

Economic Theory: Consistency and Rhetoric?

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Abstract

This paper considers the role of theory in our understanding of economic phenomena. While theoretical findings are sometimes claimed to have direct, real world relevance, this is based on rhetoric rather than logic. Theory can and has been considered as analogy, metaphor or framing. These aspects are discussed, along with the suitability of theoretical formulations, in particular perfect competition, as a basis for real world decisions. The issue of consistency is considered in relation to theory. Alternative interpretations are illustrated using the Tversky and Kahneman life/death rational choice case. These suggest that insufficient attention may be given to simplifying assumptions, or to the possibility of alternative explanations that are also consistent with the evidence. The rhetoric of acceptance and rejection of theory is then considered, and results are placed in the context of group membership and perspectives.

1. Introduction

Economists have been widely criticised for their unrealistic representations of the real world. This extends to the point where economics is described as being little more than a rhetorical device to persuade people to accept some preferred policy position (Dunn, 2004). Commonly raised points of concern include assumptions of exogenous preferences and rational behaviour, as well as the disregard for processes of deliberation and political decision making. While much of this criticism is directed at what might be termed ‘mainstream’ economics, some of the points raised in this paper have relevance for economics in general and for wider academic discourse.

This paper presents a framework for considering the use of theory to understand real world phenomena, suggesting that there are aspects of the application of theory which merit particular attention. Three areas of potential error relate to (i) the link between theory and the real world, (ii) the relationship between theory and empirical analysis, and (iii) the application of empirical results in decision making and implementation. The first of these is discussed here, with questions being raised about the nature and role of theories, and the possible misuse of theory.

As a first step, it is important to be able to distinguish between logic and rhetoric, or proof and persuasion. If people were purely logical, there would not be a distinct area of study called rhetoric. People would only be persuaded by logical argument.

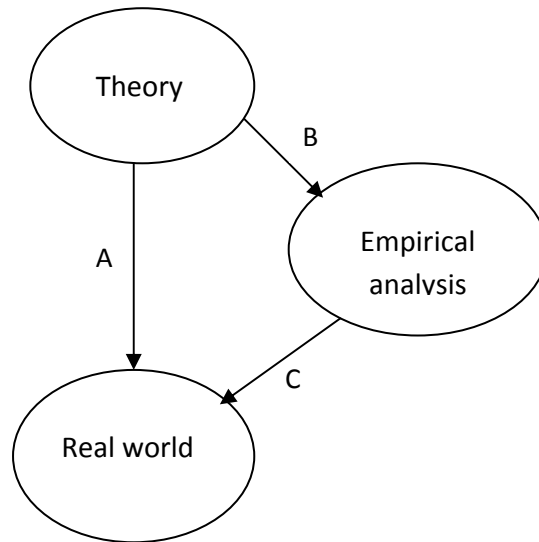
Deirdre McCloskey (1998) has contended that economics has its own rhetoric, with support being given by others including Arjo Klamer (2007). Rhetoric is based on persuading a particular audience, and the rhetoric of economics persuades economists and econometricians, but probably not others. In a discussion on the structure of argumentation in economics, Klamer refers to gaps in the reasoning:

“Gaps between the theoretical and empirical arguments have not been bridged, policy implications do not necessarily follow and methodological arguments are, for the most part, seriously flawed.” (Klamer, 2007, p. 106)

Figure 1 makes broadly similar points, focusing on the application of points to real world decisions. In particular, it should be noted there are potential difficulties in the translation of results from one area of analysis to another, and in these moves across areas unrecognised errors are likely to arise. While the diagram could be modified to include feedback from the real world impacting on theory and empirical analysis, that is another issue and will not be discussed here.

It is to be hoped that any theory is internally logically consistent. Similarly, empirical analysis should be based on sound methodology. However, these two requirements are not sufficient for the use of these approaches to be meaningful for real world issues. There are problems with A, B and C. Theoretical findings, being based on specific assumptions, may not translate directly to the real world (path A). The relationships or findings may also not be accurately or uniquely described in empirical formulations (path B). The results of empirical analyses may not support the claims made about real world implications (path C). In each of these cases, the paths may not be based on logic, in which case they rely on rhetoric. People, often unaware, are prepared to accept flawed reasoning. Consequently, three types of error are highlighted through this structure:

Figure 1 Logical errors, Types A, B and C



Type-A errors arise when theoretical results are assumed to be directly applicable to the real world.

Type-B errors arise when empirical formulations do not accurately reflect the underlying theory. This can be due to data problems, or difficulties specifying relationships and functional forms that match the theory.

Type-C errors occur when incorrect conclusions are drawn from statistical results, either through a misinterpretation of the meaning of the results, or a failure to consider additional, relevant policy dimensions.

The focus here is on methodological issues related to Path A, relating theory to the real world. Paths B and C on empirical issues are discussed in Chapter 4 of Birks (2011).

2. Theory to the real world (Path A)

In October 2008 there was a coordinated international response to what had been recognised as a global financial crisis. On 23 October in the US, the former chairman of the Federal Reserve, Alan Greenspan, appeared before the House Oversight and Government Affairs Committee, where he read a statement (Greenspan, 2008) and answered questions. In the statement he described his understanding of the reasons for the “once-in-a-century credit tsunami” arising from the sub-prime mortgage crisis. Here is an extract from an exchange between him and the chairman of the committee, Rep. Henry Waxman:

“WAXMAN: You found a flaw in the reality...

GREENSPAN: Flaw in the model that I perceived as the critical functioning structure that defines how the world works.

WAXMAN: In other words, you found that your view of the world, your ideology was not right.

GREENSPAN: Precisely.” (James, 2008)

Greenspan was treating his chosen theoretical perspective as if it were representative of the real world. In general, people’s perceptions of their environment can be shaped by many things, including their education, the views of their discipline, beliefs within a discipline, commonly promoted views in the news media, and concepts of acceptable reasoning. Issues are not analysed

simply on the evidence presented for that particular issue. The analysis is shaped by numerous other influences that individuals bring with them to interpret that evidence, with theories being an important component.

While theory is important in shaping our understanding, its influence can be misplaced. This suggests a need to investigate the nature and function of theory as a means of understanding real world events.

2.1. *What is theory?*

Theory, and in particular economic theory, can be seen as a tool for analysing issues and presenting criteria for evaluation of alternatives. It has limitations, so the nature of theory should be recognised. Any theory involves simplification, giving a partial view based on a particular perspective. It is at best an approximation of reality. Alternative theories highlight different aspects and give differing results. This difference in emphasis can be most apparent when comparing theories across disciplines, but differences are more commonly identified and debated between competing schools of the same discipline. A possible outcome of these differences is described in the poem about the blind men and the elephant, where each man felt a different part of the elephant, drawing their own conclusions as to the appearance of the animal (like a wall, like a tree...) (Saxe, 1878). The image is significant. Similar issues can be considered by several disciplines and professions. Each discipline applies its own existing body of knowledge, perspectives and tools of analysis. They are looking at the same thing, but in different ways and with differing conclusions.

Theories are commonly presented in terms of variables and the relationships between them, so that, at their core, there is a model. This would fit a conventional view of theory in economics. A model is a simplified representation that is intended to highlight the main elements of a phenomenon. Except for possible differences in the level of formalisation, it is not unlike the approach that a person might take on any issue, as in adopting a stylized, simplified, or heuristic representation of the real world.

From one perspective, the use of theoretical findings might be considered as merely a “mode of argumentation”, such as Dunn’s (2004, p. 395) Mode no.5, reasoning from cause. The following discussions of models illustrate this alternative, considering them as forms of **analogy**, **metaphor**, and **attribute agenda setting**, or **framing**.

Klamer, in an economics context, describes a model as, “an explicitly, and in economics often formally, articulated **analogy**. A model is typically characterised by ‘as if’ reasoning” (Klamer, 2007, p. 123). It was not by accident that the blind men each interpreted their impression of the elephant by means of analogy. Lakoff and Johnson, from a linguistic perspective, focus on the use of **metaphor**, where, “The essence of metaphor is understanding and experiencing one kind of thing in terms of another” (Lakoff & Johnson, 2003, p. 5). With economic models, we commonly see economic phenomena in terms of mathematical/mechanical systems. Lakoff and Johnson speak more generally:

“In all aspects of life...we define our reality in terms of metaphors and then proceed to act on the basis of the metaphors. We draw inferences, set goals, make commitments, and execute plans, all on the basis of how we in part structure our experience, consciously and unconsciously, by means of metaphor.” (Lakoff & Johnson, 2003, p. 158)

They distinguish between direct and indirect experience, where indirect experience involves some additional processing or interpretation of information. Broader policy issues can be entirely indirect. Consequently people are, “understanding *one kind* of entity or experience in terms of *another kind* –

that is, understanding via metaphor.” (Lakoff & Johnson, 2003, p. 178) A metaphor highlights certain aspects, “and what is not highlighted is downplayed or hidden” (Lakoff & Johnson, 2003, p. 179). So models and theories could be considered as metaphors which shape our perceptions and understanding.

Communication literature refers to **frames**. Hence Severin and Tankard, discussing the news media, write (emphasis added), “A frame can be defined as ‘a central organising idea for news content that supplies a context and suggests what the issue is through the use of **selection, emphasis, exclusion, and elaboration**’” (Severin & Tankard, 1997, p. 320). As with analogy and metaphor, framing can be widely observed. In fact, theories and model building could be considered as frames, involving these four components of selection, etc.. Similar points are made in a political context by Cobb and Ross (1997). They describe agenda setting and denial, whereby groups attempt to set the agenda to attend to their issues and ignore those of other groups. Weaver (2007) takes this approach with an additional distinction between the selection of issues (what) and the choice of perspective on the issues (how), the latter being likened to framing. Fairclough (1995) on discourse analysis identifies “ideological-discursive formations” with which groups may use a choice of language to favour their perspective, given that the terms used, and their associated connotations, shape perceptions.

To summarise, various bodies of literature have their own terms for very similar phenomena. They all suggest that our understanding is influenced by the perspectives taken, and theories and models perform this function also. As they affect our perceptions, they may result in distorted understanding. We may be unduly influenced by rhetoric as discussed by Dunn, and even addressed by Adam Smith (1963). It is inevitable that theories and models will be used to assist in our understanding, but they are not accurate representations of the real world. They are alternative structures which, it is hoped, may bear some resemblance to, and provide some insight into real world phenomena. However, they are partial, they may distort, and they may mislead. It is important that the nature of theories and, in particular, their limitations be understood. Otherwise the theories might be considered, wrongly, as definitive descriptions of real world situations. In short, we should treat theories as analogies for, not representations of, the real world.

2.2. *Limits of theory*

Mainstream microeconomic theory focuses heavily on the concept of “market failure”. It plays an important role in economic arguments for policy selection. As the underlying assumptions and theory are questioned by heterodox economists (Earl, 1995; Hodgson, 2001; Keen, 2001; Lawson, 2003; Mearman, 2007; Stretton, 1999; Tomer, 2001) and non-economists (Bosso, 1994; Considine, 2005; Dunn, 2004), the issue merits some attention. More generally, given that there may be several possible explanations of observed phenomena, care should be taken about conclusions based on evidence being “consistent with” theory. There may be numerous alternative explanations of the observed phenomena that can be presented. These two points, perfect competition and consistency, are considered here.

2.2.1. *Perfect competition and counterfactuals*

Market failure is defined in comparison to the ideal of perfect competition. An alternative is needed for comparison, and value judgments must be applied to justify one situation being considered superior to another. This raises two questions:

- i) Is perfect competition the right “ideal”?

- ii) Given that the counterfactual is an important aspect of any policy analysis, should economic analyses compare a real situation with an unattainable ideal such as perfect competition?

Theory is, in essence, an intellectual exercise whereby structures are presented and implications drawn. There is no a priori reason to assume that they in any way accurately reflect, or even closely approximate, the real world. Amartya Sen summarised the situation in his paper on “Rational Fools”, describing Edgeworth’s analysis on the possibility of egoistic behaviour achieving general good as an abstract query, not intended to reflect reality (Sen, 1977). Economists have taken something that was intended as an intellectual exercise, paradoxically extending it to become a combined answer to questions of “how people actually behave” and “how people should behave”.

Now consider the issue of counterfactuals. Aristotle (350 B.C E.: Part 1) discussed the limitations of unattainable optima, and Demsetz (1969) makes a similar point, using the term “nirvana approach”. In epidemiology, four alternatives have been suggested as counterfactuals in relation to risk of disease. These are *theoretical minimum risk*, *plausible minimum risk*, *feasible minimum risk*, and *cost-effective minimum risk* (Murray & Lopez, 1999). These represent, in turn, the lowest risk imaginable, even if highly unrealistic; the lowest risk that might be considered possible, even if not currently realistic; the lowest risk that has been achieved somewhere, and thus is known to be attainable; and the lowest risk that could be achieved using all cost-effective means available. The economic “ideal” counterfactual would roughly parallel the theoretical minimum, while the others reflect the best we might ever expect to achieve, or the best that has been observed elsewhere, or the best that could be currently achieved using approaches that are known to be cost-effective.

Additional dimensions could be considered in a policy setting when selecting counterfactuals. For example, the timing of the alternatives, political acceptability, distribution of costs and benefits, and certainty of outcome may be relevant. Nor should we forget the Theory of Second Best (Lipsey & Lancaster, 1956). Eliminating a distortion does not necessarily result in an improvement. Keen (2001) illustrates this point well in his example of an economy with a monopolist and a trade union. It may not be desirable to eliminate one only. In other words, perhaps we should be aiming for some other goal, as suggested by the alternative counterfactuals, although there may be significant information requirements that would have to be met.

To summarise, there is a possibility that economics is using an optimal that would not be meaningful, desirable, or widely accepted. Even if the chosen optimal is suitable as an ideal, that may not be a useful criterion for judging failures and interventions. Given the rhetoric of economics, it is necessary to explain these potential weaknesses. A recognition of them then opens up the possibility of other criteria and consideration of other aspects to be considered. Also, to avoid Type A errors, it is necessary to investigate issues beyond those assumed within particular theoretical models.

2.2.2. Evidence consistent with theory

Tversky and Kahneman are well known for a celebrated finding in behavioural economics which is considered to show that a basic assumption in economics does not hold. They suggest that people violate rational choice requirements of consistency and coherence due to “psychological principles that govern the perception of decision problems and the evaluation of options”, such that, “We have obtained systematic reversals of preference by variations in the framing of acts, contingencies, or outcomes” (Tversky & Kahneman, 1981, p. 453). The use of the term “framing” is worth noting. In their summary, they suggest that, “The dependence of preferences on the formulation of decision

problems is a significant concern for the theory of rational choice” (Tversky & Kahneman, 1981, p. 453).

Their finding is illustrated by their now classic example of the outbreak of an unusual Asian disease which is expected to kill 600 people. Two scenarios are given. First, the options are:

- Program A, 200 people will be saved
- Program B, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved

There is a strong preference for option A. For the second scenario, another group is given options C and D:

- Program C, 400 people will die
- Program D, there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die

There is then a strong preference for option D.

Tversky and Kahneman suggest that the outcomes in the two problems are actually identical because the numbers living and dying in each option are the same. They then assume that the framing is distorting because it shapes perceptions differently. This assumption is key to their finding. Consider, as a basis for these alternatives, that the payoffs to the decision maker may not be specified in terms of lives saved or lost (under which the two problems are identical), but are linked to perceptions of the choices. These may differ over the two problems. To illustrate, in the first scenario the focus is on the 200 who could be saved with certainty, in which event option B would involve risking the lives of these people. In the second scenario, by contrast, the focus is on the 400 who would face certain death under program C, but who might be saved under program D. The choice of the risky option is then one of possibly saving these 400 from otherwise certain death. Here are two alternative hypotheses, others are discussed by Altman (2008).

For one hypothesis, Tyler (2000, p. 123) has suggested that people may accept different treatment of people according to group membership. In this case, two groups are defined, with one group emphasized in the first formulation and the other emphasized in the second. If the decision makers are led to identify with the first group, the certain survivors, they may not wish to risk their lives. If they identify with the second group, the certain fatalities, they may choose the risky option in an attempt to save them.

For a second hypothesis, participants may interpret the difference in the framing of the options as reflecting society’s preferences, and hence the payoffs they would face. Payoffs depend on other people’s perceptions, and are measured in terms of these other people’s responses. A choice of the risky option could then result in being seen by others (their superiors, or public opinion, say) as risking the lives of the 200, and possibly being blamed for causing their deaths. Alternatively, it could be seen as trying to save 400 from certain death, and being praised if the gamble pays off. Should they risk the lives of 200, or take a risk to try to save 400? There could be a difference in terms of praise or blame in the perceived payoffs for the two problems.

Tversky and Kahneman write of the importance of the “reference outcome” against which other outcomes are “perceived as positive or negative”. “The reference outcome is usually a state to which one has adapted; it is sometimes set by social norms and expectations...” (Tversky & Kahneman, 1981, p. 456). It is only a short step from there to suggest that the decision makers will also be

judged, and rewarded or penalized, according to those norms or expectations. Consideration of rationality should then focus not only on the decision maker, but also on the society and the institutions. It should be defined not within the simplified world of the theory, but in the actual context in which the decision makers are operating. As a general point, when it is found that evidence “supports” a theory, it should be considered as indicating that the theory is one possible explanation of the evidence, but the analysis should not stop there. There may be numerous alternative explanations also.

2.2.3. Accepting or rejecting a theory

Theories serve as tools that may aid us in our attempts to understand our environment and to make decisions. As with any tools, care must be taken in their use. There are alternative views on how those who favour a theory can or should react to criticisms of that theory. Three arguments that are sometimes used in response to such criticisms are described below. They all have flaws and can lead to problems. A fourth option is then discussed. The options are:

- 1) Accept current theory as a matter of faith;
- 2) Do not look outside current theory as long as it can give SOME explanation of an observed phenomenon;
- 3) Do not reject a theory, even if flawed, unless the challenger can present a superior alternative;
- 4) Take a more pragmatic approach.

The first three views could be considered as being logically flawed. Alternatively, they could be described as rhetorical arguments that are persuasive for the target audiences and are used by people who want to maintain a particular position. The four views are discussed in turn.

1) Accept current theory as a matter of faith

Several writers have voiced concern at a perceived debasement of academic standards. Mishan talked of “the stringent requirements of scholarship” being set aside where, “the doctrines of... ideologically inspired 'studies' are not regarded by their proponents as provisional and refutable hypotheses” (Mishan, 1993, p. 202). Mishan was referring to studies based on gender and ethnicity. However, similar criticisms could also be made against other academics, even without clear political motivation, or rather, acknowledging the politics of academia. Economics may also fit this description.

This could be explained as an effect of the framing of economic theory. The suggestion in this context would be that, while economic theory may be based on “provisional and refutable hypotheses”, the basis may seldom be questioned, and it may even be considered that the issues have been fully debated and resolved, or, at least, so well entrenched as to be accepted as a starting point for any analysis. This would match the concept of “normal science” (Kuhn, 1970) and has been described specifically for economics (Robinson, 1970; Rosen, 1972).

It could be said that economic theory provides frames that have come to be widely accepted among economists, and these shape perceptions of economic phenomena. Being accepted, they both enlighten and restrict the aspects that are observed. Taking a step back one could consider whether economic theory has tended to set the agenda itself. In other words, has economics specified not only the approaches to issues, but also the selection of issues and questions to be considered (and those to be overlooked) by economists?

2) Do not look outside current theory as long as it can give SOME explanation of an observed phenomenon

Normal science has been described as, “a strenuous and devoted attempt to force nature into the conceptual boxes supplied by a professional education” (Kuhn, 1970, p. 5). Similarly, “conservative conventionalists attempt to preserve existent theories by building onto them ever more elaborate (critics would label them ad hoc) peripheral systems” (Caldwell, 1980, p. 367). Even if successful, it should not be considered as an end to discussion. Not only is the presence of alternative consistent hypotheses possible, but, according to Milton Friedman, it is inevitable: “Observed facts are necessarily finite in number; possible hypotheses, infinite. If there is one hypothesis that is consistent with the available evidence, there are always an infinite number that are.” (Friedman, 1953, p. 9) The criterion for acceptability of an established theory sets the bar at such a level that many theories would be virtually non-falsifiable. This could lead us to have an inflated view of our level of understanding.

3) Do not reject a theory, even if flawed, unless the challenger can present a superior alternative

Writing on econometrics in *The Economic Journal*, Peter Phillips quotes Hoover, who makes a claim about scientists: “even accumulated falsifications or anomalies do not cause scientists to abandon an approach unless there is the prospect of a better approach on offer” (Phillips, 2003, p. C27). The point is made for economics, “...you can’t beat something with nothing, and so it is not enough to show that some given rational choice model does not fit the data, it is necessary to show that some other perspective leads to a model with better fit and predictive power” (Grofman, 1993, p. 240). This approach involves the use of something that is known to be misleading in preference to admitting ignorance. While criticisms of a theory or the presentation of contrary evidence have been dismissed on the basis that a superior alternative has not been presented, this is not a valid reason for ignoring flaws in a theory. Socrates, 2,400 years ago, made the point that it is important to recognize the limits of one’s understanding (Plato, Approx 380 B.C.E.).

4) Take a more pragmatic approach.

The information for the public on the 2008 award of the Nobel Prize to Paul Krugman includes the statement, “The truth, as in so many other instances, is that reality encompasses features of both theories” (The Royal Swedish Academy of Sciences, 2008, p. 2). Similarly, Gordon Tullock writes, “I have given you a number of theories on how regulatory agencies act and I regret to say that instead of telling you now which one of them is true, I think all of them are partly true” (Tullock et al., 1983, p. 10). There is a danger that a focus on simple explanations, automatically assuming they are valid, not looking beyond a narrow, accepted perspective, or rejecting valid criticisms unless alternative superior solutions are presented, results an inflated sense of the extent to which issues are understood.

A pragmatic approach would result in a qualified use of theory-based understanding. Alternative evidence can result in two key qualifications that should be recognised:

- a) Valid criticisms should be recognised as limitations of current understanding (and hence on our ability to intervene);
- b) All theories should be recognised as being partial, and they are analogies for, rather than representations of, the real world. They result in the framing of issues, so it is prudent to use a mix of theories and to acknowledge the aspects that are assumed away in a particular

theoretical approach. There are additional reserves, qualifications and adjustments to be considered in any application of theory (Keynes, 1973, pp. 297-298).

These points can be expressed in another way. Rather than considering that there are “theories” that may “explain” the evidence of the real world, it should be recognised that there are “analogies” that may be “consistent with” the evidence of the real world (and may then in addition possess some explanatory power). To take the latter to be the former is to overstate the level and value of our understanding.

3. An additional consideration: the importance of groups

Various social sciences may take different approaches to the analysis of the same phenomena. Members of a discipline (economists included) are likely to be subscribing to partial assessments that are inconsistent with those of other disciplines. Group cultures, understandings and accepted reasoning and behaviours may be significant influences on outcomes. In economics, Galbraith (1999) writes of the significance of ‘conventional wisdom’. Williamson (1975) notes the importance of “atmosphere” and “informal group influences”, and Laffont and Martimort (2001) refer to interactions between private incentives and cultural norms of behaviour. There are some well-known examples of ordinary people displaying extreme group behaviour, including the Stanford experiment where students played the roles of guards and prisoners (Zimbardo, 1999), and the Milgram experiment, where subjects were instructed to administer increasingly severe electric shocks (Milgram, 1974).

Group dynamics may be important in determining collective views and behaviour. Numerous examples were given over 150 years ago in the book, *Extraordinary popular delusions and the madness of crowds* (Mackay, 1995). Even among economists, and for economics as a discipline, there may be common acceptance of our conventions despite cause for unease. Might commonly held views be as much the result of a collective group dynamic as a logical, reasoned, and regularly reviewed and revised, assessment of theory and evidence? New entrants are educated as to the established conventions, and their acceptance into the group depends on a demonstrated competence according to those conventions. Given the emphasis given to peer review, it could be asked whether it serves as quality control, or as a device for gatekeeping (Gillies, 2006). This would be consistent with “street-level epistemology” (Hardin, 2002), whereby people accept the information conveyed by those around them.

Groups can be found in many places, including academic disciplines, professions, institutions, social organizations, and political parties. The previous sections of this paper suggest that they may each have their own beliefs, including unquestioned assumptions, perspectives on issues, and inertia limiting change. This affects understanding and communication across groups. It can be important both for economists as a group (or a collection of groups), and as a phenomenon which affects the operation of the economy and the political environment in which policy is made and implemented. A theoretical framework based on individuals with exogenous preferences cannot incorporate these influences.

4. Conclusions

The direct application of theory to real world issues requires more than just the use of logic within a theoretical structure. There are additional questions to be addressed, disregard of which results in a rhetorical dimension to the resulting advice. Central to the application of theory to the real world is the recognition that theoretical representations serve only as analogies of the real world. These are

simplified and incomplete, and different approaches or perspectives may see the “elephant” quite differently. The nature of “theory as analogy” should be acknowledged.

This raises several concerns. One, specific to mainstream economics, is the use of a theoretical “ideal” as a basis for real world policy recommendations. Such an ideal is defined within the bounds of the theory. It may not result in realistic decision making if the theoretical relationships do not match the real world, if the theory is based on a poor measure of society’s objectives, or if the theoretically derived optimum is an unattainable position. Another concern is the recognition that theories may be merely “consistent with” the evidence. A theory that appears to explain some evidence may simply give one of numerous possible explanations, and so should not be thought sufficient to definitively resolve an issue.

There are several positions that may be observed in response to evidence that appears to conflict with a theory. Three that were described are that a theory could be accepted as a matter of faith, it could be accepted as sufficient as long as it can be adapted to give some explanation of the evidence, or it should be retained unless an alternative explanation is provided that is considered superior. Each of these overlooks the nature of theory as an analogy, and results in limiting the investigation and probably presenting an inflated impression of the prevailing level of understanding provided by a theory.

Recognition of the limitations of the theoretical approach in general would be helpful. Any particular theory considers a limited range of factors and interactions, overlooking much of the available evidence and the thinking and analysis that exist elsewhere. The best that can be done with a theory is to demonstrate consistency with the selected observations. There may be numerous possible alternative explanations. Relaxed or changed assumptions or consideration of alternative evidence may suggest very different conclusions. Given the diverse perspectives available, all of them partial, a combination or synthesis of theories and concepts may yield a superior understanding than one theory alone. At the least, it could indicate the contradictions in and limitations of our diverse attempts to understand issues. An analogy for the real world does not describe the real world itself.

The environment also plays a part in determining which theories are proposed and accepted. This can be seen in terms of groups and group beliefs. Group membership, including that for an academic discipline or sub-discipline, requires acceptance of a body of knowledge or beliefs and its associated perspectives and findings. These may be slow to change, and they may differ from those of other groups focusing on similar issues. Alternatively, this could be described in terms of differing agendas and framing. Consequently, there is a rhetorical dimension to positions that are taken.

It is hoped that this paper indicates that caution should be exercised in the application of commonly accepted theories. Similar issues can be found in consideration of the empirical representation of theory and in the application of empirical findings to real world issues. However, that would be the subject of another paper.

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