On the Notion of Epistemic Opportunity Cost

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I mentioned in a previous article in this publication that whereas economic methodologists as a rule ‘import’ methodological canons from philosophies of science and social sciences to appraise economic doctrines, it has seldom been the case that an idea from economics provides that inspiration for developing methodological doctrines. In this short paper, I will show that the notion of opportunity cost, a basic economic concept, could be usefully generalized to provide a fundamental criterion for theory appraisal and theory choice.

The Idea of Opportunity Cost

In economics, cost is not only defined in the superficial terms of how much one has to pay for something but more fundamentally in terms of what one has to give up in order to get something else, that is, in terms of opportunities forgone. Opportunity cost, then, is a way of measuring costs by looking at the alternatives one might otherwise obtain by using resources in a different way. One can easily generalize this idea of alternatives forgone to any choice situation. This is because an act of choice implies that we are confronted with a situation where we are not free to pick and choose any combination of features or results. Reality — or the conjoined results of reality interacting with our given human limitations at the time — always confronts us in terms of alternative packages of features and results which cannot be unbundled. In addition, these packages usually present themselves in such a way that we cannot pick one package, try it out and leave it as it is and then choose another package at will because the situation would probably be different after the choice. At most, our ingenuity and problem-solving capability can help us to tinker with the grouping of the bundles or to expand the range of options available to us. Given such limitations, the elimination of alternatives by weighing relative loss and gain is the most sensible strategy to adopt.

From Theory Justification to Theory Choice

Historically, one major issue in the realm of philosophy of science and social sciences has been the problem of theory justification, namely, by what rational criteria can we justify a theory. This issue does not necessarily constitute a problem of choice among alternatives. For, if there exists an absolute standard for theory justification, all that is needed is to apply that standard to any theory that comes along and let that theory be judged accordingly. Since Hume, it was realized that theory justification in the ultimate, incorrigible sense faces insurmountable difficulties. Some hope was raised when Popper reformulated the problem and proposed his falsificationist solution. But Popper’s criterion shows at the most that a theory can be irrevocably overthrown and not that a theory can be irrevocably established. The problem still remains among those theories that ‘survive’ how these are to be rationally appraised or compared.

In full awareness of the problem of induction and thereby the fallibility of any theory in principle, subsequent developments in philosophy of science turned its attention to the question of theory acceptance, i.e., by what rational criteria should we accept a theory as the most tenable among those we are presently able to think of. This change of focus means that a theory is no longer appraised merely in terms of certain pre-set standards, e.g., its explanatory power. It is also to be evaluated in the context of other competing theories that equally qualify for acceptance. In some cases, the focus is put on developing a single most important criterion by which all competing theories are to be evaluated on the same footing. In other cases where no single criterion seems to be available or dominant, theory acceptance consists in deciding first what passable criteria should a theory fulfill in order that it deserves our grace and thereby deserves admittance into a smaller group of alternative theories for the next step of more careful, case-by-case attention and comparison. Along the former direction, vigorous efforts were made to develop — by Carnap, among others — a sophisticated inductive logic that a theory enjoys. Using a diametrically opposite approach, Popper’s conception of verisimilitude is designed to rank different competing theories by their respective truth content, and thus their degree of correspondence to truth. At this stage, it was still believed or hoped that some hard and fast rules could come by so that some ‘absolute’ ranking of theories is finally made possible.

It was soon realized that the attempt to search
for a universal and thus context-free criterion or set of criteria faces great difficulties. Kuhn tried to convince us that rational comparison of theories is possible only within a particular paradigm. He believed that the actual criteria employed by scientists for theory appraisal are too multi-faceted and complex to be inter-paradigmatically comparable. In a similar vein, Feyerabend contended that the search for criteria is positively harmful. In his view, science must be freed of attempts to legislate how we go about doing it. These are, of course extreme positions we need not necessarily endorse. But they serve to re-focus the question of appraisal as one of choice, although the choice to be made, if it were to be a sensible or meaningful one, has to be elevated beyond the level of individual theories. Meaningful comparison of theories and choices can only be made over systems of theories (Quine), or paradigms (Kuhn), or scientific research programs (Lakatos), or further still, research traditions (Laudan).

The switch from theory justification to theory choice has great bearing on the social sciences. This is because the search for some universal criteria for theory justification in a realm as diverse as the social science is clearly a most difficult if not impossible task. There is great diversity in how a theory is being argued for, in how far the basic data are inter-subjectively testable, in the mix of factual descriptions and assumed value judgements, etc. Characteristic of the social science theories are that inter-theory differences are invariably of the ‘paradigmatic order’, and that a new theory is seldom merely a more encompassing one that reduces a previous theory to that of a limiting case (Laudan).

In addition, fact-theory relations in the realm of the social sciences are highly problematic for theory justification. On one pole, facts in the human realm are generally loosely related to or weakly supportive of a theory in question. The evidence available is relatively scant in comparison with the claims made by the theory. On the other pole, the facts and the theory they are supposed to independently verify or falsify are prima facie mutually defining to the extent that certain data are perceived to be facts only through the spectacles of the theory. It requires very close argument in many cases to see why it is still possible for reality to turn out facts contrary to the theory, despite the fact that a part of the theory or a part of the theory’s background assumptions is used to detect and organize the facts. Such apparent “incommensurability” among social science theories means that the only hope left would be that of choosing among alternatives, rather than that of evaluating different theories comprehensively on the same set of universal standards.

The Notion of Epistemic Opportunity Cost

But if the incommensurability argument is not to be used as a case for relativism or irrationalism, and if some degree of objectivity in theory appraisal is to be hoped for, then any criteria we are to propose for theory choice must be able to compare the alternative set of theories at a higher level of generality so that the seeming incommensurability could be partly closed. Here comes the contribution from economics. The economist’s conception of opportunity cost could be easily translated into the idea of epistemic opportunity cost. On this conception, what is now at stake is no longer the apparent merits of a theory, but also the merits omitted or forgone. A social science theory or any theory in general, or for that matter, any paradigm or research program, is to be measured not only by how much it can explain, but also by how much it omits to cover in its framework, or fails to explain, or denies as existent.

Plausible this idea appears to be in the abstract, it may be objected that the idea of epistemic opportunity cost could hardly be helpful for specific application. For without the backup of some explicit, common criteria for across-the-board comparisons, one would easily be at a loss as to how conclusive evaluations could be finally arrived at. To meet this challenge, let us first refine and substantiate the notion of epistemic opportunity cost. One aspect of the notion is that, besides comparing the respective merits of competing theories, we can now explicitly build into our framework of comparison what these theories omit, or fail to account for. By extension, in the course of comparing what they omit, we would probably also be appraising what desirable features are forced to forgo as a result of what the theories have already assumed, whether or not these assumptions are explicit or implicit ones. In other words, the “sins of omissions” are fully taken into account in this new framework of appraisal. Another aspect of the notion is that, by way of assessing the competing theories’ drawbacks, we would be led to study what undesirable features the theories are compelled to take in as a consequence of their assumptions. A theory or system of theories would then be in trouble if it entails logical consequences that either contradict well-established first principles or widely recognised empirical regularities, or that assume away phenomena asserted to exist by these principles and regularities. In weighing these positive and negative consequences in a systematic and comprehensive manner, we will be alerted not only to what gains we make by positing a theory, but also the loss incurred. Conversely we have to consider not only what we lose by abandoning a
theory, but what gain we might realize by the abandonment. As a metaphor, we might say that the notion of epistemic opportunity cost provides us a kind of “epistemic accounting system” by which “epistemic balance sheet” of any position could be drawn in our setting out to appraise a theory or system of theories.

In assessing the omissions of competing theories, we would also be drawing upon a wider range of background knowledge for theory comparison. We would be appealing to established and commonsense conceptions that we commonly take for granted as not problematic, although there is no hard and fast rule as to how this should be done. In other words, the epistemic opportunity cost of a theory is to be measured not only in terms of the \textit{prima facie} loss, but also in terms of what deep, entrenched conceptions that we treasure dearly. If we take this method seriously, we will be in a position to dilute the seeming arbitrariness of \textit{prima facie} loss or gain as well as to reduce the apparent incommensurability among different theories, for what we do amounts to drawing upon the least controversial intellectual resources in our appraisal of these theories.

The use of deep, entrenched background knowledge that we commonly share for the judgement of theories enables us to further refine the concept of the cost of omission we have mentioned. If a new theory cannot explain a range of phenomena, but is able to give very convincing reason why such phenomena should be treated separately, then such omission would \textit{prima facie} not be counted against that theory. The distinction between tolerable and intolerable omission should push us to the further step of formulating more precise conceptions, with the aid of our background knowledge, about what parts are essential to a theory and what parts are not. Although there may be disagreement over these formulations, much more objectivity could hopefully be gained through discourse at this less controversial level. In justifying why a phenomenon should or should not be treated separately, reasons could again be given in terms of what intellectual gain and loss would be incurred in treating a certain phenomenon under the same or separate theories. Thus, while there is an important need to appeal to such “background knowledge” in assessing the epistemic opportunity cost of theories, no dogmatism needs to arise in the use of such “background knowledge”.

A similar line of argument had been advanced by Popper in his discussion over the paralyzing effect in other areas of knowledge if we were to abandon our established empirical generalizations and our well corroborated theories just for the sake of saving a theory in an \textit{ad hoc} manner. The notion of epistemic opportunity cost explicated here is a more encompassing formulation in that it includes undesirable intellectual consequences that are less drastic, but nonetheless damaging, than those discussed by Popper. Besides, this notion also explicitly encompasses a conscious and detailed contrasting of the pros and cons not covered by Popper’s discussion.

The Epistemic Implications of the Notion

To illustrate the application of the notion, we may consider the following examples. Hegel and Marx, among others, held the strong historicist thesis that human history carries an invincible logic of its own and thereby follows some inescapable pattern of development. Appealing this thesis may have seemed to many generations, a careful analysis of the epistemic opportunity cost of taking on this thesis compels us to give up at least two important plausible assertions, namely, (a) that chance elements may at times alter the course of history (b) that the effects of individual action can sometimes be indeterminate with respect to global or aggregate results; or alternatively, local effects may or may not have impact on global patterns. Though less interesting than the historicist thesis, (a) and (b) are close to our commonsense conceptions of reality. While they are not capable of directly falsifying the historicist at such an abstract level, for they do not deny the existence of macroscopic laws and evolutionary trends that govern the development of history, they do alert us to the epistemic opportunity cost involved in the strong historicist position. A conscious recognition of the cost we have to pay would probably compel us towards adopting an eclectic position and to moderate the outright dogmatism inherent in the original strong assertion. In the same vein, accepting the idea of creationism in religion or in biology means that one has to give up the whole array of time-tested theories and knowledge about evolution as well as knowledge in related sciences that supports the idea of evolution.

Were such a notion to be thoroughly enforced in theory appraisal, the kind of ambivalence often displayed by theorists whose theories come under serious challenge could be more easily avoided. The neoclassical economic theory is a case in point. Strictly speaking, accepting the assumptions of perfect competition, perfect knowledge or perfect information, homogeneity and infinite divisibility of goods means that if we were to take these assumptions seriously, we have to let go very important ideas about real-life phenomena of risk, uncertainty, entrepreneurship, etc. One could avoid
such challenge by holding the methodological stance that these assumptions are merely working assumptions and do not constitute the basic core of the neoclassical theory. This strategy will save the neoclassical theory from the need to pay the epistemic cost mentioned in the above. But we know too that many economists do expend much effort to relax these assumptions in a piecemeal manner, by way of replacing, say one at a time, unreal assumptions by more realistic ones. In so doing, they have unknowingly turned the original instrumental status of uncal assumptions into that of ontological assumptions, thus opening up the possibility for us to legitimately appraise the epistemic opportunity cost of the resultant package of assumptions in terms of the realism forgone. Since the resultant framework usually retains most other blatantly unreal assumptions, it yields results that represent an awkward blending of realism with a large chunk of unreality. As a result, they either become a ‘senseless’ package that bars rational epistemic comparison anyway, for there could hardly exist criteria to handle such blends or it tacitly embodies contradictions that are not easy to detect. In either case, if we are consistent in applying the notion of epistemic opportunity cost, the resultant package will force us to reject uncompromisingly important real-life factors, in the same way that neoclassical assumptions interpreted in the ontological sense force us to ignore any sense of realism.

An interesting implication for economic methodology is this. Discussion of the epistemic opportunity cost incurred by a theory could help dissolve the question of unreal assumptions. With the aid of this notion, one no longer needs to quarrel over whether or not it is categorically valid to posit unreal assumptions, or to advance criteria to determine what degree of unreality is acceptable, or to address the issue if we can distinguish, in a non-arbitrary way, between useful and unavoidable abstraction and unreality. These questions can now be more fruitfully discussed by re-structuring the debate in terms of epistemic opportunity cost, namely, what consequential gain or loss we have to accept upon making such assumptions. Once we have identified systematically their exclusions or omissions, we can check them against our background knowledge. We can also check if they are in conflict with our entrenched conception of what theories in that area should be able to explain. The question is thus switched from asking whether or not assumptions should be real or unreal to asking whether or not the omissions are fatal or not, as well as asking to what extent we can pay a lesser cost in positing another set of assumptions.

In the broader context of philosophy of science, this notion has also important bearing on existing doctrines. The very notion rooted in an objectivist philosophy of science is incompatible with the thesis of relativism and its sophisticated attendant, namely, the idea of incommensurability prevalent in the realm of social science philosophy. The notion, too, is inconsistent with the positivist philosophy. Since the notion permits theory comparison to be made at the level of metaphysical and ontological assumptions, it clearly rejects the highly constricted positivist conception that only elementary facts or logical derivations from these facts constitute meaningful knowledge. The notion, too, renders the instrumentalist doctrine in the received form either irrelevant or unimportant by outgrowing its usefulness, for the question now asked becomes how precisely an assumption is useful, instead of merely the categorical one whether or not the assumption is of use to the theory. On the other hand, the notion is more compatible with the realist philosophy. It sees no objection to the thesis of scientific realism positing reality of theoretical entities or the existence of real objects and mechanisms beyond sensory experience as revealed by the sciences at different levels of reality, although admittedly the notion of epistemic opportunity cost is more flexible in that it does not have to commit strictly to any one version of the said ontology nor obliged to elucidate it. A more detailed discussion of these different positions, of course, lies beyond the scope of this brief note.

References
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