It seems quite obvious that we must not speak of ‘science’, but of ‘the sciences’. The word ‘science’ means ‘what scientists do’, and what scientists do is to engage in work in the various sciences. There is no science *an sich* lying out there waiting to be discovered, just as there is no world *an sich* lying out there waiting to be discovered.¹ Sciences, like worlds, are human artifacts. Science in the making is scientists at work. There must be, however, some way of identifying the kind of work that is to be called ‘scientific’, especially if we are to be able to conceptualize what it means for the sciences to possess a unity. Perhaps there are many ways in which we can formulate such a conceptualization. I propose to investigate only three; I will call them the *metaphysical*, the *teleological*, and the *pragmatic*.

1. The Metaphysical Unity of the Sciences

The metaphysical urge to need to think of the sciences as unified is based on some forthright commitment to an alleged extra-scientific knowledge of the basic constitution of nature coupled with some equally forthright commitment to an alleged extra-scientific knowledge of the make-up of the human mind. By ‘extra-scientific’ I mean here ‘not ascertainable by empirical means alone’. We are all familiar with the kinds of stories the classical rationalists told along these lines. Indeed, the metaphysical conceit that we can know that nature is divinely ordered and that our minds are made fit to know this order is at least as old as Aquinas’s synthesis of the metaphysics of Aristotle and the revelations of the Bible. It seems fairly obvious that if the universe is a systematic unity, and our minds are created so as to be able to theoretically mimic that systematic order, then what we know will share in the unity of nature; our theoretical understanding of nature as system will also be a system. This does not, however, resolve the larger issue of determining the respect in which the *different* sciences can form a unity. As we know, the differences dividing the major seventeenth century rationalists had mainly...
to do with this very question in the form of the mind/body problem and the related problem of determining how many countable substances there are. Descartes may be credited with having created modern physics and modern psychology, but he surely found no way of unifying them. Leibniz thought that he had, and if any one cares to try to make out the case, it can probably be argued that for Spinoza there is no essential difference between a psychological and a physical explanation.

I want to turn attention to a more recent form of metaphysically inspired acceptance of the unity of the sciences. In the period 1830 - 1850 in Britain there was an explosion of interest in the inferential moves typical of scientific thought. The results were the first formulations (after Francis Bacon) of the logic of induction. Prominent among these theories of scientific method was that of William Whewell. The full development of this theory represents one of the clearest statements of the unity of science based ultimately on appeal to extrascientific pretensions that exists in the literature.

Whewell’s theory of induction begins in a seemingly harmless way:

...the familiar act of thought exercised for the common purposes of life, by which we give to an assemblage of our impressions such a unity as implied in the above notions and terms, a month, a year,...and the like, is in reality an inductive act, and shares the nature of the processes by which all sciences are formed.  

The unity introduced by generalized naming of resembling particulars becomes transformed into a more commodious generality by means of what Whewell calls a propensity to generalize:

But the mind has a perpetual propensity to consider those individual propositions as cases of more general ones and to frame and contemplate these latter.

This tendency to generalize is so strong that even children cannot avoid it. It is also shown by the tendency to put the results of experience in the form of maxims. (It is curious that in his masterpiece on method, Novum organon renovatum, each chapter is introduced by a list of aphorisms.) Whewell provides a delightful example of what the inductive propensity, operating at the level of pre-scientific ‘common purposes of