies in the relation of the will to the intellect, 'Since the will is much wider in its range and compass than the understanding, I do not restrain it within the same bounds, but extend it also to things which I do not understand.' It is not God's fault, says Descartes, if, in the exercise of my freedom, I do not 'withhold my assent from certain things as to which He has not placed a clear and distinct knowledge in my understanding.'" (*The Great Ideas*, II, p. 921.)

One more quote:

> "Beginning with Descartes' *Discourse on the Method*, in which a method of universal doubt is proposed to clear the ground before the foundations of the sciences can be laid, the consideration of knowing is put before any attempt to know." (*The Great Ideas*, I, 885.)

At first glance this would not seem to be a very radical step beyond the medieval Scholasticism that Descartes had learned in his Jesuit schooling, but once we reflect on the Aristotelianism of the Scholastics, and how much closer Descartes is to a Platonic way of knowing than to an Aristotelian way -- in which the intellect and senses work together harmoniously to achieve a knowledge of forms-in-things and not pure Forms or Ideas -- it becomes clear that there has been a radical break. Add to this Descartes' brilliance in mathematics and his sympathy for post-Galileo experimental science, and it is easy to see why subsequent philosophers see Modern Philosophy as having its beginning with Descartes. And it starts with the Cartesian problem: how can we be sure that our ideas are true, that we are not deceived when we think we know the truth? For Descartes, it is a matter of clear and distinct ideas -- the comparison with Plato's Forms is inescapable -- together with the guarantee that God will not deceive us as long as we do not willfully stray onto the terrain of the less-than-clear.

The American Pragmatists reacted with horror to Descartes, to Cartesianism, and to any of the rationalisms derived from it -- indeed, to the whole epistemological project. Mead was the clearest (see his "Scientific Method and Individual Thinker") in his opposition. He thought that every version of epistemology he knew was individualistic in a way that is indefensible both scientifically and philosophically: there is no way for universal doubt to get off the ground in what he called a "world taken for granted," which means any world we know of. All humans begin their lives in groups (families most obviously), and everything they come to know is a function of that indisputable (he thought) fact.

Other philosophers in the modern period did take Descartes and his epistemological project seriously, and much of subsequent philosophy involves a search for different radical guarantees. As we will see, Dewey castigated them all for their fruitless "quest for certainty."

2
Empiricist Radicalism

In one sense, the earliest empiricist radical, Francis Bacon, does not react to Descartes but to medieval, Aristotle-based Scholasticism.

a. Francis Bacon and the "Methods" of John Stuart Mill

> "Bacon's criticism of the logic of Aristotle seems to rest on two counts: first, he complains of Aristotle's over-emphasis on syllogisms, whether they are used dialectically or demonstratively; and second, he charges Aristotle with a superficial understanding of induction. One of the chief efforts of [his] *Novum Organum* is to correct the latter mistake.
>
> "'There are and can exist,' says Bacon, 'but two ways of investigating and discovering truth. The one hurries on rapidly from the senses and particulars to the most general axioms, and from them, as principles, and from their supposed indisputable truth, deduces the intermediate axioms. This is the way now in use. The other constructs its axioms from the senses and particulars, by ascending continually and gradually, until it finally arrives at the most general axioms, which is the true but unattempted way. . . .
>
> . . . "Bacon seems to think that induction requires the practice of the most detailed and precise method. Not only must the various ascending stages of induction be regulated by observance of an order of generality, but the making of experiments and the collection and arrangement of particulars, 'forming tables and coordinations of instances,' must be governed by a complex set of rules. The twenty-seven tables of instances, set forth in the second book of the *Novum Organum*, constitute the heart of Bacon's method of induction. This new method 'of discovering the sciences,' he observes, 'levels men's wits and leaves but little of their superiority, since it achieves everything by their most certain rules.' . . .
>
> "The elaborate procedure which Bacon proposes for collating instances stresses, not completeness of enumeration [he calls that 'puerile'], but an examination of their relation to one another and, in the light thereof, an interpretation of their significance. [John Stuart] Mill's four or five methods of induction bear a close resemblance to Bacon's more numerous tables of instances; but Mill's methods are attempts to formulate the rules of inference for [all] inductive reasoning." (*The Great Ideas*, I, 807 and 809.)

I should pause to add some dates: for Bacon, 1561-1626; for Descartes, 1596-1650; for Mill, 1806-1873 -- and they should all three be compared with Galileo, 1564-1642. That is, Galileo's "new science" was more or less contemporaneous with Bacon and Descartes. The three of these defenders of modern experimental science were united in opposing medieval Scholasticism and its Aristotelian roots (and branches). Nonetheless. many of Bacon's strictures against deductive thinking could have been aimed as much against Descartes as against Aristotle's logic (in the text quoted); and a mostly British tradition grew up in opposition to what was called Continental Rationalism.

Though the authors of *The Great Ideas* downplay Mill while emphasizing the originality of Bacon, it would turn out to be "Mill's methods," his nineteenth-century formulation, that would become regulatory in the twentieth century, in practically every introduction to the scientific method. So Bacon and Mill are here taken to be one version of the empiricist reaction to Cartesian rationalism -- while all three were reacting against

Aristotle, with Mill writing in a later context that would include Kant and Hegel's transcendentalisms (below).

In the end, the point here can be stated in Bacon's terms: "The other [the empiricist way] constructs its axioms from the senses and particulars, by ascending continually and gradually, until it finally arrives at the most general axioms, which is the true but unattempted way" -- to arrive at the truth, that is. In their opposite ways, both Descartes and Bacon still believed in the certitude of truth. Mill would be more temperate in his attitude and he paved the way for American Pragmatism. But British empiricism can be said to have reached its most radical formulation with David Hume.

b. Hume's Skepticism about Causality

> "According to the ancient conception of science, knowledge, to be scientific, must state the causes of things. . . .
>
> "Galileo's exposition of the new mechanics explicitly announces a departure from the traditional interest of the natural philosopher in the discovery of causes. The aim, he says in his *Two New Sciences*, is not 'to investigate the cause of the acceleration of natural motion' . . . [but] 'to investigate and demonstrate some of the properties of accelerated motion.' . . .
>
> . . . "Newton [also] disparages the search for 'hidden or occult' causes as no part of the business of science.
>
> "Hume goes further. He insists that all causes are hidden. By the very nature of what causes are supposed to be and because of the manner in which the human mind knows, man can have no knowledge of how causes really produce their effects. 'We never can, by our utmost scrutiny,' he says, 'discover anything but one event following another, without being able to comprehend any force or power by which the cause operates, or any connexion between it and its supposed effect.'
>
> "All that men can be referring to when they use the words 'cause' and 'effect,' Hume thinks, is the customary sequence of 'one object followed by another, and where all objects similar to the first are followed by objects similar to the second.' So far as any knowledge based upon reason or experience can go, the relation of cause and effect is simply one of succession, impressed upon the mind 'by a customary transition.' That one event leads to another becomes more and more probable -- but never more than probable -- as the sequence recurs more and more frequently in experience." (*The Great Ideas*, I, p. 161.)

This, like Mill's methods, was later to become an article of faith in discussions of scientific method in the twentieth century. But whereas twentieth-century philosophers of science could find much that was positive in Mill's methods -- and neither Dewey nor Mead repudiated those methods -- they found Hume's skepticism to be as indefensi-

ble as Cartesian rationalism, partly for the same reason. Doubts about scientific causality have no more foundation than universal doubt within the world-taken-for-granted that is the context for a scientist's education and future work.

A side comment: Hume's argument holds up principally, if at all, if we limit it to discussions of mechanical motion: (hidden) pushes from behind, or pulls from ahead, as in magnetism, positive or negative. It says nothing about Aristotle's other types of causes -- better thought of as "becauses": such and such is explainable because of something else, formal as well as material; modern science couldn't do without explanations by formula (as in chemistry) branching schemes (as in the periodic table of the elements, or biological charts of families and subfamilies, etc.); and, even more obviously, it couldn't do without material explanations in terms of atomic and subatomic elementary particles; and so on. But that is an Aristotelian objection, not that of the Pragmatists. Dewey, for example, considers the empiricists (for the most part) to be as guilty of the "quest for certainty" as the rationalists.

But all of this leaves a broad opening for still another pair of radical challenges in Modern Philosophy, Kant's "critical transcendental logic," and Hegel's challenge to modern science as "petty" in the grand scheme of things.

3
Transcendental Radicalisms

I start with Immanuel Kant, who offered his "critique" in opposition to Scholasticism, to Cartesian rationalism, and to all the metaphysical systems that arose in their wake.

a. Kant

> "By redefining metaphysics to mean 'any system of knowledge a priori that consists of pure conceptions,' Kant not only gives his fundamental treatises in morals and ethics a metaphysical character, but sees the possibility of a genuine metaphysic emerging from the *Critique of Pure Reason*. Once 'the dogmatism of metaphysic' has been removed, 'that is, the presumption that it is possible to achieve anything in metaphysic without a previous criticism of pure reason . . . . it may not be too difficult to leave a bequest to posterity in the shape of a systematical metaphysic, carried out according to the critique of pure reason.'
>
> "Kant's transcendental philosophy, and especially what he calls the 'architectonic of pure reason,' is in a sense that metaphysic already begun. In subject matter, if not in its methods or conclusions, it resembles the traditional inquiry concerning the universal principles and transcendental properties of being. The objects of natural theology are . . . excluded as being beyond the power of reason to know in a speculative manner.

> "Metaphysics as a possible science is for Kant 'nothing more than the inventory of all that is given us by pure reason, systematically arranged. . . . Such a system of pure speculative reason,' he says in his original preface to the Critique, 'I hope to be able to publish under the title of *Metaphysic of Nature*.' And in the last pages of the Critique, wherein he criticizes all speculative efforts in the sphere of natural theology, Kant reaffirms 'the speculative and the practical use of pure reason' to constitute 'a Metaphysic of Nature and a Metaphysic of Ethics.' The former, he says, is what is commonly called Metaphysic in the more limited sense.' Both together 'form properly that department of knowledge which may be termed, in the truest sense of the word, philosophy. The path which it pursues is that of science, which, when it has once been discovered, is never lost, and never misleads.'" (*The Great Ideas*, II, pp. 164-165.)

Okay, so Kant praises himself for providing the ultimate "scientific critique" of traditional metaphysics, including natural theology. But of what does this critique consist? In another place, the authors of *The Great Ideas* provide a brief summary:

> "Kant himself retains Analytic and Dialectic as the major divisions of his own transcendental logic. . . . Transcendental logic does not entirely ignore the content of knowledge, but only the content of that knowledge which is empirical in origin. If there are transcendental or a priori concepts which do not originate from experience, then there can be a science which treats 'of that knowledge which belongs to the pure understanding, and by which we may think objects entirely a priori.'
>
> "That is the science Kant calls 'transcendental Logic.' It deals, he writes, with the laws of the understanding and reason in so far only as they refer a priori to objects.' That part of it 'which teaches the elements of the pure knowledge of the understanding, and the principles without which no object can be thought, is the transcendental Analytic.' The second part of it is the transcendental Dialectic . . . serving as a protection of the pure understanding against all sophistical illusions.'" (*The Great Ideas*, I, p. 1040.)

That is, it is possible to erect a science (?) of the laws of human understanding, the understanding of anything that can be understood in Kant's sense, and these concepts and their laws can include nothing that is "empirical in origin." No scientific reasoning, in the modern sense of "scientific," can lead us to or tell us anything about these concepts and laws. We might say that they are the laws of understanding that only understanding itself can provide -- a priori. Empirical science presupposes them, and natural theology -- often taken to mean proving the existence of God based on the knowledge of his creatures -- is a "dialectical," a fallacious undertaking.

One example is Kant's treatment of the concept of "space": it is, he says, "a quality produced out of the inward resources of the mind, to envelop sensations which, as given originally, are not spatial." I would render this as meaning that space is a conceptual

framework the mind imposes on sensations that would not otherwise be spatial. We can't think of anything as spatial without a pre-existent "concept of the understanding." The test? Try to think of anything spatial -- from the space assumed in plane geometry to outer space -- without presupposing the concept of space.

For the Pragmatists, the difficulty with this is similar to what we saw earlier in relation to Parmenides and Plato. Where are these concepts and laws of human understanding supposed to come from? Kant doesn't exactly say he discovered them, and it seems clear that he is not thinking of either divine revelation or "clear and distinct" innate ideas in Descartes' sense. But the very fact that Kant takes credit for putting together his system of "a priori understandings" -- in a "scientific" (but in no sense empirical) way -- suggests that they came to him as a solution to what he perceived to be problems associated with the "dogmatism" of prior versions of metaphysics. He can claim that they aren't based on or derived from sense experiences, but he must -- at least he should -- admit that they came to him in his "pure thought" experiences. We should give him credit for his thoughts, not treat them as somehow pre-existent or given from who knows where.

For the Pragmatists, this is particularly problematic in terms of Kantian ethics. Supposedly universal moral laws of the Kantian type are treated as so self-evident that to deny them is tantamount to a Parmenidean logical contradiction, but, say the Pragmatists (especially Mead), if they are to have any moral force they can't be left up in the clouds of a priori understanding. They must be interpreted experientially (for Mead that means socially), and then their meaning is neither absolutely clear nor immune from different interpretations. And for Mead and the Pragmatists ethics means communities making difficult choices among possibilities about what will improve the lot of their members. If Kant or Kantians reply (as with the space concept above), that no particular moral norm can be thought of as morally binding without presupposing Kant's "laws of the understanding," this becomes vacuous in terms of real-life social behavior.

But G. W. F. Hegel, almost as soon as Kant had proclaimed his "critical" system, found other aspects to object to.

b. Hegel

Hegel repudiated Kant's critique almost as soon as it was formulated, and he seems to have had two reasons: though he wasn't a defender of traditional natural theology, Hegel thought that philosophy must include God within its purview (and not just Kant's "critical" version of religion); and he thought Kant did a disservice to the concept of dialectic, so important throughout the history of Western philosophy since Plato.

First the God part:

> "Hegel . . . does not approach the problem of being or reality through a critique of knowledge. For Hegel, as for [the neo-Platonist] Plotinus before him, the heart of metaphysics lies in understanding that 'nothing is actual except the Idea' or the

> Absolute, 'and the great thing is to apprehend in the show of the temporal and the transient, the substance which is immanent, and the eternal which is present.' Plotinus calls the absolute, not the Idea, but the All-one, yet he tries to show that the One is the principle, the light, and the life of all things, just as Hegel reduces everything to a manifestation of the underlying reality of the Absolute Idea." (*The Great Ideas*, I, p. 130.)

But more important is Hegel's vindication of Kant's despised version of dialectic:

> "For Hegel . . . opposition takes the milder form of contrary theses and antitheses. They can be dialectically overcome by a synthesis which remedies the incompleteness of each half truth. 'It is one of the most important discoveries of logic,' Hegel says, 'that a specific moment which, by standing in an opposition, has the position of an extreme, ceases to be such and is a moment in an organic whole by being at the same time a mean.' . . .
>
> "It is only in the writings of Hegel or his followers that the meaning of dialectic is not limited to the activity of human thought. Hegel expressly warns that 'the loftier dialectic . . . is not an activity of subjective thinking applied to some matter externally, but is rather the matter's very soul putting forth its branches and fruit organically.' It is the 'development of the Idea,' which is 'the proper activity of its rationality.' If the whole world in its existence and development is the thought and thinking of an Absolute Mind, or the Idea, then the events of nature and of history are moments in a dialectical process of cosmic proportions. The principles of dialectic become the principles of change, and change itself is conceived as a progress or evolution from lower to higher, from part to whole, from the indeterminate to the determinate. (*The Great Ideas*, I, pp. 350-351.)

We have already seen this sort of thinking when discussing Parmenides among the Greek thinkers. There I asked myself: "Is all of this no more than logic-gone-mad, an interpretation of the realities of everyday life governed by the non-contradiction rule of logic?" And I answered myself: "Possibly. But for many people, and we should think especially of mystical views often associated with Indian and other non-Western systems of thought, individual humans are thought to share in something like a totally-harmonious Universal Being." For Kant, who didn't live long enough to react to Hegel in any detail, this would be the ultimate dialectical = fallacious thinking; but for Hegel, the Dialectic reveals a Truth that "scientific" thinking never will.

One other thing should be noted here. Though in some sense Hegel is here reviving the metaphysical monism so often associated with Parmenides -- where the same Pragmatist objection arises as against Parmenides -- his writings are extensive and filled with historical detail, unlike Parmenides' fragments. But the fundamental problem remains: though Hegel may deny that any merely fallible human thought generates the Absolute -- that if it is Absolute it must be categorically different from and superior to (indeed generative of) any fallible human bit of thinking -- nonetheless this supposed Absolute entered into Hegel's vaunted history *somehow*. And the Pragmatists would say as a solu-

tion to some perceived problem, say, with Kant's critique -- or, in the Plotinus case that *The Great Ideas* authors take to be a forerunner of Hegel, in difficulties encountered within Platonic metaphysics. That is, fallible Hegel and fallible Plotinus deserve more credit than their systems allow them.

Moreover, I can't help revealing my own Pragmatist prejudices on the issue of the Hegelian Absolute; and to do so I repeat this sentence: "If the whole world in its existence and development is the thought and thinking of an Absolute Mind, or the Idea, then the events of nature and of history are [only] moments in a dialectical process." The parenthetical insertion suggests how I, and the Pragmatists, see Hegelianism as downplaying "the events of nature" -- and perforce natural science -- relegating it (them) to a relatively low role. And Hegel's Absolutism seems to have been at least in part a reaction to the newly-ascendant natural sciences of the late eighteenth century and the early nineteenth century. In that respect, Hegel is often seen to be part of the so-called Romantic reaction to a new science hegemony in the nineteenth century, a common interpretation that gives Hegel more weight than my pro-science prejudice would.

We can see some of the same problems arise with out next radicalism, Karl Marx's "turning Hegel upside down" (or right side up, in his view).

4
Political Radicalism

The only radicalism I introduce here is political radicalism of the left. There are also radical versions of conservatism, the so-called "radical right"; and some people even talk (erroneously I think) about a "radical middle." But for most people and for our purposes here, the radical left is the only viewpoint that counts among nineteenth-century foils for the introduction into my story of the American Pragmatists.

Here is one reconstruction of the essential reasonableness of a Karl Marx-based radicalism. It comes from Carl Cohen's *Four Systems* (1962), a set of reconstructions of what Cohen takes to be the four principal types of political thinking:

"Communism is rooted in the laws of historical development. It provides the only scientifically correct account of how human societies have become what they are and how they will progress. Unlike Western democracy and fascism, communism emphasizes not the way governments make decisions, but the substance of what is decided. It seeks and promises a society which is no longer divided into economic classes. It aims at a world order based on material prosperity and economic justice. It will eliminate the exploitation of man by man [sic].

"Scientific communism—called Marxism after its greatest theoretician—is built on the principles of dialectical materialism. Dialectics, employed by all great philosophers from Plato to Hegel, is the study of the universal patterns in change and development.

Marxism applies this dialectical analysis to the material foundation of human life, to basic human needs for food, clothing, and shelter, and to the changing modes of industrial production.

"Human history exhibits a pattern of relentless opposition between those who control the productive forces of society and those who do not, unending conflict between oppressors and oppressed. In every age the resolution of these dialectical conflicts has led to renewed opposition at a higher level, with oppression taking new forms. Marxism explains the successive phases of this continuing struggle, each dominant class replacing its predecessor as it wins control of the material substructure of society. Each resulting revolution in the course of history brings new productive powers and new economic cruelties. The long chain is culminated by the cataclysmic conflict, now in progress and already international in scope, between the capitalists and the working class, between the bourgeoisie and the proletariat.

"Capitalism, like every preceding stage in history, contains the seeds of its own destruction. It is based on the private appropriation of goods that are socially produced. This internal contradiction will be dialectically overcome only when production and appropriation, making and taking, are brought into full harmony—when both are fully socialized. This cannot be accomplished (as Western 'socialists' and vulgar communists believe) by nationalization or state ownership. The concept of ownership itself must be eradicated, superseded by new relations between people and things.

"Marxism elucidates the stages of this complicated but inexorable process. It shows why capitalism necessarily results, even today, in the alienation and exploitation of working men and women. It explains the inevitable accumulation of wealth under capitalism, and its centralization into fewer and fewer hands. It shows how these tendencies produce increasing tension between the classes, and then increasing misery among the workers. It traces the development of these trends from their beginnings in Europe, through their growth in North America, and to their consummation throughout the globe over which capitalism extends its tentacles. Marxism explains the struggle of the capitalists to retain their wealth and power, resorting first to collusion, then to monopolies and cartels, then to colonialism and other forms of imperialism, and eventually to war.

"The revolution of the proletariat against bourgeois exploitation is shown to be dialectically inevitable. Workers and peasants, led by a devoted and intellectual avant-garde, will ultimately create a world in which private property has been abolished, and material abundance is available for all. When the division of society into classes thus comes to an end, national states, which are the instruments of class oppression, will also wither away. In the highest phases of communism alienation will be overcome, universal equality and full self-realization achieved, in accordance with scientific principles. All will work--creatively and with satisfaction—and all will benefit justly.

"In sum: Communism applies the dialectic to the material foundations of human history, and thus provides a scientific and coherent account of the inexorable course of social development. It explains the proletarian revolution now in progress, and it points

to the classless society being born, in which human society will at last live up to the supreme principle of justice: From each according to his abilities; to each according to his needs."

It is not obvious how Cohen would deal with what most feel were distortions of Marxism under Lenin and especially Stalin -- or what he would say about the "logic" of Communism after the demise of the Soviet Union. But his reconstruction puts Marxism in about as positive a light as can reasonably be thrown on it. Nevertheless, though Dewey was willing to go a long way toward finding good in the system, he ended up objecting to it strenuously; and neither Peirce nor James found Marxism appealing. The fundamental reason lies in a rejection of any claim to "a scientific and coherent account of the inexorable course of social development." Marx's inversion of the Hegelian Absolute Dialectic -- his materialist dialectic, his "dialectical materialism" -- is just one more version of the "quest for certainty." It is impressive in its historical details (as are Hegel's writings), but it seeks and claims to have found a certainty that the Pragmatists think can not be found in human discourse. The Pragmatists also find the repressive aspects of Communism, the alleged heir of Marxism in history, to be problematical.

I turn to now to the American Pragmatists in their claim to out-radical all the radicalisms of the nineteenth century (and their "quest for certainty" predecessors in earlier centuries).

5
Enter American Pragmatism: Peirce, James, and Dewey

Three philosophers -- Charles Sanders Peirce, William James, and John Dewey -- leaders of what came to be known as the school of American Pragmatists, were all opposed to epistemology, especially in the *Cartesian* version that dominated so much of Modern Philosophy. James can in some sense be said to be a follower of the *empiricists*, and Dewey often uses Mill's thought in a positive way to state his own positions on a number of issues; but all three opposed the view that empiricism offers a guarantee of *certainty* in a way that Cartesian Rationalism could not. All three opposed *transcendentalism* whether of the Kantian or the Hegelian sort -- though in their early philosophical education both Dewey and his friend and colleague Mead were influenced by Hegelianism. And at least James and Dewey opposed *Marxist radicalism*. Though Dewey went out of his way to be fair to the Communism that many of his left-leaning friends in organized labor often supported, he was a resolute opponent of totalitarian infringements on civil rights in Soviet Russia.

Unfortunately, as we will see, none of their anti-radicalisms succeeded in winning out over their opponents. And Pragmatism itself was shoved aside by analytical philosophy in the twentieth century, though in part three we will look at an attempt to convert pragmatism into a worthy counterforce to analytical philosophy in general in its epistemo-

logical guise.

I begin at the beginning, with Peirce.

1. C. S. Peirce

We have seen that, for Plato – and for Aristotle in a different sense – philosophical wisdom is the most important kind of knowledge. Even when science-oriented Western philosophers after Descartes rebelled against this basically Platonic model, for the most part they remained attached to some system in which certain knowledge is the highest form in each system. I believe that this is true even with the British Empiricists, culminating with J. S. Mill in the middle of the nineteenth century, though others may doubt that claim. In any case, something was changing in the philosophical landscape. What I offer here, in a long quote, is C. S. Peirce's famous summary, in an essay on "four modes of fixating belief":

"If the settlement of opinion is the sole object of inquiry and if belief is of the nature of a habit, why should we not attain the desired end, by taking any answer to a question, which we may fancy, and constantly reiterating it to ourselves, dwelling on all which may conduce to that belief, and learning to turn with contempt and hatred from anything which might disturb it? This simple and direct method is really pursued by many men. I remember once being entreated not to read a certain newspaper lest it might change my opinion upon free trade. 'Lest I might be entrapped by its fallacies and misstatements' was the form of expression. 'You are not,' my friend said, 'a special student of political economy. You might, therefore, easily be deceived by fallacious arguments upon the subject. You might, then, if you read this paper, be led to believe in protection. But you admit that free trade is the true doctrine; and you do not wish to believe what is not true.' I have often known this system to be deliberately adopted. Still oftener, the instinctive dislike of an undecided state of mind, exaggerated into a vague dread of doubt, makes men cling spasmodically to the views they already take. The man feels that if he only holds to his belief without wavering, it will be entirely satisfactory. Nor can it be denied that a steady and immovable faith yields great peace of mind. It may, indeed, give rise to inconveniences, as if a man should resolutely continue to believe that fire would not burn him, or that he would be eternally damned if he received his ingesta otherwise than through a stomach pump. But then the man who adopts this method will not allow that its inconveniences are greater than its advantages. He will say, 'I hold steadfastly to the truth and the truth is always wholesome.' And in many cases it may very well be that the pleasure he derives from his calm faith overbalances any inconveniences resulting from its deceptive character. Thus, if it be true that death is annihilation, then the man who believes that he will certainly go straight to heaven when he dies, provided he will have fulfilled certain simple observances in this life, has a cheap pleasure which will not be followed by the least disappointment. A similar consideration seems to have weight with many persons in religious topics, for we frequently hear it said, 'Oh, I could not believe so-and-so, because I should be wretched if I did.' When an ostrich buries its head in the sand as danger approaches, it very likely takes the happiest course. It hides the danger,

and then calmly says there is no danger; and, if it feels perfectly sure there is none, why should it raise its head to see? A man may go through life, systematically keeping out of view all that might cause a change in his opinions, and if he only succeeds—basing his method, as he does, on two fundamental psychological laws—I do not see what can be said against his doing so. It would be an egotistical impertinence to object that his procedure is irrational, for that only amounts to saying that his method of settling belief is not ours. He does not propose to himself to be rational, and indeed, will often talk with scorn of man's weak and illusive reason. So let him think as he pleases.

"But this method of fixing belief, which may be called the method of tenacity, will be unable to hold its ground in practice. The social impulse is against it. The man who adopts it will find that other men think differently from him, and it will be apt to occur to him in some saner moment that their opinions are quite as good as his own, and this will shake his confidence in his belief. This conception, that another man's thought or sentiment may be equivalent to one's own, is a distinctly new step, and a highly important one. It arises from an impulse too strong in man to be suppressed, without danger of destroying the human species. Unless we make ourselves hermits we shall necessarily influence each other's opinions; so that the problem becomes how to fix belief, not in the individual merely, but in the community.

"Let the will of the state act, then, instead of that of the individual. Let an institution be created which shall have for its object to keep correct doctrines before the attention of the people, to reiterate them perpetually, and to teach them to the young; having at the same time power to prevent contrary doctrines from being taught, advocated or expressed. Let all possible causes of a change of mind be removed from men's apprehensions. Let them be kept ignorant, lest they should learn of some reason to think otherwise than they do. Let their passions be enlisted, so that they may regard private and unusual opinions with hatred and horror. Then, let all men who reject the established belief be terrified into silence. Let the people turn out and tar and feather such men, or let inquisitions be made into the manner of thinking of suspected persons, and when they are found guilty of forbidden beliefs, let them be subjected to some signal punishment. When complete agreement could not otherwise be reached, a general massacre of all who have not thought in a certain way has proved a very effective means of settling opinion in a country. If the power to do this be wanting, let a list of opinions be drawn up, to which no man of the least independence of thought can assent, and let the faithful be required to accept all these propositions, in order to segregate them as radically as possible from the influence of the rest of the world.

"This method has, from the earliest times, been one of the chief means of upholding correct theological and political doctrines, and of preserving their universal or catholic character. In Rome, especially, it has been practiced from the days of Numa Pompilius to those of Pius Nonus. This is the most perfect example in history; but wherever there is a priesthood—and no religion has been without one—this method has been more or less made use of. Wherever there is aristocracy, or a guild, or any association of a class of men whose interests depend or are supposed to depend on certain propositions, there will be inevitably found some traces of this natural product of social feeling. Cruelties always

accompany this system; and when it is consistently carried out, they become atrocities of the most horrible kind in the eyes of any rational man. Nor should this occasion surprise, for the officer of a society does not feel justified in surrendering the interests of that society for the sake of mercy, as he might of his own private interests. It is natural, therefore, that sympathy and fellowship should thus produce a most ruthless power.

"In judging this method of fixing belief, which may be called the method of authority, we must, in the first place, allow its immeasurable mental and moral superiority to the method of tenacity. Its success is proportionally greater; and in fact it has over and over again worked the most majestic results. The mere structures of stone which it has caused to be put together—in Siam, for example, in Egypt, and in Europe—have many of them a sublimity hardly more than rivaled by the greatest works of nature. And, except the geological epochs, there are not periods of time so vast as those which are measured by some of these organized faiths. If we scrutinize the matter closely, we shall find that there has not been one of their creeds which has remained always the same; yet the change is so slow as to be imperceptible during one person's life, so that individual belief remains sensibly fixed. For the mass of mankind, then, there is perhaps no better method than this. If it is their highest impulse to be intellectual slaves, then slaves they ought to remain.

"But no institution can undertake to regulate opinions upon every subject. Only the most important ones can be attended to, and on the rest men's minds must be left to the action of natural causes. This imperfection will be no source of weakness so long as men are in such a state of culture that one opinion does not influence another—that is, so long as they cannot put two and two together. But in the most priest-ridden states some individuals will be found who are raised above that condition. These men possess a wider sort of social feeling; they see that men in other countries and in other ages have held to very different doctrines from those which they themselves have been brought up to believe; and they cannot help seeing that it is the mere accident of their having been taught as they have, and of their having been surrounded with the manners and associations they have, that has caused them to believe as they do and not far differently. And their candor cannot resist the reflection that there is no reason to rate their own views at a higher value than those of other nations and other centuries; and this gives rise to doubts in their minds.

"They will further perceive that such doubts as these must exist in their minds with reference to every belief which seems to be determined by the caprice either of themselves or of those who originated the popular opinions. The willful adherence to a belief, and the arbitrary forcing of it upon others, must, therefore, both be given up and a new method of settling opinions must be adopted, which shall not only produce an impulse to believe, but shall also decide what proposition it is which is to be believed. Let the action of natural preferences be unimpeded, then, and under their influence let men conversing together and regarding matters in different lights, gradually develop beliefs in harmony with natural causes. This method resembles that by which conceptions of art have been brought to maturity. The most perfect example of it is to be found in the history of metaphysical philosophy. Systems of this sort have not usually rested upon observed

facts, at least not in any great degree. They have been chiefly adopted because their fundamental propositions seemed 'agreeable to reason.' This is an apt expression; it does not mean that which agrees with experience, but that which we find ourselves inclined to believe. Plato, for example, finds it agreeable to reason that the distances of the celestial spheres from one another should be proportional to the different lengths of strings which produce harmonious chords. Many philosophers have been led to their main conclusions by considerations like this; but this is the lowest and least developed form which the method takes, for it is clear that another man might find Kepler's theory, that the celestial spheres are proportional to the inscribed and circumscribed spheres of the different regular solids, more agreeable to his reason. But the shock of opinions will soon lead men to rest on preferences of a far more universal nature. Take, for example, the doctrine that man only acts selfishly—that is, from the consideration that acting in one way will afford him more pleasure than acting in another. This rests on no fact in the world, but it has a wide acceptance as being the only reasonable theory.

"This method is far more intellectual and respectable from the point of view of reason than either of the others which we have noticed. But its failure has been the most manifest. It makes of inquiry something similar to the development of taste; but taste, unfortunately, is always more or less a matter of fashion, and accordingly, metaphysicians have never come to any fixed agreement, but the pendulum has swung backward and forward between a more material and a more spiritual philosophy, from the earliest times to the latest. And so from this, which has been called the a priori method, we are driven, in Lord Bacon's phrase, to a true induction. We have examined into this a priori method as something which promised to deliver our opinions from their accidental and capricious element. But development, while it is a process which eliminates the effect of some casual circumstances, only magnifies that of others. This method, therefore, does not differ in a very essential way from that of authority. The government may not have lifted its finger to influence my convictions; I may have been left outwardly quite free to choose, we will say, between monogamy and polygamy, and appealing to my conscience only, I may have concluded that the latter practice is in itself licentious. But when I come to see that the chief obstacle to the spread of Christianity among a people of as high culture as Hindus has been a conviction of the immorality of our way of treating women, I cannot help seeing that, though governments do not interfere, sentiments in their development will be very greatly determined by accidental causes. Now there are some people, among whom I must suppose that my reader is to be found, who, when they see that any belief of theirs is determined by any circumstance extraneous to the facts, will from that moment not merely admit in words that that belief is doubtful but will experience a real doubt of it, so that it ceases in some degree at least to be a belief.

"To satisfy our doubts, therefore, it is necessary that a method should be found by which our beliefs may be caused by nothing human, but by some external permanency—by something upon which our thinking has no effect. Some mystics imagine that they have such a method in a private inspiration from on high. But that is only a form of the method of tenacity, in which the conception of truth as something public is not yet developed. Our external permanency would not be external, in our sense, if it was restricted in its influence to one individual. It must be something which affects, or might affect,

every man. And, though these affections are necessarily as various as are individual conditions, yet the method must be such that the ultimate conclusion of every man shall be the same, or would be the same if inquiry were sufficiently persisted in. Such is the method of science. Its fundamental hypothesis, restated in more familiar language, is this: There are real things, whose characters are entirely independent of our opinions about them; those realities affect our senses according to regular laws, and, though our sensations are as different as our relations to the objects, yet, by taking advantage of the laws of perception, we can ascertain by reasoning how things really are, and any man, if he have sufficient experience and reason enough about it, will be led to the one true conclusion. The new conception here involved is that of reality. It may be asked how I know that there are any realities. If this hypothesis is the sole support of my method of inquiry, my method of inquiry must not be used to support my hypothesis. The reply is this: 1. If investigation cannot be regarded as proving that there are real things, it at least does not lead to a contrary conclusion; but the method and the conception on which it is based remain ever in harmony. No doubts of the method, therefore, necessarily arise from its practice, as is the case with all the others. 2. The feeling which gives rise to any method of fixing belief is a dissatisfaction at two repugnant propositions. But here already is a vague concession that there is some one thing to which a proposition should conform. Nobody, therefore, can really doubt that there are realities, or, if he did, doubt would not be a source of dissatisfaction. The hypothesis, therefore, is one which every mind admits. So that the social impulse does not cause me to doubt it. 3. Everybody uses the scientific method about a great many things, and only ceases to use it when he does not know how to apply it. 4. Experience of the method has not led me to doubt it, but, on the contrary, scientific investigation has had the most wonderful triumphs in the way of settling opinion. These afford the explanation of my not doubting the method or the hypothesis which it supposes; and not having any doubt, nor believing that anybody else whom I could influence has, it would be the merest babble for me, to say more about it. If there be anybody with a living doubt upon the subject, let him consider it.

"To describe the method of scientific investigation is the object of this series of papers. At present I have only room to notice some points of contrast between it and other methods of fixing belief.

"This is the only one of the four methods which presents any distinction of a right and a wrong way. If I adopt the method of tenacity and shut myself out from all influences, whatever I think necessary to doing this is necessary according to that method. So with the method of authority: the state may try to put down heresy by means which, from a scientific point of view, seem very ill calculated to accomplish its purposes; but the only test on that method is what the state thinks, so that it cannot pursue the method wrongly. So with the a priori method. The very essence of it is to think as one is inclined to think. All metaphysicians will be sure to do that, however they may be inclined to judge each other to be perversely wrong. The Hegelian system recognizes every natural tendency of thought as logical, although it is certain to 'be abolished by counter-tendencies.' Hegel thinks there is a regular system in the succession of these tendencies, in consequence of which, after drifting one way and the other for a long time, opinion will at last go right. And it is true that metaphysicians get the right ideas at last; Hegel's system of Nature

represents tolerably the science of his day; and one may be sure that whatever scientific investigation has put out of doubt will presently receive a priori demonstration on the part of the metaphysicians. But with the scientific method the case is different. I may start with known and observed facts to proceed to the unknown; and yet the rules which I follow in doing so may not be such as investigation would approve. The test of whether I am truly following the method is not an immediate appeal to my feelings and purposes, but, on the contrary, itself involves the application of the method. Hence it is that bad reasoning as well as good reasoning is possible; and this fact is the foundation of the practical side of logic.

"It is not to be supposed that the first three methods of settling opinion present no advantage whatever over the scientific method. On the contrary, each has some peculiar convenience of its own. The a priori method is distinguished for its comfortable conclusions. It is the nature of the process to adopt whatever belief we are inclined to, and there are certain flatteries to one's vanities which we all believe by nature, until we are awakened from our pleasing dream by rough facts. The method of authority will always govern the mass of mankind; and those who wield the various forms of organized force in the state will never be convinced that dangerous reasoning ought not to be suppressed in some way. If liberty of speech is to be untrammeled from the grosser forms of constraint, then uniformity of opinion will be secured by a moral terrorism to which the respectability of society will give its thorough approval. Following the method of authority is the path of peace. Certain nonconformities are permitted; certain others (considered unsafe) are forbidden. These are different in different countries and in different ages; but, wherever you are let it be known that you seriously hold a tabooed belief, and you may be perfectly sure of being treated with a cruelty no less brutal but more refined than hunting you like a wolf. Thus, the greatest intellectual benefactors of mankind have never dared, and dare not now, to utter the whole of their thought; and thus a shade of prima facie doubt is cast upon every proposition which is considered essential to the security of society. Singularly enough, the persecution does not all come from without; but a man torments himself and is oftentimes most distressed at finding himself believing propositions which he has been brought up to regard with aversion. The peaceful and sympathetic man will, therefore, find it hard to resist the temptation to submit his opinions to authority. But most of all I admire the method of tenacity for its strength, simplicity, and directness. Men who pursue it are distinguished for their decision of character, which becomes very easy with such a mental rule. They do not waste time in trying to make up their minds to what they want, but, fastening like lightning upon whatever alternative comes first, they hold to it to the end, whatever happens, without an instant's irresolution. This is one of the splendid qualities which generally accompany brilliant, unlasting success. It is impossible not to envy the man who can dismiss reason, although we know how it must turn out at last."

[Peirce goes on to discuss his tolerance for the other methods, alongside his belief that "the scientific method" is ultimately the only method of fixating that we should endorse.]

["Such are the advantages which the other methods of settling opinions have over scientific investigation. A man should consider well of them; and then he should consider

that, after all, he wishes his opinions to coincide with the fact, and that there is no reason why the results of those first three methods should do so. To bring about this effect is the pre-rogative of the method of science. Upon such considerations he has to make his choice—a choice which is far more than the adoption of any intellectual opinion, which is one of the ruling decisions of his life, to which when once made he is bound to adhere. The force of habit will sometimes cause a man to hold on to old beliefs after he is in a condi-tion to see that they have no sound basis. But reflection upon the state of the case will overcome these habits, and he ought to allow reflection full weight. People sometimes shrink from doing this, having an idea that beliefs are wholesome which they cannot help feeling rest on nothing. But let such persons suppose an analogous though different case from their own. Let them ask themselves what they would say to a reformed Mussulman who should hesitate to give up his old notions in regard to the relations of the sexes; or to a reformed Catholic who should still shrink from the Bible. Would they not say that these persons ought to consider the matter fully and clearly understand the new doctrine, and then ought to embrace it in its entirety? But, above all, let it be considered that what is more wholesome than any particular belief is integrity of belief; and that to avoid looking into the support of any belief from a fear that it may turn out rotten is quite as immoral as it is disadvantageous. The person who confesses that there is such a thing as truth, which is distinguished from falsehood simply by this, that if acted on it should, on full consid-eration, carry us to the point we aim at and not astray, and then, though convinced of this, dares not know the truth and seeks to avoid it, is in a sorry state of mind indeed.

"Yes, the other methods do have their merits: a clear logical conscience does cost something—just as all that we cherish, costs us dear. But, we should not desire it to be otherwise. The genius of a man's logical method should be loved and reverenced as his bride, whom he has chosen from all the world. He need not condemn the others; on the contrary, he may honor them deeply, and in doing so he only honors her the more. But she is the one that he has chosen, and he knows that he was right in making that choice. And having made it, he will work and fight for her, and will not complain that there are blows to take, hoping that there may be as many and as hard to give, and will strive to be the worthy knight and champion of her from the blaze of whose splendors he draws his inspiration and his courage."]

So, with Peirce, we have now definitely entered a science-based or science-oriented culture. Peirce may not seem to be its best defender, though he is commonly respected for his defenses of science -- including this one -- and of its place in modern culture. Where he differs from others (among other ways) is in abandoning any claim to certainty on the part of the scientific community. Scientists are simply doing the best they can, and they have a better chance that their "fixed beliefs" will remain fixed at least into some long-range future. Peirce also differs from others -- for example, so-called logical positivists or "scientific realists" in the twentieth century -- in that he is willing to give some credit to other ways of fixing beliefs, even the metaphysical (or religious) way so despised by the positivists.

But Peirce, perhaps for reasons of personality or personal history, had limited success in countering the long history of "the quest for certainty." Our next philosopher, William James, was in many ways the temperamental opposite of Peirce, and he might have been expected to have more success.

2. William James

Where Peirce had been the first to formulate their new approach to a "pragmatic" truth, James was the suave public spokesperson for the American Pragmatists. Here is one account of James's thought on the matter.

> "In his Preface to *The Meaning of Truth*, James comments on the excitement caused by his earlier lectures on pragmatism, in which, offering the pragmatist's conception of truth, he had spoken of an idea's 'working successfully' as the sign of its truth. He warns his critics that this is not a new definition of the nature of truth, but only a new interpretation of what it means to say that the truth of our ideas consists in 'their agreement, as falsity means their disagreement, with reality. Pragmatists and intellectualists,' he adds, 'both accept this definition as a matter of course.'
>
> ""To agree in the widest sense with reality,' James then explains, 'can only mean to be guided either straight up to it or into its surroundings, or to be put into such working touch with it as to handle either it or something connected with it better than if we disagreed. Better either intellectually or practically . . . . Any idea that helps us to deal, whether practically or intellectually, with either the reality or its belongings . . . that fits, in fact, and adapts our life to the reality's whole setting, will agree sufficiently to meet the requirement. It will be true of that reality.' . . .
>
> "The problem of the criteria or signs of truth does not seem to be of equal concern to all who discuss the nature of truth. For the ancients, at one extreme, it seems to be hardly a problem at all. For William James, at the other extreme, it seems to be the central problem. In the controversy over the pragmatic theory of truth, in which James engages with [Idealist F. H.] Bradley [Truth is agreement among ideas] and [empiricist Bertrand] Russell [truth is agreement with sensed reality], some confusion tends to result from the fact that James seldom discusses what truth is except in terms of how we know what is true, while his opponents often ignore the signs of truth in discussing its nature. The important point for James is not that truth consists in agreement with reality, but that 'true ideas are those we can assimilate, validate, corroborate, and verify.' Whether we can assimilate or validate or verify an idea in turn depends upon its consequences, either for thought or action. . . .
>
> "In his *Psychology*, James suggests another aspect of his theory of the expediency of a true idea, which he later developed in *Pragmatism*. Not only must

> our conceptions or theories be 'able to account satisfactorily for our sensible experience,' but they are also to be weighed for their appeal 'to our aesthetic, emotional, and active needs.'" (*The Great Ideas*, II, pp. 917, 919.)

This is, obviously, a brief account of a difficult matter -- at least historically thought to be a difficult matter. But it is the commonsense ordinariness of the conception -- James says it's "not a new definition . . . but only a new interpretation" of what many people already think -- that appeals to the pragmatists. No elaborate Kantian critique; no Platonic "world of Ideas"; no Cartesian need for God to guarantee that we won't fall into error about our clear and distinct ideas. I repeat Peirce's version of the scientific way of fixating belief (which he thinks should apply in all fields): "To satisfy our doubts it is necessary that a method should be found by which our beliefs may be caused by nothing human, but by some external permanency . . . [which] permanency would not be external, in our sense, if it was restricted in its influence to one individual. It must be something which affects, or might affect, every man. And, though these affections are necessarily as various as are individual conditions, yet the method must be such that the ultimate conclusion of every man shall be the same, or would be the same if inquiry were sufficiently persisted in." Echoes of Francis Bacon, but in a new key.

Neither of these accounts, of Peirce's discussion of ways of "fixating belief," or of James's "new way of interpreting" truth, does adequate justice to the originality of American Pragmatism as a counter to the whole history of Western philosophy. For my most complete account to this point, I turn to John Dewey. Parts three and four will supplement this account.

3. John Dewey

I will not here try to put together a set of quotes from Dewey's large body of work to summarize his views for the reader. Instead I will use the writings of Larry Hickman -- a leading voice on Dewey today, and director of the Dewey Center at Southern Illinois University at Carbondale -- as a sort of touchstone.

Hickman's view of Dewey is strongly influenced by one book in particular, Ralph Sleeper's *The Necessity of Pragmatism: John Dewey's Conception of Philosophy*. Sleeper's account, which follows Dewey's philosophical development from its earliest beginnings to what Sleeper views as Dewey's "mature philosophy" in *Experience and Nature*, and in *Logic: The Theory of Inquiry*, begins with the claim that, for Dewey, philosophy is "a force for change," an instrument for transforming the culture in which we live. And Sleeper ends, in a chapter that, he says, shows "the integrity of Dewey's work and some of its ramifications," with the claim that Dewey's philosophy is fundamentally meliorist. In an insightful and sharp contrast, Sleeper notes how:

> Although Wittgenstein and Heidegger share something of Dewey's concern for

> the release of philosophy from the constraints of tradition, they share little or nothing of Dewey's concern with the application of philosophy once released. They have none of Dewey's concern regarding the practice of philosophy in social and political criticism.

For my purposes here, limiting myself to an introductory essay, it helps me that Hickman's view focuses on Dewey's philosophy of technology (mostly implicit before Hickman made it explicit), on Dewey's claim (according to Hickman) that philosophy is a technology -- it is an instrument in the hands of society for society to improve itself. (See Hickman's *John Dewey's Pragmatic Technology*.)

Hickman goes a step further than Sleeper. Hickman's thesis is that Dewey's philosophy is explicitly and consciously a meliorist critique of our technological culture. Possibly exaggerating some of Dewey's own statements, Hickman says that for Dewey philosophy is a technology -- an instrumentality -- for the transformation of culture, in our case, of technological culture. In saying that a critique of technology was Dewey's main philosophical goal, Hickman is being only slightly less provocative than in his claim that Dewey's larger project was to restore meaning to a culture that had rendered not only science but also workaday skills and even the fine arts "technological." In other words, Hickman is claiming that Dewey both intended to be and was a philosopher of technology -- and a better one than most who today give themselves that title.

In one passage in this book, Hickman contrasts Dewey's treatments of the way technology dominates today's culture with several versions of Karl Marx, interpreted as an economic determinist, and with the "autonomous technology" thesis of Jacques Ellul. It is while examining the social and political ramifications of Dewey's critique of technology and technological culture that Hickman, echoing Sleeper, says that, among the most influential philosophers of the twentieth century, "Only Dewey wrote extensively about public philosophy; only Dewey advanced a philosophy of education; and only Dewey had a coherent program to produce practical social amelioration" (p. 198).

In a more recent book, *Philosophical Tools for Technological Culture*, Hickman lays out Dewey's approach in an orderly fashion. Recognizing many different uses of the term "technology" in recent years, Hickman provides his own definition:

> Technology in its most robust sense . . . involves the invention, development, and cognitive deployment of tools and other artifacts, brought to bear on raw materials . . . with a view to the resolution of perceived problems . . . [which, together] allow [society] to continue to function and flourish (p. 12).

This is more or less Dewey's classic definition of "inquiry" (sometimes "logic") as successful social problem solving, now clothed in language that makes the definition relevant to controversies in the twentieth century over the meaning of technology and a technological society.

In this approach, Dewey has sometimes been faulted for neglecting what his friend and

colleague, G. H. Mead, called the “consummatory phase” -- the phase of the "social act" (according to Mead) that gives meaning to all the hard work involved in social problem solving. Though Hickman's account might be accused of the same relative neglect, he tries to blunt the force of the criticism with this:

> [Dewey] sought to reconstruct [in *A Common Faith*, 1934] the noun “religion” as “religious,” an adjectival term that would refer to the qualities of energy and enthusiasm that infuse and motivate all those experiences that produce enhanced adjustment within life’s situations (p. 77).

And in Hickman's defense (he would say Dewey doesn't need one), he has also published an edited collection, *Reading Dewey*, in which he gives pride of place to an essay by Thomas Alexander, “The Art of Life: Dewey’s Aesthetics.” That's where, Hickman says (with Alexander), Dewey would say it belongs. According to Dewey, a philosopher's approach to aesthetics, to the arts in a broad sense -- including what Hickman elsewhere calls "quotidian" or everyday technologies -- is the key to his or her thought. In Mead's thinking, the "consummatory" plays the same role. Problem solving, like any human social activity, requires motivation -- though we should not think of this as external to the work. As we will see, there is a well-defined set of steps within social as well as scientific problem solving.

Much misinterpretation of Dewey’s “instrumentalism” (a favorite term of his to describe his approach), and of Hickman’s broad use of “technology” might be avoided by making explicit how “social problem solving” is not all hard work, but includes -- indeed is motivated by -- the “consummatory phase” that is an integral phase of Mead's "social act."

One of these common misinterpretations shows up in this criticism by another philosopher of technology, Carl Mitcham, “If virtually all knowledge, and indeed all human activity, is or ought to be at its core technical, this raises the specter of reductionism . . . [and] the concept of technology becomes vacuous.” Hickman says Dewey had anticipated, and answered, this criticism. Hickman's version of Dewey's reply distinguishes between habitualized “technical platforms” that support routine implementations of technology, as he has defined it following Dewey, and the “reconstruction of technological platforms [which] requires reflection . . . [and] is therefore best termed ‘technology’ . . . in its etymologically correct sense." Using Dewey’s *Logic* (1938 version), Hickman makes the case for distinguishing the “technical” -- activities that tend to be “habitualized or routinized” -- from the “technological” in the good sense: “When habitualized techniques . . . fail . . ., then more deliberate inquiry into techniques . . . is called for.”

Hickman says Dewey's aim, in this, was to place the technology that is philosophy "within the evolutionary history of human development.” This is an important point in Mead as well. (See Mead's *Philosophy of the Act*.)

Dewey was an implacable enemy of the so-called analytical philosophy that came

to dominate British and American academic philosophy -- and, later, much European philosophy as well -- in the very years the American Pragmatists were struggling to bring about a major transformation in the history of Western philosophy. (Dewey was involved in a number of controversies with Bertrand Russell, as one example, but clearly Russell won out in terms of his impact on analytical philosophy in the USA.) Talking about this, Hickman grudgingly admits that there can be something positive about analytical philosophy. Hickman says that where Dewey and he are -- and all philosophers ought to be -- concerned with real-world problems, not academic problems, "Perhaps [analysts think that] philosophy should restrict itself to analyzing and tuning up skills associated with natural and artificial languages." We will see, in part three, that Joseph Margolis criticizes Dewey for "epistemological naivete" because he does not take this task seriously enough. Hickman's reply is that Margolis might be right in saying that, in today's philosophical world, one must be analytical to be taken seriously; but that cannot and should not be the end of the story.

The one part of analytical philosophy that Hickman considers legitimate -- one that arose only after Dewey's death -- is so-called applied ethics, where, Hickman says, some analysts try "to deal with the specific problems engendered by the use and development of specific techniques . . . in [for example] medical ethics, agricultural ethics, and environmental ethics" (pp. 24-25).

In any case, in claiming to correct the narrowness of the analytical approach, Hickman also claims to carve out a niche for a Deweyan philosophy of technology -- which he interprets as a philosophy of technological culture:

> Somewhere between these broad and narrow philosophical tasks -- the [analytic] theory of inquiry on one side and technical field-specific studies on the other -- there lies yet another area of activity, uniquely philosophical but at the same time intimately associated with anthropology, sociology, history, and other disciplines, such as economics. This is the field known generally as the philosophy of technology, or the philosophy of technological culture (p. 25).

[Seeing Dewey's place among the American Pragmatists -- in their reaction both to Modern Philosophy and to the whole history of Western philosophy -- through the lens offered by Hickman, suggests that I should be fair and pause a moment to look at some criticisms of Hickman. Doing so takes my story here a little bit out of historical sequence, toward looking at controversies at the end of the twentieth century rather than its beginning. But at the same time it will allow the reader to see that Dewey has both opponents and followers, in addition to Hickman (and myself), right down to the present.

In a special author/critics look at the second Hickman book (*Techne* 7:1, Fall 2003; see spt.org/journal), Hickman reacts to four critiques that I think are worth mentioning here. Reacting to a charge by neo-Heideggerian Albert Borgmann that his approach can offer no "firm norms" for the reform of technological culture, Hickman simply denies the force of the charge. Humans, working for reform from a great variety of intellectual disciplines, can both devise means to achieve a better social condition and adjust their goals

-- even providing "firm" goals if one feels that is necessary -- as they go along. A both-and philosophy, Hickman says, is better than what seems to be Borgmann's point, either firm norms or unacceptable relativism. (The question of relativism is a traditional issue in philosophy, and Dewey was often accused by his opponents of falling into relativism. A certain carelessness about this matter may be what Margolis, in part three, has in mind in preferring his version of "analytical pragmatism" to Dewey's -- to what Margolis sees as Dewey's cavalier dismissal of post-Cartesian epistemology in favor of social reform.)

In reacting to another avowed pragmatist, Paul Thompson, who claims that Hickman's book does not go beyond being a "propaedeutic" to actual involvement with the experts who can help solve technosocial problems, Hickman admits there can be a tension between academic work and activism -- though he thinks a professor's teaching role allows for plenty of critical activism on the part of students, either now or in their future technical careers. Thompson thinks this is not enough; a genuine pragmatism should involve active cooperation in the real world of social problem solving. Again this is a perennial problem for philosophers, who often labor under the charge of being useless, of living in ivory towers. (Some, of course, are perfectly happy to do so -- but not pragmatists in the style defended here.)

Andrew Feenberg's critique is that Hickman's pro-science politics -- faithful to Dewey's version of liberalism -- is not what radicals were looking for in their calls for revolutionary reform in the 1960s and 1970s. Hickman, still claiming to follow Dewey faithfully, says that the policies he favors are fairly close to socialist policies -- others might call them "progressive" -- and, calling it a sort of paradox, Hickman claims that Feenberg's recent proposals, under the label of neo-Marxist radicalism, move further toward pragmatism than Feenberg is willing to admit. Whatever the merits of either side in this exchange, there is an issue here -- a perennial one since the days of Marx -- as to whether modern society needs revolutionary change or whether progressive reforms can do enough to make ours a better world. Here I would recall Ralph Sleeper's claim about Dewey's meliorist philosophy, and Hickman's endorsement of it.

One last interchange from the *Techne* author/critics number that is worth mentioning here -- to shed more light on whether Hickman's philosophy is sufficiently Deweyan -- pits Robert Innis against Hickman. Innis charges that Hickman has not been faithful to Dewey in terms of the much broader emphasis Dewey places on the role of "aesthetics" in his instrumentalism: our cultural settings provide the motivation for (as well as the culmination of) our efforts at social reform, and in general play a much larger role than Hickman allows for in his book. Earlier, replying to another objection, I noted that Hickman had edited another book on Dewey in which aesthetics had pride of place, but that would not undercut Innis's charge that he unduly plays it down, or neglects it, in this book. In any case, the issue of a proper definition of instrumentalism, one that doesn't leave pragmatism open to the charge that it is excessively focused on problem solving, to the neglect of esthetic and other values concerns, is one that Hickman and any defender of pragmatism is going to have to deal with. (Recall Dewey's *A Common Faith*; this is also where I recall Mead's "consummatory" phase of social action.)]

Now it's time to end this part, in which the American Pragmatists of the late nineteenth and early twentieth century have been introduced as a challenge to the various radicalisms of Modern Philosophy; it's time, that is, to move on to twentieth-century philosophy. The issue in part three will be whether or not pragmatism, in an analytical version, can really offer an alternative to the dominant schools in twentieth-century academia, all of them operating under the umbrella of analytical philosophy. Part four will then end the essay on a note that definitely challenges the dominant view.

Part Three: Analytical Pragmatism

a.

I look at two approaches here, and I begin with Joseph Margolis's most recent statement of his general philosophy in his *Reinventing Pragmatism* (2002). Margolis contrasts early American pragmatism with the revival of pragmatism in American analytic philosophy after about 1980. In the "revived" version, the focus is not on Mead and Dewey's "meliorizing" progressivism, with its suspicion of large science-based corporations, but on quarrels over different versions of epistemology. With the exception of Richard Rorty, who wants his pragmatism (he says it is more literary than philosophical) to join in leftist causes (Rorty, 1998), none of the "revived pragmatists" have much interest in ethics, technology, or real-world problems -- except an interest in science, and even that is reducible to a scientistic model of human knowing (or opposition thereto).

Margolis's is the best summary of these disputes that I know of, and I summarize his summaries here -- though a warning is in order. Throughout this essay, I have been trying to rephrase philosophers' views in ways that are intended to be intelligible to beginners. With an analytical pragmatism, as with any version of analytical philosophy in the twentieth century, this task is complicated by the fact that they never deliberately talk to non-philosophers. Occasionally, as in an introduction to philosophy text, one or another analyst will at least try to reach beginners or people in other disciplines -- just as the occasional science popularizer does. But it's always difficult: things written for other specialists are difficult to translate, without distortion, into non-specialist language. My discussion of Margolis was originally written as a contribution to an encyclopedia, so perforce for a general audience. But the editors rewrote it in good part because they felt it was too technical for such an audience as I tried to be fair to Margolis's nuances, in his own words where possible. What I reproduce here is largely the unedited early version of that encyclopedia entry (actually part of an entry on pragmatism in general); and I do that at some risk. It might seem overly concise, and it might assume too much knowledge of philosophy on the part of the reader. But I take the risk, hoping the reader will bear with me -- and with Margolis.

Margolis's opponents are some of the best known analytical philosophers:

1. Hilary Putnam, Donald Davidson, W. V. Quine, and "naturalized epistemology"; along with:

2. Richard Rorty's "postmodern" reaction (Rorty claims to be following Davidson's lead in doing so).

Against these giants of analytic thought, Margolis offers what he calls a

3. Constructivist middle ground as more genuinely pragmatic.

Though his writing style is, here as in everything he writes, dense and convoluted, what Margolis does is talk about what he thinks is an acceptable pragmatism against both kinds of naturalizers. He talks in particular about several debates in the professional literature between Rorty (claiming to speak for Davidson as well as himself) and Putnam. The conflict has to do with how to safeguard a "true" pragmatism from relapsing into a Cartesian quest for a guaranteed foundation of knowledge -- primarily scientific knowledge.

To summarize the account -- at some cost in terms of glossing over the nuances -- Margolis (p. 15) says: "In any event, Putnam's [1994] newly minted denial of his earlier [1980] denial of the subject-object disjunction . . . risks his joining forces with the Cartesian realists he opposes." Margolis references Putnam in *Reason, Truth, and History*; and "Sense, Nonsense, and the Senses: An Inquiry into the Powers of the Human Mind." That is, Margolis says Putnam has reversed himself in a risky way.

Margolis tries to give the reader some help in understanding the controversy:

> On any serious reading, you can hardly deny that the essential philosophical questions that arise from the first appearance of Descartes's principal tracts persist to the very end of the twentieth century. We are evidently still trapped by the two unavoidable paradoxes Descartes has bequeathed us: one, that of . . . pretend[ing] to reclaim an objective and neutral grasp of the way the world is apart from our inquiries; the other, that of the conditions for resolving the first puzzle, if we are confined to inner thoughts and perceptions (Margolis, 2002, p. 13).

In short, for Margolis, Descartes' claim to offer a neutral and objective way to know the world is paradoxical; and it is especially so if we are limited to inner thoughts and perceptions.

Putnam, in Margolis's view, makes too much of a concession to naturalizers, especially Quine (he references "Epistemology Naturalized" in Quine's *Ontological Relativity and Other Essays*), and Davidson (Margolis references Davidson's "A Coherence Theory of Truth and Knowledge," in Lapore, *Truth and Interpretation*). Naturalizing, Margolis thinks, is incompatible with the earlier generation of pragmatists' repudiation of any and

all versions of Cartesianism. It continues what Dewey calls the "quest for certainty," just as had the earlier generation of empiricists (part two above).

Margolis's critique of Rorty (he cites his "Pragmatism, Davidson, and Truth" in E. Lapore, ed. *Truth and Interpretation*, above), as the other pole in his "primary debate in recent pragmatism," is easier to state in simple terms. Rorty's "postmodernism," Margolis thinks, is incompatible with any pragmatism legitimately related to earlier pragmatism, with its trust in science, and expertise generally, in the search for solutions to problems either scientific or social. In this, Margolis is siding with many critics of Rorty's postmodernism as anti-science.

Margolis contrasts early American pragmatism with this debate over pragmatism in American analytic philosophy (after about 1980), saying that, for instance, Dewey's epistemology was naive. Presumably Margolis means that Dewey's anti-epistemology, in his many writings, does not measure up to contemporary analytical philosophy standards. But there is more to it than that. Margolis favors Peirce over Dewey, at least partly because he finds Dewey's activism to be incompatible with what academic philosophy has come to be in recent decades, whereas Peirce was more narrowly philosophical -- and certainly not activist in the Dewey and Mead sense. (On one occasion, at a philosophy conference in Philadelphia at which he was the lead speaker, Margolis told me exactly that.)

Finally, Margolis outlines his own version of constructivist pragmatism. He sees it as following from the failures of the two parties to the debates he has outlined: "Putnam went much too far in rejecting his internal realism when he rejected his [earlier] representationalism; and Davidson and Rorty go too far in construing the mind-dependent constitution of the independent world" (p. 22). Big phrases, "representationalism vs. internal realism" and the "mind-dependent constitution of the world"; but I think the sense is clear: Putnam should have retained the "internal" in his realism-based rejection of his earlier representationalism; and Rorty and Davidson forget an independent world in their "mind-dependent" construal of knowledge.

So it seems, as Margolis then says, that there can today be "no viable realism that is not also a constructivism":

> Constructivism means at the very least that questions of knowledge, objectivity, truth, confirmation, and legitimation are constructed in accord with our interpretive conceptual schemes . . .; that, though we do not construct the actual world, what we posit (constructively) as the independent world is epistemically dependent on our mediating conceptual schemes.

Another mouthful, perhaps, but the thrust seems to me clear when some of Margolis's phrases are emphasized.

In an earlier essay, Margolis had clarified how this analytical-pragmatist constructivism is inherently technological:

"What we have sketched thus far are the lines of an argument by which, admitting the constructive nature of the world along the moderate (if somewhat muddled) lines of [Thomas] Kuhn's historicizing, we find ourselves obliged to admit the constructive nature of cognizing selves. Mark that (the constructive thesis) as thesis (1) of what we have termed the doctrine of the technological or technologized self. It exercises an immense economy in disqualifying at a stroke all forms of logocentrism -- all essentialisms, all universalisms, all natural necessities of cognition, all totalizing, all closed systems, all apodicticity. But it is itself fragile and incomplete as an account of what the technologized self entails. It does not sufficiently identify what, minimally, the achievement of human communication requires. . . .

"A better clue lies elsewhere -- in the biologized philosophical anthropologies of the European tradition. Marjorie Grene, for instance, captures what we shall mark here as theme (2) of the technologized self:

> To be a person is to be a history. In what respects? In two respects, opposed but related. On the one hand, being a person is an achievement of a living individual belonging to a natural kind whose genetic endowment and possible behaviors provide the necessary conditions for that achievement. On the other hand, a human being becomes the person he is within, and as one expression of, a complex network of artifacts -- language, ritual, social institutions, styles of art and architecture, cosmologies and myths -- that constitute a culture. A culture, of course, is itself a sedimentation of the actions of past persons; but it is, nevertheless, preexistent with respect to the development of any particular person.

". . . Technology, then, is the biological aptitude of the human species for constituting, by alternative forms of equilibration, a world suited to a society of emergent selves or a society of such surviving selves adjusted, diachronically, to such a world. We understand one another for the same reason we survive as a species. Technology is the flowering of our biological endowment and is incarnate in it. . . .

"One cannot refuse the bare option of the reduction or elimination of the cultural dimension of the real. But its intended prize has yet to be earned. The doctrine of the technological self is incompatible with the victory of that project; and, in fact, the separate vindication of its own characteristic claims -- the constructed nature of reality and self, the incarnation of cognition, the praxical nature of theory -- counts against a bifurcation of the real and the rhetorical, in virtue of which one might be otherwise tempted to endorse their ultimate rejection. Failing that, we are invited to make a fresh analysis of what is clearly salient in human history -- of what, in the opposing view, tends to be neglected anyway. Nevertheless, in achieving just this small advantage, we have not yet explained what the sense is in which the technologized self or its world are constructed and yet are not merely

> constructed." (See Margolis's "The Technological Self," in Byrne and Pitt, eds., *Technological Transformation*.)

In another essay, Margolis had already produced one account, which is similar to what we have seen him say above in formulating his constructivist analytical pragmatism. I reproduce its conclusion, and its connection to analytical pragmatism, here:

> Seen both in its transcendental role (as insuring inquiry a measure of objectivity relativized to the conditions of praxis and dialectical review) and in its role vis-a-vis the human sciences (as modelling the methodological distinction of such sciences) the technological may fairly be interpreted as helping to preserve whatever distinction bears on human freedom and dignity, the thrust and direction of human inquiry, the balance between realist and idealist components of cognition, the tolerance of plural, even incompatible, theories compatible with a common praxis, the provision of grounds for disclosing ideological distortion without appeal to foundationalism, the admissibility of a moderate relativism consistent with objectivity, and such similar doctrines as the recent currents of pragmatism have been advancing. (See "Pragmatism, Transcendental Arguments, and the Technological," in P. Durbin and F. Rapp, *Philosophy and Technology*.)

I have not attempted to rephrase Margolis in this, the "technological" part of his analytical pragmatism, not because I think it is clear enough for beginners but because it is such a nuanced view. If it seems too difficult, I would just say reread it, and reread it again and again if necessary. Descartes is not easy reading either, so in this case I'm hoping that anti-epistemology in Margolis's version will be at least as intelligible.

b.

There is, moreover, another take on analytical pragmatism that deserves mention here, and that I touched on earlier. Larry Hickman, whose writings I used earlier to introduce Dewey's version of American Pragmatism, has said:

> Dewey was an implacable enemy of the so-called analytical philosophy that came to dominate British and American academic philosophy (and, later, much European philosophy as well) in the very years the American Pragmatists were struggling to bring about a major transformation in the history of Western philosophy.

I would say to see Dewey's disagreements with Bertrand Russell (as one example, in selections from Dewey in selections from *The Journal of Philosophy*). Talking about this, Hickman grudgingly admits that there can be something positive about analytical philosophy. Hickman says that where Dewey and he are -- and all philosophers ought to be -- concerned with real-world problems, not academic problems, “Perhaps [analysts think that] philosophy should restrict itself to analyzing and tuning up skills associated with

natural and artificial languages." But the one part of analytical philosophy that Hickman considers legitimate is when analysts try "to deal with the specific problems engendered by the use and development of specific techniques . . . in [for example] medical ethics, agricultural ethics, and environmental ethics" (24-25).

Claiming to correct the narrowness of the analytical approach, Hickman claims to carve out a niche for a Deweyan philosophy of technology -- "somewhere between these broad and narrow philosophical tasks -- the theory of inquiry on one side and technical field-specific studies on the other" -- but that is not my point here. What I want to emphasize is Hickman's recognition of the value of analytical applied philosophy. That is a very large subset of recent philosophical writing, but much of it is too academic for my Deweyan tastes -- I very much prefer *The Journal of Applied Philosophy* to the more academic *Philosophy and Public Affairs*, for example. But Hickman is surely right that some analytical philosophers have come down to the real world from their academic clouds. There is even a beginning at attempts to produce applied philosophy in line with American Philosophy.

As we have seen, Hickman's pragmatism has itself been criticized -- by a friend and one-time colleague in the same department, Paul Thompson -- for not pushing pragmatism even further down to earth and out of the academic clouds. Thompson says pragmatists should not only deal with real-world issues, but they should do so in collaboration with others already working on the issues. One of his specialties has been agricultural ethics, and he thinks pragmatists writing on that subject should not only consult with agricultural experts (with farmers as well) but work with them on, for example, better government regulations. Hickman has written about environmental ethics, but Thompson would say he ought also to work with regulators and others trying actively to improve the environment, not just to write about it. I don't want to dwell on this mild disagreement among friends, but it can serve to introduce my next -- and final -- topic, an *activist* version of American Pragmatism.

Part Four: Activist Philosophy: Why It Is Not a Misnomer

What I present here is an argument of sorts. More precisely, it is a defense of a Mead-Dewey activist philosophy -- in Mead's terms, an ethic that is the community solving its problems democratically. The view needs a defense for two reasons: as we have seen, Joseph Margolis, in his analytical pragmatism, says that Dewey's repudiation of epistemology is naive; it does not measure up to the standards of contemporary analytical philosophy. And almost all academic philosophers in the United States today, but especially philosophers in departments dominated by analytical philosophy, believe that philosophers can get involved in social problem solving, if at all, only under the heading of service.

I have presented a defense along these lines on a number of occasions, but the version I fall back on here is adapted from the lead essay I did for a volume on "philosophy of technology and activism" in *Research in Philosophy and Technology* (1999), edited by Carl Mitcham and Leonard Waks. On another occasion, I called mine a "truly pragmatic philosophy of technology" (see my web page under the Philosophy Department at the University of Delaware: www.udel.edu/Philosophy).

Here I not only outline but also espouse a piecemeal, public-interest-activism approach to philosophy. In my opinion, the approach follows closely the social ethics of G. H. Mead (1934, 1936, 1964a, 1964b), along with what Larry Hickman has called the "philosophy that is a technology" of John Dewey (1929, 1935, 1948).

As we saw at the end of Part III, Hickman acknowledges one aspect of the analytical philosophy that Dewey opposed so strenuously, the application by some analysts of their techniques to so-called applied ethics issues. "Professional ethics," in one form or another, has become something of a mainstream activity, both in certain segments of academe and in certain circles within professional associations. Conferences involving an amazing array of professional disciplines and associations have been held at the University of Florida, and there is an Association for Practical and Professional Ethics, based at Indiana University, that runs regular meetings -- equally well attended -- every year.

Carl Mitcham and Leonard Waks (Mitcham and Waks, 1997) have lamented the fact (as they see it) that this growing body of literature includes all too few explicit references to the centrality of technology in generating the problems that applied and professional ethics practitioners address. Mitcham and Waks admit that biomedical ethics, engineering ethics, and computer ethics often, perforce, address issues related to technology and particular technological devices -- for an obvious example, the computers themselves, but also artificial intelligence applications, and so on, in the case of computer ethics. But, Mitcham and Waks complain, "the technological" in these cases is all too often subordinated to the ethical (often to very traditional ethics) rather than transforming ethics. I believe there is something to be said for this complaint. However one defines technology -- whether in terms of new instrumentalities or devices or processes, or in terms of so-called "technoscience" (that peculiar admixture of science and engineering and other technical expertise with capitalism or modern governance that is so pervasive in our era) -- the phenomena associated with contemporary technologies or technological systems ought to have a more central place in contemporary discourse on ethics than they do. And that means they should have such a place in the discourse of those philosopher-ethicists concerned with real-world issues in our technological society.

In this introductory essay, I take it for granted that academic ethicists have at least made a beginning in taking note of technosocial problems. What I advocate is that they do so in an activist fashion.

Some philosophers have claimed that academic ethicists have a special claim to contribute to the solution of the sorts of technosocial problems I have in mind. I dispute that claim if it assumes that philosophers can claim a special expertise in these areas. In my

opinion, we are all involved in technical decisions: the experts who are involved directly with them, those who hire or otherwise deploy the experts, citizens directly or indirectly impacted by the decisions, and the entire democratic citizenry who pay the taxes that support the ventures or benefit the corporations involved in them in myriad ways or who must often pay (not only through taxation) for the foul-ups so often associated with large technological undertakings (and not only with technological disasters). Technical expertise is often central to the creation of technosocial problems -- but also to their solution or at least remediation. Corporate or governmental expertise is also involved. Citizens can become experts, but they continue to have a legitimate democratic voice when they do not. Philosophers in general, and ethicists in particular, often gain their own expertise -- most commonly in arriving at legal or political or social consensus on technosocial issues. But no one -- none of the actors in these complicated issues -- has any more expertise than he or she does in his or her own limited area of focus. We are all involved, together, in the sorts of decisions (and often the lack of considered decisions) that I have in mind.

What I focus on here is the help that philosopher/ethicists can contribute in the search for solutions to social problems -- but especially to how they can do a better job of it than they have done so far.

Ralph Sleeper (1986), as we have seen above, has interpreted Dewey's philosophy as fundamentally meliorist. I like that. Sleeper's contrast of Dewey with Martin Heidegger and Ludwig Wittgenstein seems to me especially instructive. According to Sleeper (p. 206), Heidegger and Wittgenstein "have none of Dewey's concern regarding the practice of philosophy in social and political criticism." Earlier in his book (p. 7), Sleeper had noted how this "accounts for [Dewey's] . . . pervasive sense of social hope. It accounts for . . . his dedication to the instruments of democratic reform; his historicism and his commitment to education; his theological agnosticism and his lifelong struggle to affirm the 'religious' qualities of everyday life." I suspect it is clear to anyone who has read Dewey carefully that the sorts of problems Dewey wanted to attack with his transformed, meliorist philosophy are very similar to those dealt with by leading advocates of an ethics of technology.

Mead did not live nearly as long as Dewey, and the social problems to which he addressed his equally meliorist philosophy were those of just the first three decades of the twentieth century. That was before the high-technology period of "post-industrialism" or the so-called "scientific-technological revolution," as it was called in the pre-1989 Communist Bloc. But the spirit of Mead's philosophy is the same as Dewey's. And, as seems to me often to have been the case, Mead is clearer than Dewey was when it comes to stating the theoretical underpinnings of their shared approach.

According to Mead (1964, p. 266):

> The order of the universe that we live in is the moral order. It has become the moral order by becoming the self-conscious method of the members of a human society. . . . The world that comes to us from the past possesses and controls us.

> We possess and control the world that we discover and invent. . . . It is a splendid adventure if we can rise to it.

In other words, societies acting to solve their problems in a creative fashion are by definition ethical.

Traditional definitions of ethics are inadequate, Mead thought, and he grounded his social-action approach on this inadequacy. This is emphasized by Hans Joas (1985, p. 124) in a recent reinterpretation of Mead: "[Mead] and Dewey developed the premises of their own ethics through criticism of utilitarian and Kantian ethics." Specifically, according to Joas, "In Mead's opinion, the deficiencies of utilitarian and Kantian ethics turn out to be complementary": utilitarians connect morality with means, where Kant focuses on right motives. But utilitarians, who typically base their view on people's self-interests (according to Joas's interpretation of Mead), fail to provide an adequate grounding for altruistic social action. Kant, on the other hand, Joas says, fails to see that the right way to do one's duty is not predetermined; it must be worked out in a social dialogue or struggle of competing values.

In both Dewey and Mead, ethics is not a set of guidelines or a system but the community attempting to solve its social problems in the most intelligent and creative way its members know how. In a technological world, ethics is community action attempting to solve urgent technosocial problems.

I believe one can make a positive defense of a social ethics of technology. What this means for me is to demonstrate that there is some hope that some of the major social problems of our technological age are in fact being solved.

A study, some years ago, of reform politics and public interest activism (McCann, 1986, p. 262) says just that about activism in the 80s:

> Throughout the [United States], myriad progressive groups have been mobilizing and acting on behalf of crucial issues largely outside the glossy mainstream of media politics: the variety of church, campus, and community organizations mobilized around issues of U.S. policy in South Africa and Central America as well as nuclear arms policy; the increasingly effective women's and gay-rights movements; the growing numbers of radical ecologists and advocates of "Green Party" politics; the renewed efforts to mobilize blacks, ethnics, and the multitude of the poor by Rev. Jesse Jackson and others; the diverse experiments of working people both in and out of labor unions to reassert themselves; and the legions of intellectuals committed to progressive economic and social policy formulation -- all have constituted elements of an increasingly dynamic movement to build an eclectic base of progressive politics in the nation.

This puts the case for progressive reform generally. Here, I want to concentrate on the contributions that contemporary philosophers, including academic philosophers, might make to the solution of technosocial problems. In an earlier book (Durbin, 1992),

I concentrated on the kinds of reforms technically-trained professionals might be able to bring about. I took up specific examples, focusing on seven of ten representative types of technosocial problems. Part two of that book addressed general problems, such as education, health care, and politics. Part three focused on problems specifically related to technology: biotechnology, computers, nuclear weapons and nuclear power, and problems of the environment. In each case, I tried to show how unlikely it is that real reform will actually take place unless technical professionals are willing to go beyond what is demanded by their professions to get involved with activist groups seeking to bring about more fundamental change.

I later made the same claim with respect to academic philosophers generally but also to philosophers of technology. What I do here is expand on this challenge to my fellow philosophers.

Before launching into a demonstration of how the approach might work out in practice, in my earlier book, I felt a need to provide a sample case. What I chose for this purpose was the case of professionals attempting to deal with problems of families in our technological world. There we see clearly displayed the combined power, if they get involved in activist ways, as well as the weakness if they do not, of that set of professionals people would see as most likely to get involved in activism in our culture. What I hoped to show by this means was a pattern: trained professionals -- in this case, social workers and other "helping" professionals -- who attempt to deal with the problems they are trained to address are helpless to get their professional goals accomplished if they do not go beyond mere professional work, if they do not get involved in activist coalitions with people outside their professions. In the rest of that book, I tried to show this same pattern with respect to other types of professionals.

Here I focus mainly on philosophers, assuming that the other activists are still active.

In a nutshell this is my claim. There are a great many social problems in our technological world. Many ethical solutions have been proposed. But in the end none of them seems as likely to be a solution as an approach like that of Mead and Dewey that would urge philosophers to work alongside other activists in dealing with the real problems that face us. Other ethics-of-technology approaches might also work, but in my view that can only happen if their practitioners become as actively involved as Mead and Dewey were.

Why should anyone accept this view that I have called a "social work model of philosophy of technology"? Clearly they should not do so on the authority of Dewey and Mead -- let alone on my authority.

At this point, an early reviewer of the manuscript complained that I do not develop a detailed theory or program of activist philosophy of technology. At first I was taken aback; why would anyone call for a theory of what is basically an approach that refuses to separate theory from practice? But a moment's reflection made me sensitive to the complaint -- though I still resist its thrust.

My claim here to be following the lead of Dewey and Mead may seem controversial. But in my opinion, Dewey has already produced an excellent defense of activism in his *Reconstruction in Philosophy* (1920; 2d ed., 1948) and even a program of sorts in *Liberalism and Social Action* (1935). The incredible extent of Dewey's personal activism is documented in Bullert (1983).

Mead, for his part, felt no need to provide either a theory or a program; he simply viewed it as an expected extension of his philosophical commitment to get deeply involved in a variety of causes and political activities in and around the Chicago of his day. (See Feffer, *The Chicago Pragmatists and American Progressivism*, chapters 9-13; note that Feffer is highly critical of the impact of Mead's interventions. Westbrook's *John Dewey and American Democracy* is critical of Dewey's involvement in the defense of World War One.)

I am not here claiming to update Dewey's defense of activism for our own time; the reader who is interested enough can go back to *Reconstruction in Philosophy* and *Liberalism and Social Action* — or, for that matter, to Dewey's *The Quest for Certainty* (1929) or I actually prefer Mead's attitude, that activism simply follows from a commitment to pragmatism.

But if people are not going to be persuaded on the basis of authority, they need an argument. And a fully satisfying argument is difficult to come by.

No one could be persuaded on the basis of a rigorously compelling logical argument -- certainly not on the basis of a claim that it is contradictory, in the literal sense, to defend ivory tower solutions for real-world problems. Dewey and Mead opposed the academicizing of twentieth-century philosophy, but they did so precisely because they thought that philosophy has almost always, down through the centuries, been linked to the attempt to solve real-life problems. No more than that.

Neither is any factual argumentation likely to be totally compelling. There might be a social philosophy or a political philosophy argument, but nothing of that sort is likely to be genuinely decisive. Mead and Dewey offered historical arguments, but I doubt that they really expected academic philosophers to be persuaded.

In the end, it seems to me that what it comes down to is a social responsibility argument -- a demonstration of the urgency of social problems in our technological world combined with the opportunity that exists to do something about these urgent problems. In the list of (classes of) problems I referred to as a touchstone in my earlier book, some of the issues have the urgency of sheer survival -- e.g., nuclear proliferation or worldwide ecological collapse -- and others are related to fears about the survival of human values in the face of genetic engineering or possible new advances in applications of artificial intelligence or "smart" programming of computerized systems that escape human control. But others are keyed to threats to the good life in a democratic society: technoeconomic inequities or disparities between rich and poor (nations or individuals); hazards of

technological workplaces or extreme boredom in high-technology jobs or widespread technological unemployment even among highly trained professionals; extreme failures of schools -- including universities and professional schools -- to prepare their graduates (or dropouts) for the jobs that need doing today, or for a satisfying and effective political/civic life; the widely-recognized but also confusing health care crisis; even technological and commercial threats to the arts and traditional high culture.

Such a list, as a generalized list of classes of contemporary problems, cannot even begin to hint at the urgency I have in mind. It is genuinely felt problems, of numbers of people in local communities everywhere throughout modern society, that will be compelling. People motivated to do something about particular local problems do not look kindly on an academic retreat to the ivory tower. But what I would stress is not people's disfavor; I would emphasize the opportunity such issues represent for philosophers to get involved.

And some have gotten involved; that is the other half of my argument (or sermon). In my earlier book, I offered several examples. The first was related to a very technical aspect of contemporary philosophy of science -- as academic a field as there could possibly be -- and has to do with philosophical interpretations of artificial intelligence. Quite a few philosophers of science have simply jumped on the bandwagon in this field, defending even the most extreme anti-humanistic claims of the artificial intelligence community. But some philosophers (e.g., Hubert Dreyfus, 1992, and John Searle, 1992) have gained a certain notoriety as opponents of exaggerated claims for artificial intelligence. I do not address this kind of contribution at all here. However, as we have seen Margolis say, "The technological may fairly be interpreted as helping to preserve whatever distinction bears on human freedom and dignity, the thrust and direction of human inquiry, the balance between realist and idealist components of cognition, the tolerance of plural, even incompatible, theories compatible with a common praxis." I even tried to show that those forbiddingly academic folks, philosophers of science, can make at least limited social contributions.

While I find the work that academic philosophers have done on artificial intelligence interesting, I am not overwhelmed by the contributions that others think that academic philosophers can make. Thomas Perry (1986) claims that certain philosophers (Perry mentions Judith Thomson, Thomas Scanlon, James Rachels, and Jeffrey Reiman) have thrown "increasing light on the privacy problem" (p. xiii) -- presumably in discussions of issues such as abortion and euthanasia. Certainly many applied ethicists have made contributions to public debate on such issues, but my claim is that they do not necessarily thereby contribute to the solving of social problems. To do that (as one example), they would have to join with others to bring about real reform.

Returning to the possibility of direct contributions by academic philosophers to the solution of social problems, I added some examples not included in the earlier book: nuclear waste disposal, the regulation of toxic products more generally, and environmental ethics broadly, among others.

A second (still academic) example has to do with work on encyclopedias and other integrative publishing ventures, as well as integrative teaching programs in colleges and universities. Here, a small number of philosophers have exempted themselves from the normal promotion-ladder process in academia -- often against extreme pressure not to get involved -- to devote themselves to integration work. One example is the work of the editors of volumes such as the *Encyclopedia of Bioethics* (1978, 1995, and 2004). Similar projects in other fields help solve our social problem of intellectual fragmentation by bringing together, in a coherent whole, the work of specialist scholars in a vast array of fields -- a task for which thousands of students, not to mention physicians and other healthcare workers and their patients (in the bioethics example), ought to be as grateful as for the original specialist scholarly expertise.

Similarly, a small but important band of interdisciplinarily-inclined philosophers have worked with others to establish integrative programs that help otherwise bewildered, career-oriented undergraduates to see some connections in the facts (and specialist hypotheses) they are so pressured to absorb. (See Marsh, 1988; Klein, 1990; and Edwards, 1996.)

A third example has to do with philosophers who have ventured completely outside their academic roles, joining with others in ethics committees, technology assessment commissions, and so on. The best known example is the small group of bioethicists who worked with the two U.S. national commissions which, in the 1970s and 1980s, studied the regulation of human biomedical and behavioral research. By their own admission (see Beauchamp and Childress, 1989 edition, pp. 13-14; Brock, 1987; and Weisbard, 1987), these philosophers discovered that their abstract theories helped them very little toward reaching consensus on controversial issues; for that they had to devise a set of principles of lesser generality that almost all the commissioners could agree on. The resulting guidelines do not, strictly speaking, solve problems in the practice of medicine and related areas of professional practices; only the participants in local controversies can do that, and even then only partially and temporarily. But the influence of the philosophers on the commissions, and of the resulting commission guidelines on practice, seems to have had an overall social benefit. And this continues today, with U.S. Presidential commissions on cloning and similar ventures.

A final example among possibilities for philosophical activism I take directly from the conclusion of my earlier book (Durbin, 1992).

> The final way I have said that contemporary philosophers can contribute to the modern world is as what I would call secular preachers -- advocates of vision in the solution of social, political, and cultural problems. I had in mind philosophers like Albert Borgmann in *Technology and the Character of Contemporary Life* (1984), *Crossing the Postmodern Divide* (1992), and most recently *Real American Ethics* (2006). Bruce Kuklick, in *The Rise of American Philosophy* (1977), maintains that this role has come largely to be scorned by academic philosophers after the rise of philosophical professionalism. I believe Kuklick is, for the most part, correct; but I also believe that the small number of philosophers who still

> feel called upon to play this role are not necessarily out of the philosophical mainstream.

Another recent American philosopher who has been perceived as playing this cultural role is Richard Rorty (1979, 1982, 1989) -- though he tends to look to literary figures rather than philosophers for such cultured vision. Presumably, in this dichotomy, he would think of himself as more a literary figure, an essayist, rather than a philosopher -- at least in the narrow academic sense. On the other hand, many critics -- and I include myself among them -- do not see Rorty as sufficiently activist in the Mead/Dewey sense. Rorty would exercise his culture-criticism -- especially his criticism of the contemporary culture of academic philosophy -- exclusively at the intellectual level. And even at that level, some critics have accused him of lacking the conviction that a preacher, even a secular preacher, needs.

One of Rorty's defenders, Konstantin Kolenda (1990), attempts to address these criticisms -- of Rorty's lack of a "philosophically serious social activism" like that of Dewey (see Richard Bernstein, 1980a, 1980b, 1987), or of lacking a democratic liberalism with specific content (see Cornel West, 1985 and 1989). Kolenda appeals to the political credo that Rorty proposed in response to West's goading. But, strangely, neither Kolenda nor Rorty relates this credo to activist attempts to see it put into practice --though, very recently, Rorty (1998) has made something of a move in that direction. (On Rorty, see also Saatkamp, 1995.)

I would not commend secular preaching, whether Borgmann's or Rorty's, if it were not connected to activism. Intellectual discourse unrelated to specific solutions for real and urgent problems is no better outside than inside the academy.

Some concluding notes: I would not want anyone to think that I have provided, here, anything like a comprehensive list of all -- or even a representative sample -- of the philosophical work in the United States in which philosophers have joined in activist crusades to solve urgent technosocial problems. Even Michael McCann (1986), in his broader-ranging summary of progressive activists, had to resort to generality when he referred to "legions of intellectuals committed to progressive economic and social policy formulation." Perhaps "legions" exaggerates, if one is applying the claim to philosopher-activists, but surely there are many more of them than the "ivory tower" stereotype would suggest -- and surely there are more than I am personally aware of, especially given that much activism is buried in group efforts on local issues. These activists are, as often as not, the proverbial unsung heroes.

Moreover, I would not want anyone to think that I approve of any and all activism(s), philosophical or other. Not all activism is good. All voices have the right to be heard in a democracy, but voices of groups that work to undercut this very democratic freedom -- indeed, voices of groups that are not positively committed to expanding democracy, to the removal of power structures or social structures that keep some groups down -- seem to me to be abusing the freedom they claim to be exercising. What I (along with Mead and Dewey) want is for philosophers to join with progressive activists, with those who

are consciously fighting for the expansion of social justice and the elimination of unjust inequities.

As I said earlier, it is going to be very difficult to offer an argument that will persuade very many academic philosophers. So my appeal, in the end, is to the overwhelming urgency of technosocial problems, large and small, local, national, and international. I am just happy that some philosophers, recognizing this urgency, have joined with progressive groups in trying to solve the problems. Here I argue that there should be more.

Okay, so here we have an argument-from-urgency (hardly an argument at all in the analytical philosophy sense, as Margolis would emphasize). What about the reasons why other philosophers would oppose the view?

Margolis, sympathetic as he is to at least a Peircean version of traditional pragmatism while denouncing Dewey's naivete, would say that this kind of would-be argument can't even be considered within the technical framework of contemporary academic analytical philosophy. If Dewey's anti-epistemology was naive, this sermonizing is even more naive.

This much I readily admit, though the urgency of the social problems remains -- and Margolis's "technological" reading of his constructivist analytical pragmatism would say that it includes this much: "We understand one another for the same reason we survive as a species. Technology is the flowering of our biological endowment and is incarnate in it."

Second, someone might ask if I think that there is no justification for the practice in academia of listing "service" contributions apart from teaching and research contributions that an academic is expected to make. Historically, adding in the service dimension was intended to keep professors from focusing almost totally on scholarship or research; the same was true for guaranteeing that they make a teaching contribution. That is, in the early days of the modern American research-oriented university (see Oleson and Voss), there was a perceived fear that a research orientation could go too far -- as some people felt had happened in some German universities that served as the model for the American universities emerging at the end of the nineteenth and the beginning of the twentieth century. That is, protecting an interest in teaching and service was seen as a hedge against too much scholarship for its own sake. And this happened at a time when American universities were changing over from being training grounds for the clergy at least as much as science-oriented institutions. So service was assumed to be part of a scholar's career.

What I would say is that this little bit of history is often forgotten, and we would do well to return to the view that scholarship-teaching-research are all of a piece. That was clearly the view of Mead on the Chicago stage and Dewey on the national stage, and I take it to be crucial for philosophy pragmatist style.

REFERENCES

Note: What I offer here is a list of books referred to in the text (by part). This is in lieu of a proper bibliography. Citations in the text vary and are limited, but the interested student or reader who really wants to check things out will have enough information here to start on an exhaustive, but I would hope enlightening, search.

Introduction

Adler, Mortimer J. *Great Books of the Western World*; vols. 2 and 3: *The Great Ideas: A Syntopicon*. Chicago: Encycopaedia Britannica, 1952.

Bulmer, Martin. *The Chicago School of Sociology*. Chicago: University of Chicago Press, 1984.

Collins, Randall. *Sociology of Philosophies*. Cambridge, MA: Harvard University Press, 1998.

Dewey, John. *Reconstruction in Philosophy*. Boston: Beacon Press, 1948 (original 1920).

Durbin, Paul. *Logic and Scientific Inquiry*. Milwaukee: Bruce, 1968.

Durbin, Paul T. *Social Responsibility in Science, Technology, and Medicine*. Bethlehem, PA: Lehigh University Press, 1992.

Feffer, Andrew. *The Chicago Pragmatists and American Progressivism*. Ithaca, NY: Cornell University Press, 1993.

Flyvberg, Bent. *Making Social Science Matter*. New York: Cambridge University Press, 2001.

Hickman, Larry. *The Essential Dewey*. (With Thomas Alexander) Bloomington: Indiana University Press, 1998.

_____. *Reading Dewey*. Bloomington: Indiana University Press, 1998.

Joas, Hans. *G. H. Mead*. Cambridge, MA: MIT Press, 1985.

Kuklick, Bruce. *The Rise of American Philosophy*. New Haven: Yale University Press, 1977.

McDermott, John. “Technology: The Opiate of the Intellectuals." *New York Review of Books*, 31 July 1969.

Mead, George Herbert. *Movements of Thought in the Nineteenth Century*. Chicago: University of Chicago Press, 1936.

_____. *Selected Writings*. Indianapolis, IN: Bobbs-Merrill, 1964. See especially the essay, “Scientific Method and Individual Thinker."

Merton, Robert K. *On the Shoulders of Giants*. San Diego, CA: Harcourt Brace Jovanovich, 1985.

Nogar, Raymond J. *The Wisdom of Evolution*. New York: Doubleday, 1963.

Rorty, Richard. *Achieving Our Country*. Cambridge, MA: Harvard University Press, 1998.

Wallace, William A. *Causality and Scientific Explanation*. Ann Arbor: University of Michigan Press, 1972.

Westbrook, Robert B. *John Dewey and American Democracy*. Ithaca, NY: Cornell University Press, 1991.

Part One:

Adler, Mortimer J. *Great Books of the Western World*; vols. 2 and 3: *The Great Ideas: A Syntopicon*. Chicago: Encycopaedia Britannica, 1952. Note: In the text I have used this source for many Greek authors, rather than their specific works. I repeat that practice here -- for Aeschylus, *Agamemnon*; Euclid, *Elements*; Euripides, *Medea*; Herodotus, *History*; Hesiod, *Works and Days* ; Homer, *Iliad*; Lucretius, *On the Nature of Things*; Marcus Aurelius, *Meditations*; Parmenides, *On Nature*; Sophocles, *Antigone* (among others) -- leaving it up to the reader to consult other sources.

Aquinas, Thomas. *Disputed Questions on Virtue*. South Bend, IN: St. Augustine's Press, 1999.

Aristotle. *The Basic Works of Aristotle*. (Edited by Richard McKeon) New York: Random House, 1941. The most important works for our purposes here are: *Physics*; *Metaphysics*; *Nicomachean Ethics*; and *Politics*.

Crombie, I. M. *An Examination of Plato's Doctrines*. New York: Humanities Press, 1962.

Dewey, John. *The Quest for Certainty*. New York: Minton, Balch, 1929.

_____. *Reconstruction in Philosophy*. Boston: Beacon Press, 1948 (original 1920).

Flaceliere, Robert. *Daily Life in Greece in the Time of Pericles*. New York: Macmillan, 1965.

Friedlander, Paul. *Plato*. New York: Pantheon, 1958.

Gale, George. *Theory of Science: An Introduction to the History, Logic, and Philosophy of Science*. New York: McGraw-Hill, 1979.

Graves, Robert. *The Greek Myths*. New York: Braziller, 1957.

Heath, Thomas. *Aristarchus of Samos*. Oxford: Oxford University Press, 1913. The key text is *On the Sizes and Distances of the Sun and Moon*.

Jaeger, Werner. *Paideia*. New York: Oxford University Press, 1939.

Medina, Manuel. "Philosophy, Technology, and Society." In C. Mitcham, ed., *Philosophy and Technology in Spanish Speaking Countries*. Dordrecht: Kluwer, 1993.

Nussbaum, Martha. *The Fragility of Goodness*. New York: Cambridge University Press, 1986.

Plato. *The Dialogues*. (Edited by B. Jowett) Oxford University Press, 1931. The crucial ones here are *Euthyphro*; *Timaeus*; and *Republic*.

Randall, John Herman. *Aristotle*. New York: Columbia University Press, 1960.

Robinson, John Mansley. *An Introduction to Early Greek Philosophy*. Boston: Houghton Mifflin, 1968. I have used this source for Empedocles, *Purifications*, and *On the Nature of Things.*

Stone, I. F. *The Trial of Socrates*. Boston: Little, Brown, 1988.

Wallace, William A. *Causality and Scientific Explanation*. Ann Arbor: University of Michigan Press, 1972.

Wheelwright, Philip. *Aristotle*. Indianapolis: Bobbs-Merrill, 1951.

Whyte, Lancelot Law. *Essay on Atomism, from Democritus to 1960*. Middletown, CT: Wesleyan University Press, 1961.

Part Two:

Bacon, Francis. *Advancement of Learning*. Oxford: Clarendon, 2000.
_____. *The New Organon*. New York: Cambridge University Press, 2000.
Cohen, Carl. *Four Systems*. New York: Random House, 1982.
Descartes, Rene. *Discourse on the Method*; and *Meditations on First Philosophy*. New Haven: Yale University Press, 1996.
Dewey, John. *Logic: The Theory of Inquiry*. New York: Holt, 1938.
_____. *A Common Faith*. New Haven: Yale University Press, 1934.
_____. *Experience and Nature*. Chicago: Open Court, 1925.
Durbin, Paul T. "Author/critics number on Larry Hickman" (*Techne* 7:1, Fall 2003: www.spt.org, under journal).
Hegel, G. W. F. *Hegel Selections*. New York : Macmillan, 1989.
_____. *Encyclopedia of Philosophy*. New York: Philosophical Library, 1959.
Hickman, Larry. *Reading Dewey*. Bloomington: Indiana University Press, 1998.
_____. *The Essential Dewey*. (With Thomas Alexander) Bloomington: Indiana University Press, 1998.
_____. *John Dewey's Pragmatic Technology*. Bloomington: Indiana University Press, 1990.
_____. *Philosophical Tools for Technological Culture*. Bloomington: Indiana University Press, 2001.
Hume, David. *An Enquiry concerning Human Understanding*. New York: Oxford University Press, 2000.
_____.*A Treatise of Human Nature*. New York: Oxford University Press, 2000.
James, William. *The Principles of Psychology*. Cambridge, MA: Harvard University Press, 1981.
_____. *Pragmatism*. Cambridge, MA: Harvard University Press, 1975.
_____. *The Meaning of Truth*. Cambridge, MA: Harvard University Press, 1975.
Kant, Immanuel. *Critique of Pure Reason*. Chicago: Encyclopaedia Britannica, 1990. Edition includes other works.
Marx, Karl. *Capital: A Critique of Poitical Economy*. (Edited by Friedrich Engels) New York: International Publishers, 1967.
Mead, George Herbert. *The Philosophy of the Act*. Chicago: University of Chicago Press, 1938.
Mill, John Stuart. *Philosophy of Scientific Method*. (Edited by Ernest Nagel) New York: Hafner, 1950.
Peirce, Charles Sanders. *The Essential Writings*. (Edited by Edward C. Moore) New York: Harper & Row, 1972.
Sleeper, Ralph W. *The Necessity of Pragmatism: John Dewey's Conception of Philosophy*. New Haven: Yale University Press, 1986.

Part Three:

Davidson, Donald. “A Coherence Theory of Truth and Knowledge.” In E. Lapore, ed.,

Truth and Interpretation: Perspectives on the Philosophy of Donald Davidson. Oxford: Blackwell, 1986).
Dewey, John. *The Quest for Certainty*. New York: Minton, Balch, 1929.
Hickman, Larry. *Philosophical Tools for Technological Culture*. Bloomington: Indiana University Press, 2001.
Margolis, Joseph. *Reinventing Pragmatism* (2002).
_____. "The Technological Self." In E. Byrne and J. Pitt, eds., *Technological Transformation: Contextual and Conceptual Implications*. Dordrecht: Kluwer, 1989.
_____. "Pragmatism, Trenscendental Arguments, and the Technological." In P. Durbin and F. Rapp, eds., *Philosophy and Technology*. Dordrecht: Kluwer, 1984.)
Putnam, Hilary. *Reason, Truth, and History*. Cambridge: Cambridge University Press, 1980.
_____. "Sense, Nonsense, and the Senses: An Inquiry into the Powers of the Human Mind." *Journal of Philosophy* 91:9 (September 1994), pp. 445-517.
Quine,W. V. "Epistemology Naturalized." In his *Ontological Relativity and Other Essays.* New York: Columbia University Press, 1969.
Rorty, Richard. "Pragmatism, Davidson, and Truth." In Lapore, *Truth and Interpretation.*
_____. *Achieving Our Country*. Cambridge, MA: Harvard University Press, 1998

Part Four:

(Note: Because this part first appeared in another form -- though modified here -- this set of references is more like references normally are. Some of them, however, deserve to be updated but haven't been.)

Beauchamp, Tom L., and Childress, James F. *Principles of Biomedical Ethics*, 4th ed. New York: Oxford University Press, 1994.
Bernstein, Richard J. 1980a. "Philosophy in the Conversation of Mankind," *Review of Metaphysics*, 33: 745-775.
_____. *Philosophical Profiles*. Philadelphia: University of Pennsylvania Press, 1980b.
_____. "One Step Forward, Two Steps Backward: Richard Rorty on Liberal Democracy and Philosophy." *Political Theory*, 15(1987): 538-563.
Borgmann, Albert. *Technology and the Character of Contemporary Life*. Chicago: University of Chicago Press, 1984.
_____. *Crossing the Postmodern Divide*. Chicago: University of Chicago Press, 1992.
_____. *Real American Ethics*. Chicago: University of Chcago Press, 2006.
Brock, Dan. *Ethics*, 97(1987): 775-795.
Dewey, John. *The Quest for Certainty*. New York: Minton, Balch, 1929.
_____. *Liberalism and Social Action*. New York: Putnam, 1935.
_____. *Reconstruction in Philosophy*, 2d ed. Boston: Beacon Press, 1948. Original

1920.

_____. *A Common Faith*. New Haven: Yale University Press, 1934.

Dreyfus, Hubert L. *What Computers Still Can't Do: A Critique of Artificial Intelligence*. Cambridge, MA: MIT Press, 1992.

Durbin, Paul. *Social Responsibility in Science, Technology, and Medicine.* Bethlehem, PA: Lehigh University Press, 1992.

Edwards, Alan F., Jr. *Interdisciplinary Undergraduate Programs: A Directory*, 2d ed. Acton, MA: Copley Publishing Group and Association for Integrative Studies, 1996.

Joas, Hans. *G. H. Mead: A Contemporary Re-Examination of His Thought*. Cambridge, MA: MIT Press, 1985.

Klein, Julie Thompson. *Interdisciplinarity: History, Theory, and Practice.* Detroit, MI: Wayne State University Press, 1990.

Kolenda, Konstantin. *Rorty's Humanistic Pragmatism.* Tampa: University of South Florida Press, 1990.

Kuklick, Bruce. *The Rise of American Philosophy: Cambridge Massachusetts 1860-1930.* New Haven, CT: Yale University Press, 1977.

Marsh, Peter T., ed. *Contesting the Boundaries of Liberal and Professional Education: The Syracuse Experiment*. Syracuse, NY: Syracuse University Press, 1988.

Mead, George Herbert. *Mind, Self, and Society*. Chicago: University of Chicago Press, 1934.

_____. *Movements of Thought in the Nineteenth Century*. Chicago: University of Chicago Press, 1936

_____. "Scientific Method and Individual Thinker" and "Scientific Method and the Moral Sciences." In A. Reck, ed., *Selected Writings.* Indianapolis, IN: Bobbs-Merrill, 1964.

McCann, Michael W. *Taking Reform Seriously: Perspectives on Public Interest Liberalism*. Ithaca, NY: Cornell University Press, 1986.

Mitcham, Carl, and Leonard J. Waks. "Technology in Applied Ethics: Moving from the Margins to the Center." *Bulletin of Science, Technology, and Society,* 16:4(1996): 217-226.

Oleson, Alexandra, and John Voss. *The Organization of Knowledge in Modern America, 1860-1920.* Baltimore, MD: Johns Hopkins University Press, 1979.

Perry, Thomas. *Professional Philosophy: What It Is and Why It Matters.* Dordrecht: Reidel, 1986.

Post, Stephen G., ed. *Encyclopedia of Bioethics.* New York: Thomson Gale, 2004. Earlier editions, 1978 and 1995, with a different general editor.

Rorty, Richard. *Philosophy and the Mirror of Nature*. Princeton, NJ: Princeton University Press, 1979.

_____. *Consequences of Pragmatism.* Minneapolis: University of Minnesota Press, 1982.

_____. *Contingency, Irony, and Solidarity*. New York: Cambridge University Press, 1989.

_____. 1998. *Achieving Our Country: Leftist Thought in Twentieth-Century America.* Cambridge, MA: Harvard University Press, 1998.

Saatkamp, Herman J., Jr., ed. *Rorty and Pragmatism: The Philosopher Responds to His*

Critics. Nashville, TN: Vanderbilt University Press, 1995
Searle, John. *The Rediscovery of the Mind.* Cambridge, MA: MIT Press, 1992.
Sleeper, Ralph W. *The Necessity of Pragmatism: John Dewey's Conception of Philosophy*. New Haven, CT: Yale University Press, 1986.
Weisbard, Alan. *Ethics*, 97 (1987): 775-795.
West, Cornel. "The Politics of American Neo-Pragmatism." In J. Rajchman and C. West, eds., *Post-Analytic Philosophy.* New York: Columbia University Press, 1985.
_____. *The American Evasion of Philosophy: A Genealogy of Pragmatism.* Madison: University of Wisconsin Press, 1989.