19 The way the world works (www): towards an ontology of theory choice

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1 Introducing the ontology of theory choice

Economists choose theories and they choose ways of pursuing theories, and they leave others unchosen. Why do economists choose the way they do? How should economists choose? What are the objectives and what are the constraints? What should they be? The questions are both descriptive and prescriptive.

There are two broad classes of “criteria of choice” that have been somewhat systematically considered in the recent literature on economic methodology:

1. **Empirical criteria.** There are several possible ways of incorporating empirical criteria in one’s theory of science. The respective methodology of theory assessment may be static or dynamic, it may be deductivist or inductivist, it may include various ideas of what constitutes empirical evidence, and so on. What they all share is the general idea that scientific theories are, or are to be, checked against empirical evidence according to some rules, and that this determines the choice of theory.

2. **Social criteria.** Again, there are several options. The social criteria may be related to the social interests of scientists or larger social collectives, they may be based on the persuasiveness and tradition-boundedness of theories, they may involve social or moral norms, they may be derived from various costs and benefits of holding a theory in a given research community, and so on. If they involve

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empirical data, it is the social aspects of the data that matter. What all these views share is that scientific theories are taken to have social attributes (functions, consequences) that play or should play a major role in theory choice.

In the field of economic methodology, most of the research and discussion during the era of "Popperian dominance" (see Mäki 1990a) was devoted to examining the empirical criteria and to assessing theories and larger theoretical constellations in terms of such criteria (e.g., Latas 1976; Blaug 1980; Weintraub 1985). This research led to the discovery that empirical criteria play only a limited role in theory development and in discriminating between rival fundamental theories (e.g., chapters in de Marchi 1988; de Marchi and Blaug 1991; de Marchi 1993). Theories turn out to be severely underdetermined by empirical evidence so that the Duhem–Quine problem is taken to be particularly difficult in economics.

Partly in response to the failure to establish a systematic relationship between theory choice and empirical criteria, attempts have recently been made to look at the social dynamics of theory choice in economics. Given that theory choice is taken to be radically underdetermined by empirical tests, it is suggested that various social factors adopt the role as determinants, complementing or replacing or shaping the conventional empirical criteria. Some of the key categories used for depicting the allegedly powerful social factors in play have been "conversation," "rhetoric," "social construction," and more specifically, "sunk costs," "path dependence," "physics envy," "gender bias," and others (e.g., Klammer 1983; McCloskey 1985; Mirowski 1989; Weintraub 1991; Mäki 1992d, 1993a, 1999; Hands 1994; Feber and Nelson 1993; Zamora 1999). Many of the possible directions and issues within this class of factors remain to be examined.

My view is that there is an important third class of criteria which should be invoked both in descriptive and normative considerations of theory choice in economics:

3. **Ontological criteria.** These may be related to various conceptions about the basic constituents of social reality, their causal capacities, relations of causal and other kinds of dependence between them, and mechanisms of change among them. More particularly, these criteria may be based on some more or less fundamental and more or less well-articulated visions concerning human beings in regard to notions of rationality, and the social arrangements of their lives in regard to individualism, collectivism, as well as conceptions of social causation and evolution. What all such ideas share is that consistency with conceptions of the structure and functioning of the world serves as a criterion of, or a constraint on, theory choice.

I believe there is no doubt that, as a matter of actual fact, ontological criteria play an important role in constraining actual theory choices made by economists. I also believe they should play such a role. Given these two claims, a third one is suggested: too little systematic analysis has been done on the ontological grounds of theorizing by economic methodologists. Some interesting work has been done on the ontology of economics, though. Among the examples are the argument from the folk psychological foundations of microeconomics (Rosenberg 1992); work on causal powers and tendencies in the economy (Cartwright 1989; Mäki 1990b, 1992c; Lawson 1997); work on causal processes and mechanisms (Mäki 1992c, 1998a; Salmon 1998); study on Dennettian real patterns (Ross 1995); and a study on universals in economics (Mäki 1997). One may also translate notions such as "physics envy" and "gender bias" into ontological claims. Few of the works in the above list explicitly construe ontological notions as criteria of theory choice or as constraints on theorizing. This is where the focus of the present essay lies (this draws upon earlier work with a similar focus: Mäki 1998d; 1998e; see also Mäki 1992c).

I will introduce a generic ontological notion, that of the way the world works, or www for short. My descriptive claim is that many economists invoke this idea with an intention of providing a constraint on theorizing. I will call this ontological constraint the www constraint. Economists invoke this constraint either implicitly or explicitly. I am also inclined to hold the normative claim that economists are on the right track when they, at least in some important instances, invoke such a constraint. My arguments in this paper are for the descriptive claim.

Let us suppose that it is of the essence of science that scientists pursue an understanding of the world. Let us also suppose that understanding the world amounts to understanding how the world works, the way the world functions. Let us further suppose that at least to a large extent, the world's workings are a matter of causal processes being in place. Let us finally suppose that an understanding of the world is sought by means of theories. All this means that scientific theories are - and are to be - constructed and employed with the purpose of depicting the causal processes that constitute the ways the world works. One of the prominent recent philosophical statements of this time-honored general idea has been put forth by Wesley Salmon: "To understand the world and what goes on in it, we must expose its inner workings. To the extent that causal mechanisms operate, they explain how the world works" (Salmon 1984, p. 133). Explanatory understanding is dependent on description, or theoretical redescriptions: the events and their co-occurrences and sequences, as well as the entities involved in them, are redescribed in terms
of theory as what they are believed to be, namely as manifestations of "underlying" entities and processes. Thus answers to why? questions are dependent on answers to how? questions (see Mäki 1990c, 1992c). In Salmon's words: "Causal processes, causal interactions, and causal laws provide the mechanisms by which the world works; to understand why certain things happen, we need to see how they are produced by these mechanisms" (Salmon 1984, p. 132). There is a sense in which adequate explanations are adequate descriptions of goings-on in the world.

Here is how the www constraint often works: if it is the case that we understand the world by way of theories which describe its causal functioning, then any doubt about the capacity of a given theory to expose the major elements of such causal functioning amounts to a doubt about its capacity to render parts of the world understandable. Such doubts may lead to various responses, ranging from outright rejection to relative lack of attention. In such cases, the constraint functions negatively: beliefs about its non-satisfaction serve as grounds for exclusion. Even though this negative role of the constraint in providing grounds for exclusion may be particularly important, this does not rule out its positive role in providing supportive grounds for a theory. The general point is that the www constraint serves a function in determining the merits and demerits of a theory.

We will next look at an example of the negative function of the constraint. The model of perfect competition will serve as our case. While this model enjoys an established status in most textbooks of economics, there are economists who believe the model to be fatally misguided as a picture of the competitive market economy. We will see how skepticism about the model of perfect competition as expressed by certain economists is based on invoking the www constraint. These economists have doubts about the non-satisfaction of the constraint, and these doubts serve as grounds for exclusion. Their reasoning may be put in terms of unrealisness: all models are unrealistic; this model is unrealistic in a wrong way.

2 The way the world won't work: perfect competition

The purpose of the present section is not to add anything novel to some of the customary complaints about the model of perfect competition, nor to try to persuade the advocates that the criticisms are sound. My purpose is rather to show that some of these criticisms amount to what I have set out to argue in this paper: some such criticisms are a matter of

(1) invoking an ontological www constraint on economic theorizing, and to (2) arguing that the perfect competition model does not meet this constraint. I cite three economists - George Richardson, Ronald Coase, and James Buchanan - as evidence in support of the two claims. Notice also that I will not have to be very precise about what the target of such criticisms is (nor is the textual evidence I employ very precise about this); it is enough for my case to show that the www constraint is being invoked in an argument against something.

In each case, the reasoning is the same, exhibiting the same pattern:

1. Acknowledge the unavoidability of excluding much in one's theory: any theory or model is necessarily narrow and simple.
2. Argue that the model of perfect competition is narrow in a wrong way, in that it excludes items that should not be excluded.
3. Suggest that the grounds for the claim of faulty narrowness, and, more generally, for judging what to include and what to exclude in one's model, are based on one's conception of the way the world works.

Narrowness of theory

It is a standard criticism of a model or theory to blame it for excluding something from consideration. This suggests a common form of unrealisness: a theory is unrealistic if it is unjustifiably "narrow" - that is, if it excludes from consideration factors that are deemed important. This notion is entertained also by Coase and Richardson. Both think that conventional textbook theory is unrealistic in this sense: it excludes factors that should be included in the theory. To put it in other words, conventional neoclassical theory isolates from factors that should be explicitly theorized; thus, the theory should be de-isolated so as to incorporate these factors (see Mäki 1992a, 1994a, 1994b).

However, and this is where Coase and Richardson part company, they do not share the details of where to start de-isolating the theory, that is, what precisely to include that was excluded from consideration, and in what order. Any theory excludes an enormous number of elements in reality. From this set of excluded elements, one may then only choose for inclusion a small subset comprising those that are found most important. Coase and Richardson choose somewhat differently. For Coase, the most important element to be included is transaction costs; for Richardson it is the process of information acquisition that will ensure the satisfaction of what he calls the "informational requirements."
For Coase, the incorporation of positive transaction costs required the relaxation of the assumption of zero transaction costs, which "is, of course, a very unrealistic assumption" (Coase 1960, p. 15). By relaxing this assumption, the theory could be broadened by way of theoretical de-isolation. The item thereby incorporated is what he calls "the missing element" in economic theory (Coase 1993c, p. 62). This is not the only missing item, however: "No doubt other factors should also be added" (Coase 1988b, p. 30).

Richardson stresses his main theme by saying that economists "should take account of informational considerations that have generally been neglected" and then goes on by suggesting that "there are yet other relevant considerations which cannot be brought into formal analysis" (Richardson 1998, p. 21). There is a lot that has been neglected, but not all of these factors can be incorporated into formal theory. "Economic theory is an indispensable instrument of analysis, but effective only when we are aware of its limitations" (p. 21). Yet, much that has been excluded, can and should be included. Among them are product and process innovations. Richardson blames standard theory for "[c]hoosing to set aside, or assume away, the fact that products and processes are subject to continuous development" (p. 3). This is not an innocent exclusion, since "the habit of abstracting from product development, the pace of which has been accelerating, may have led economists to view the real world as much less competitive than business men know it to be" (p. 14).

Coase is explicit that some of the excluded factors are those that characterize the internal organization of the business firm, thus leading to a notion of the firm as a black box:

The concentration on the determination of prices has led to a narrowing of focus which has had as a result the neglect of other aspects of the economic system. [...] What happens in between the purchase of the factors of production and the sale of the goods that are produced by these factors is largely ignored. [...] The firm in mainstream economic theory has often been described as a "black box." And so it is. This is very extraordinary given that most resources in a modern economic system are employed within firms, with how these resources are used dependent on administrative decisions and not directly on the operation of a market. Consequently, the efficiency of the economic system depends to a very considerable extent on how these organizations conduct their affairs, particularly, of course, the modern corporation. Even more surprising, given their interest in

the pricing system, is the neglect of the market or more specifically the institutional arrangements which govern the process of exchange. (Coase 1993 [1992], p. 229)

Richardson shares the belief that price theory gives an overly narrow if not distorted picture of economic reality; he also thinks that its prominence may be based on the mechanical analogy borrowed from physics. This suggests that conventional price theory is set up to conform to a wrong ontological constraint:

if we are led to study the informational aspects of social systems only in terms of a rigid conceptual framework borrowed from physics, we shall certainly obtain a distorted picture. Prices, for example, and particularly the current values of prices, assume from this point of view an undeserved prominence, because it is in terms of them that a quasi-physical signalling mechanism can be elaborated and given mathematical expression. (Richardson 1960, p. 41)

Coase puts some of the blame on the conception of economics as a theory of choice which has contributed to the exclusion of the human and institutional "substance" of the economy from theoretical consideration. The resulting picture is ontologically suspect:

This preoccupation of economists with the logic of choice [...] has nonetheless had, in my view, serious adverse effects on economics itself. One result of this divorce of the theory from its subject matter has been that the entities whose decisions economists are engaged in analyzing have not been the subject of study and in consequence lack any substance. The consumer is not a human being but a consistent set of preferences. The firm to an economist [...] "is effectively defined as a cost curve and a demand curve [...]". Exchange takes place without any specification of its institutional setting. We have consumers without humanity, firms without organization, and even exchange without markets. (Coase 1988b, p. 3)

No doubt economists have an amazing variety of grounds for thinking of a given theory as unrealistic, but a major one is certainly the perception of the theory as excessively narrow or partial or isolative. As we have seen, this is also one of Coase's and Richardson's critical perceptions of standard neoclassical theory. They insist on the de-isolation of the theoretical picture of the economy by incorporating neglected elements into the theory. But we have not said enough; our picture of their views on narrowness is still too narrow.

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1 The exclusion of internal characteristics of the objects under study (such as the internal organization of business firms) amounts to "internal isolation" in contrast to "external isolation" which is a matter of excluding characteristics of the system surrounding the object (such as other markets in partial equilibrium analysis) (see Måki 1992a for details).

2 More precisely, we are here talking about "horizontal de-isolation" – de-isolation at a given level of abstraction or vertical isolation (Måki 1994a). In contrast to Coase's quest for horizontal de-isolation, he also insists on vertical de-isolation, that is, lowering the level of abstraction by engaging oneself in empirical case studies (Måki 1998b).
The way the world works

The missing "imperfections": Richardson

Having listed some successes of the market system in adjusting to changes, and before providing an exposition of aspects of general equilibrium theory to account for these successes, Kenneth Arrow makes this claim: "All these phenomena show that by and large and in the long view of history, the economic system adjusts with a considerable degree of smoothness and indeed of rationality to changes in the fundamental facts within which it operates" (Arrow 1974, p. 254). Richardson agrees that the market system has the capacity of coordinating activities and adjusting to changes. However, referring to the theory of general equilibrium, Richardson makes a somewhat blunt statement:

We therefore need to find a better explanation of how, and in what conditions, coordination through market transactions, which we know from experience can work, does in fact work. Men stir up a dust... and then complain that they cannot see. And it is indeed through the creation of a model with perfect competition, perfect mobility (and, sometimes, perfect knowledge, whatever that means) that we obscure the actual process of adjustment. (Richardson 1995, p. 1492)

"Men stir up a dust and then complain that they cannot see." This sounds like a rather harsh judgement about economists holding certain theories. In what follows, we try to understand what Richardson means by the expressions "stirring up a dust" and "cannot see." This much should be clear to begin with: one does not "stir up a dust" by making just any unrealistic assumptions. The very first page of Richardson's Information and Investment hints at the possibility of harmless unrealisticness in the case of the perfect competition model:

The conditions which define it, as everyone knows, are rarely, if ever, characteristic of the real world, but it can be argued that this divergence represents no more than the normal degree of abstraction associated with general theoretical models. (Richardson 1960, p. 1)

Coase is more explicit about what makes unrealisticness justified, or, in Richardson's words, what determines "the normal degree of abstraction":

... our assumptions should not be completely realistic. There are factors we leave out because we do not know how to handle them. There are others we exclude because we do not feel the benefits of a more complete theory would be worth the costs involved in including them. [...] Again, assumptions about other factors do not need to be realistic because they are completely irrelevant. (Coase 1988c, p. 66)

In other words, Coase is comfortable with a theory being isolative in general, provided there are good reasons for this such as the ones he cites above. However, there are limits to unrealisticness: beyond these limits, one would "stir up a dust." There are some items that just cannot be excluded without obscuring the view: if you exclude them, you "cannot see." This is the fundamental message endorsed by Richardson and Coase. They also hold a shared idea of what determines these limits. These limits, they believe, are determined by our conception of the way the world works. They not only believe that the conventional picture is narrow, but that it is harmfully narrow in unduly excluding important factors. The question is to ask, what is it that makes those factors important? Why are they claimed to be unduly excluded? Why should precisely they, and not some other factors, be included? In order to answer these questions something else is needed. In the case of Coase and Richardson this something else amounts to the invocation of the ontological constraint. Plenty of documentation can be provided in support of this suggestion.

The subtitle of Richardson's main work, Information and Investment, is accurate: A Study in the Working of the Competitive Economy. Indeed, it is a recurring theme of the book that it is the task of economics to give an account of how the economy "works." Richardson's persistent critique of the perfect competition model is telling. The second page of Information and Investment summarizes his critique of the model precisely for failing to account for the world's workings:

Perfect competition, I shall affirm, represents a system in which entrepreneurs would be unable to obtain the minimum necessary information; for this reason, it cannot serve as a model of the working of actual competitive economies. (Richardson 1960, p. 2; emphases added)

Here is the claim put in more specific terms:

I feel convinced that one of the essential elements of any adequate account of the attainment of equilibrium has not been provided; for the most part, indeed, the need for it has been ignored. No explanation has been given of how, in the conditions which define the perfectly competitive model, entrepreneurs could obtain the information on which their expectations, and therefore the investment plans required for equilibrium, would have to be based. (Richardson 1960, pp. 23–4; emphases added)

Note that Richardson says that considerations of information are supposed to provide "one of the essential elements" involved in the process of "the attainment of equilibrium" and that the model under

3 For arguments that show why an economist espousing realism as a theory of theories is entitled or even required to use unrealistic assumptions, see Mäki (1994a, 1994b).
criticism fails to incorporate this essential element. Richardson puts the idea explicitly in terms of the working of the world:

Whatever insights the theory of perfect competition may have given us, it fails to provide ... a convincing account of how free enterprise economies in fact work. ... And this failure results from its neglect of what we may call the informational requirements of any workable system, the conditions that must be realized, that is, in order that those within it can have sufficient knowledge to take investment decisions. (Richardson 1998, p. 2)

He goes on by explaining why he thinks the model of perfect competition fails in accounting for the way the system works — why its advocates have “stirred up a dust”:

By abstracting from some of the circumstances of real economic life, we have, paradoxically, made it more difficult, if not impossible, to explain how the system works. I have argued elsewhere that markets generally operate not despite, but because of, some “imperfection” of competition, because of the existence, that is, of circumstances which, although excluded by definition from the perfect competition model, fulfill the informational requirements of the system by endowing the business environment with a high degree of stability sufficient to make informed investment decisions possible. (Richardson 1998, p. 2)

The “imperfections” that Richardson refers to — in his 1960 book he called them “restraints” — are institutional features of economies, including forms of information sharing such as price agreements, vertical integration, and signaling, as well as reputation and trust. Such “imperfections” reduce the cost of information and constitute commitments, and thereby facilitate the coordination of competitive and complementary investments. The “imperfections” are among the essential elements in the way the world works. To understand the workings of the economic world one has to understand such institutional features. Such understanding is not provided by the model of perfect competition:

Coordination through market transactions is only possible ... by virtue of the existence, in the real world, of circumstances which set bounds to what can happen. And these enabling circumstances, which exist naturally (such as differential capabilities) or which may be contrived through collective action (such as market sharing arrangements), all represent deviations from the pure competition model. (Richardson 1995, p. 1492; emphases added)

Richardson argues that to understand (even the possibility of) successful adjustment through market transactions, we need to incorporate various institutional features into our picture of the economy. This can be done by relaxing assumptions such as those of perfect information, atomistic firms, and homogeneous goods, and of paying attention to the ways in which the “informational requirement” is met. In the imperfect information world, institutions matter. There is a parallel logical structure in Coase’s account. By relaxing the zero transaction cost assumption, that is, by incorporating positive transaction costs into his account Coase was not only able but also forced to incorporate institutional features that were previously neglected from systematic analysis. In the positive transaction cost world, institutions matter.

We cannot yet pretend to fully understand the notion of the world’s working as it appears in Richardson. What does it mean, precisely? Why does one theory fail and why does another theory succeed as a potentially adequate representation of the way the world works? A complete account would be impossible to pursue here, but one observation can be provided. An element of ontic necessity — necessity de re rather than just de dicto — appears to involved. Richardson puts the idea variously, including references to “conceivable” systems and to some elements being “essential” or “necessary” for the functioning of the system. Here is an example:

Irreducible uncertainty, as a factor in any conceivable economic system, owes its existence, in part to incomplete information about preferences and production functions. In much of economic theory, this incompleteness is ignored ... But where the object is to study the working of a competitive economy, the question of the availability of information cannot thus be pushed aside. (Richardson 1960, p. 81; emphases added)

He also says that “some market imperfections may be essential to the process of successful economic adjustment” (p. 38; emphasis added) and that “the conditions which define the system of perfect competition are not such as would permit the economic adjustments required” (p. 10; emphasis added). As Brian Loasby puts it, Richardson’s “conclusion is that in perfecting the model of perfectly competitive equilibrium, economists have refined away the essential mechanism” (Loasby 1986, p. 152). Here is yet another way of formulating the idea:

By assuming, overtly or tacitly, that [the optimum strength for these restraints] is zero, and therefore by neglecting the whole problem of information, the perfect competition model condemns itself not only to unrealism but to inadequacy even as a hypothetical system. (Richardson 1960, p. 69; emphasis added)

The following may be taken as an explanation of what Richardson means by “inadequacy even as a hypothetical system”:

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4 “Perfect competition earned its reputation as an ideal market structure because of the belief that, to the extent that the conditions defining it were realized, resources would be allocated so as to exhaust all profit opportunities. No one, in my view, ever provided a fully satisfactory explanation of how this was to come about ... the conditions favourable to successful adjustment are not those laid down in the perfectly competitive model” (Richardson 1964, pp. 160, 161).
It is no defence to appeal, moreover, to the analogy of mechanical statics which, though neglecting friction, can still identify the equilibrium position of a system of forces, for we cannot demonstrate that economic systems have such positions of rest without reference to expectations and information which could not be presumed to be available in the absence of restraints. (Richardson 1960, p. 69; emphasis added)

Thus, “inadequacy even as a hypothetical system” can be taken to mean something like “ontic impossibility”. This can then be taken to imply that there are some ontically necessary features that a real system has to possess in order for its theoretical picture to count as adequate “even as a hypothetical system.” This suggests that it is in the character of hypothetical pictures that they represent systems that are at least possible – even though perhaps not fully actual. One further piece of evidence appears to support this reading. Ontic necessities and impossibilities have entailments regarding empirical actualities. The following can be read in this light:

It is not by accident that the markets in the real [actual] world that are closest to pure competition, namely commodity markets, are usually subject to some kind of regulation, or to disarray or, very commonly, to both. There is absolutely no presumption that either the presence of a large number of competitors, or the homogeneity of the products they offer, are, as the theory of perfect competition would lead us to suppose, conditions favourable to efficient allocation. (Richardson 1995, pp. 1492–3)

To sum up, there seem to be two ontically necessary connections envisaged by Richardson. One is that information is necessary for adjustment. The other is that “restraints” are necessary for information. And since these restraints appear in the form of institutions – “customs, conventions, and the laws” (1960, p. 69) – this implies that a theory about the working of the competitive economy has to incorporate institutions. This is a theoretical necessity suggested by the two ontic necessities.

Missing category of costs, missing institutions: Coase

Consider then Coase’s version of the idea of the world’s workings. We have already cited Coase’s complaint about economics which theorizes “consumers without humanity, firms without organization, and even exchange without markets” (Coase 1988b, p. 3). Let us try to see what grounds Coase has for this complaint. Such grounds are far from intuitively obvious given that there are highly respected scientific theories that study planets without extension, planes without friction, and molecules without color. Why are some exclusions suspicious while some others are not?

Coase explains that it took him a long time to realize that “the whole of economic theory would be transformed by incorporating transaction costs into the analysis” (Coase 1993c, p. 62). The somewhat revolutionary tone in this judgement can only be understood as reflecting the idea that transaction costs constitute a major factor in economic reality and that its inclusion in theory has major consequences for economics. But what does “major” mean here? It does not just designate the idea that here we have another “factor” which has a large impact on economic phenomena and therefore had better be included in explanations. More is involved than just causal relevance, namely what we might call ontic indispensability: the element to be added is not just causally influential, it is necessary for the functioning of the system. The introduction of positive transaction costs in the theory brings with it new kinds of entities, namely institutions, such as legal rules and contractual structures. If it is held that such institutions play both an indispensable and a powerful role in the functioning of the economy, it would be inexcusable to exclude them from the analysis.

This suggestion is based on a central idea that occurs frequently in Coase’s writings, namely that it is the task of economic theory to provide “insight into how the system works” (Coase 1988c, p. 64). He argues that “realism [i.e. realisteness] of assumptions is needed if our theories are ever to help us understand why the system works in the way it does” (p. 65). Of course, by this he must mean realisteness subject to the ontological constraint – and this leaves room for plenty of legitimate unrealisteness.

The idea that there is a way in which “the economic system works” suggests that the complaint about a “missing element” in theory is in effect a complaint about an indispensable missing link in the working of the real system; without this link, the system would not function as it does – or would not function at all. Therefore, this link has to be theorized in order to understand how the system works. Coase’s view here is akin to Richardson’s, amounting to the suggestion that some sort of necessity is involved: “The solution was to realize that there were costs of making transactions in a market economy and that it was necessary to incorporate them in the analysis” (Coase 1993a, p. 46; emphasis added). In this somewhat essentialist spirit, he says that the point of theorizing is “to get to the essence of what [is] going on in the economic system” (Coase 1988c, p. 68).
The missing endogenous process: Buchanan

Our final witness is James Buchanan. He puts forth a familiar complaint: The basic flaw in this model of perfect competition is not its lack of correspondence with observed reality; no model of predictive value exhibits this. Its flaw lies in its conversion of individual choice behavior from a social-institutional context to a physical-computational one ... but surely this is nonsensical social science, and the institutionalist critics have been broadly on target in some of their attacks. (Buchanan 1979, p. 29)

Buchanan then goes on to put forward his favored position; it is in terms of endogenous process. Here is a lengthy passage:

A market is not competitive by assumption or by construction. A market becomes competitive, and competitive rules come to be established as institutions emerge to place limits on individual behavior patterns. It is this becoming process, brought about by the continuous pressure of human behavior in exchange, that is the central part of our discipline, if we have one, not the dry rot of postulated perfection. A solution to a general-equilibrium set of equations is not predetermined by exogeneously determined rules. A general solution, if there is one, emerges as a result of a whole network of evolving exchanges, bargains, trades, side payments, agreements, contracts which, finally at some point, ceases to renew itself. At each stage in this evolution toward solution there are gains to be made, there are exchanges possible, and this being true, the direction of movement is modified. (Buchanan 1979, p. 29)

Buchanan concludes that it is “for these reasons that the model of perfect competition is of such limited explanatory value except when changes in variables exogenous to the system are introduced. There is no place in the structure of the model for internal change, change that is brought about by the men who continue to be haunted by the Smithian propensity [to truck, barter, and exchange]” (Buchanan 1979, pp. 29–30). We may paraphrase these remarks by saying that, according to Buchanan, the model of perfect competition fails to meet an important www constraint, namely it fails to depict the way the competitive economy works in terms of endogenous causal process.

4 Concluding remarks

I have used a class of criticisms against the model of perfect competition as evidence in support of the descriptive claim that at least some economists invoke ontological constraints in their arguments for or against particular theories or lines of theorizing. This limited evidence does not yet give us much of an idea about the proportion, weight, and likely context of ontological arguments in the argumentative practices of economists. It remains a task for empirical investigation to determine such matters. For example, it is obvious that the ontological arguments in relation to the model of perfect competition far from exhaust all the relevant and popular arguments there are about this model. Indeed, many economists are unimpressed by such arguments and justify their use of the model in non-ontological terms. To them, the model was never intended as an account of the way the competitive economy works. And they often say this explicitly so as to discourage others to assess the model by what they regard as wrong standards. Does this mean that these economists do not have conceptions of the www, or more precisely, consequential conceptions of the www? Not at all, on the contrary. The very fact that they often explicitly speak out their view that the perfect competition model is not, and is not intended as, a description of the way the competitive economy works implies that they do have consequential views of the workings of the world.

All theories are bound to be unrealistic in the trivial sense of excluding much, in being isolative or narrow. All economists think that there are limits to narrowness. Many economists think that the appropriate isolations have to meet an ontological constraint provided by conceptions of the way the economic system works. Some economists believe that the model of perfect competition does not meet the constraint, and therefore cannot be taken as an adequate representation of the core or essence of the competitive economy – not even as a hypothetical possibility. The need for de-isolation – that is, the need for incorporating institutional “imperfections” – is ontologically grounded. The idea is not the simple one that these “imperfections” are real and causally influential, and therefore should be included – for example in order to improve the fit of the predictive implications of the model. The idea is rather the stronger one that the imperfections play a necessary or essential role in the working of the world, and that therefore they should play an indispensable role in theory.

No complete account of the workings of the www constraint can be attempted here. I will just list a few features that would appear to be characteristic about it. It is the task of future research to revise and refine these suggestions.

1. The www constraint is an ontological constraint on theory choice. It is to the merit of a theory to meet the constraint, and to its demerit to fail to meet it. Good theories are believed to depict the way the world works
and thereby to make the world understandable to us. Reasons to think
that a given theory has failed to conform to the constraint are reasons
to think that the theory will not help us understand. Economists have
beliefs about the www, and these beliefs serve as, or give rise to, reasons
to think of a theory favorably or unfavorably. Not all economists invoke
such reasons all the time, but some economists invoke them some of the
time.

2. The sources of such reasons may range across a broad spectrum of
ideas, such as the contents of the theory itself, other scientific theories,
metaphysical theories, everyday experience, commonsense accounts, and
systematically gathered empirical evidence. The www constraint on
theories draws upon such sources which may be either explicitly acknow-
ledged or implicitly presupposed. These sources will constitute something
like a hierarchy. On the top, there may be some general metaphysical
visions such as a generic causal process theory (think of Einstein’s
determinism and the locality principle); below it, there may be alternative
more specific metaphysical theories such as versions of the generic causal
process theory at various levels of specificity (think of Salmon’s formul-
ations of the notion of causal process close to the highest such level; and
Richardson’s ideas about competition close to the lowest level). These
may set boundaries within which other sources selectively take over –
such as other scientific theories, commonsense experience, previous
research, and so on. These “lower-level” sources may, in turn, feed back
to the higher-level sources of ontological beliefs.

3. Theorizing involves making choices, including choices between
theories. Every theory candidate includes “unrealistic” elements. It is
therefore never going to be a sound criticism of any given theory to claim
that the theory is unrealistic. However, supposing that all theories are
not equally bad, or equally good, it must be that some elements of
unrealisticness are all right, while some others are less so. The problem of
theory choice is also a problem of choosing between good and bad
unrealistic elements. The suggestion pursued here is that the www
constraint is there to help scientists resolve this choice problem. Putting
the thought in terms of truth, we may say the following. Falsehood is not
sufficient for making a theory bad. Truth is not sufficient for making a
theory good. Yet, truth and falsehood should matter. For them to
matter, we have to be able to distinguish between harmful and harmless
falsehoods on the one hand, and between significant and insignificant
truths on the other. Good theories avoid harmful falsehoods and contain
significant truths. These distinctions are based on the www constraint.
Good theories are true about the www and can survive falsehoods that

are not big enough to stop the world (see Miki 1998e). In our example,
Richardson believes that the assumptions of very large numbers, ato-
mistic firms (price signals in the market being the only vehicle of contact
between them), and perfect information, are harmful falsehoods: under
these assumptions, the competitive economy cannot possibly work.

4. The www constraint is characteristically not able to constrain the
theory choice so that only one unique optimal theory option remains to
be “chosen.” Rather, the constraint typically functions as a weaker
exclusion device: it helps exclude theory candidates which depict the
world in such a way that we have reason to believe that the world does
not function that way, or, more strongly, that it cannot function that
way, or, still more strongly, that it cannot function at all, given what we
know about it. This is the thrust of the arguments against the model of
perfect competition that we have dealt with; they serve the purpose of
excluding the model but do not uniquely determine the best alternative
model. We may say that theory choices are underdetermined by the
ontological constraint just as they are underdetermined by empirical tests
and by various social criteria. We may also say that the three classes of
constraints – empirical, social, and ontological – may combine in various
permutations and with different weights of impact so as to reduce the
degree of overall arbitrariness in theory choice.

5. Among other things, two philosophical positions are involved in this
notion. One is ontic realism: the world and its constituent sub-systems
have a characteristic way of functioning. The solar system, the earth’s
ecological system, the human organism, your computer – they all have a
definite way of working. We may say that they function in the way they
do because they are what they are – because they are made of certain
kind of stuff, because they have such and such constituents and such and
such a structure. We may also say, at least in some cases such as
Richardson’s conceptions about the workings of the competitive
economy, that modal elements are involved: our conceptions of the www
suggest that there are ontic necessities and impossibilities in the world.
This view is ontic realism, since it characterizes a feature of reality. It is
ontic realism, since this feature – the way the world works (or the way it
necessarily works or cannot possibly work) – is supposed to be a
characteristic the world has independently of what we believe of it or
how we represent it.

6. The other philosophical position is theoretical realism: good theories
are purportedly true descriptions of the way the world works. This runs
counter to instrumentalist conceptions of theories according to which
theories are not attempts to capture the inner workings of the world, but rather – and no more than – instruments of organizing data or of attaining some practical goals. The realist will allow for unrealistic assumptions, but will hold that it is inexcusable not to be realistic about those elements that are necessary for the functioning of a given system, while it is permissible and advisable to leave out some others that are not.

In his critique of Coase’s methodology, Posner put forth an instrumentalist view, namely that “[a] model can be a useful tool of discovery even if it is unrealistic, just as Ptolemy’s astronomical theory was a useful tool of navigation [. . .] even though its basic premise was false” (Posner 1993, p. 77). Given Coase’s interest in how the system under study functions, he would not be content with Ptolemaic theory. He would prefer Copernican heliocentrism to the false geocentrism, even if the Copernican theory has many minor details wrong and may therefore fail in predictions. “Faced with a choice between a theory which predicts well but gives us little insight into how the system works and one which gives us this insight but predicts badly, I would choose the latter [. . .]” (Coase 1988c, p. 64). Coase’s rejection of the instrumentalist conception of theories is explicit: “But a theory is not like an airline or bus timetable. We are not interested simply in the accuracy of its predictions. A theory also serves as a base of thinking. It helps us to understand what is going on [. . .]” (p. 64). While bus timetables may help us predict the behavior of buses and thus to serve as “inference tickets,” they fail to give us any idea about the mechanisms and processes that keep buses running as they do. As Salmon puts it, “[a] detailed knowledge of the mechanisms may not be required for successful prediction; it is indispensable to the attainment of genuine scientific understanding” (Salmon 1984, p. 133).

References


For a critique of Posner’s critique of Coase, see Mäki (1998c).
Methodological implications of economic ontology

The way the world works