

ASPECTS OF REALISM ABOUT ECONOMICS

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ABSTRACT: A few aspects of the issue of realism are addressed in the context of a social science. The paper looks for adjustments needed in our conceptions of scientific realism to accommodate some peculiarities of economics. Ontologically speaking, economics appears to be closely linked to commonsense conceptions of the world, thus the problem of theoretical concepts does not emerge in the same form it is often taken to exist in physics. Theory formation is largely a matter of idealization and isolation among observables rather than postulation of unobservables. Given that isolative theories violate the truth in many ways, truth is more of a problem than existence in a realism pertaining to economics. The idea of significant truth -which is able to tolerate varieties of untruths in theories- is suggested to be based on the notion of the way the world works; this is a matter of the causal structure and functioning of the world. None of this is undermined by the acknowledgement that economist' attitudes and decisions are shaped by rhetorical persuasion.

Keywords: Realisms, economics, theoretical concepts, truth, causal process.

CONTENTS

1. The problem of realism and how to tackle it in a special social science
 2. Realism and realisticness
 3. Theoretical concepts and the common sense
 4. Theoretical isolation
 5. Truth and isolation
 6. WWW: The way the world works
 7. Truth and rhetorical construction
 8. Conclusion
- Bibliography

1. The problem of realism and how to tackle it in a special social science

I will start with a few easy observations. Scientific realism is the dominant view in the philosophy of science, and has been so for quite some while. Non-realist philosophies of science are usually presented as responses to this or that formulation of realism about science. Scientific realism is not a

uniform doctrine, it rather consists of a family of different formulations. The problem of realism in the philosophy of science has many aspects to it; alternatively, there are many problems of realism.

Do theoretical entities exist? That is, do theoretical terms factually refer? Do the objects of inquiry exist inquiry-independently? Are the lawlike statements of scientific theories true or false? Are the lawlike statements of successful theories true? Are most current theories true? Does science aim at truth? Should it aim at truth? Is truth non-epistemic, does it transcend evidence and argument? Does acceptance imply belief? Does science converge? Would the success of science be a miracle if scientific realism were not true? The list could be extended much further. Individual scientific realists characteristically answer at least some of these questions affirmatively.

Affirmative answers to questions of the above sort may serve as ingredients in realist accounts of science. They may be construed alternatively as accounts of what constitutes science; or what good science is like; or, more neutrally, what much of science is like. An obvious question arises as to the precise scope of such accounts. What is the scope of scientific realism? What's in, what's out? Is anything in? How much? This is a matter of testing a philosophical theory, so to speak.

One can use a special social science such as economics as one such test case. How does scientific realism fit with economics? At this point it is important to see that we can approach examining the relationship between economics and realism from two points of view. One may adopt a top-down approach: Fix a version of scientific realism as the right one; check whether economics fits; if it does, say 'hooray!'; if it fails to fit, blame economics and insist on its revision so as to improve the fit. One may also adopt a bottom-up approach: Identify a set of generic key features of economics as a science; check this set against a large variety of realist ideas; depending on the outcome, make such realist ideas subject to rejection, adjustment, or replacement by new realist ideas, so as to improve the fit.

It is obvious that the bottom-up approach utilizes the heterogeneity and flexibility of scientific realism in a way that is unavailable to the top-down approach. This is why the bottom-up approach is usually able to accommodate larger portions of economics within scientific realism. The bulk of my own work has been in the spirit of the bottom-up line. In the final section, I will explain why I believe this does not commit me to a complacent attitude with respect to the contents of economics.

Economics has some generic features that appear as immediately relevant for an examination of its compatibility with realism. One is that economics is a social science; it studies materials that are humanly constructed and therefore exist mind-dependently. The other is that most of economics operates with carefully designed models, that is, representations with explicitly formulated "assumptions" most of which are "unrealistic". Many of these models are concerned with equilibrium situations, and they involve fairly strong assumptions about the capabilities and propensities of individual actors. It is models of this kind that have been found interesting and problematic by many philosophers of economics. Yet, they do not exhaust all there is to economics. Indeed, just like scientific realism, economics is not fully uniform. Even though some generic features are broadly speaking shared by all of economics, some others are not. This suggests that a differentiated treatment be adopted in regard to these two sets of features in the endeavour to check the fit between economics and scientific realism.

2. Realism and realisticness

Anybody watching the verbal behaviour of economists will soon make the observation that they have the custom of using the term 'realism' quite frequently. A little more watching will soon reveal that this usage is different from that of philosophers. Economists use the term for the purpose of attributing properties to their representations, such as models and their assumptions. They say things such as "The realism of your model is not very impressive" and "Let's improve on realism by relaxing this assumption" and "Realism should not be an issue; all that matters are predictive implications" and so on. Of course, the adjectival form is very common, too: "I prefer this assumption; it is more realistic" and "There is no need for assumptions to be realistic, provided the predictions succeed" and so on. Thus, economists use 'realism' to denote a presumed property of the representations they employ to talk about the economy.

In contrast, philosophers use the term 'realism' to denote various philosophical theses or theories. They are concerned with a variety of issues, such as existence (of universals, minds, elementary particles, causal connections, possibilities, social structures, mathematical objects, moral values, the past, and so on); relations between the word and the world (as exemplified by the notions of reference and truth); justified knowledge claims (epistemic access to what there is); the goals of science (such as the attain-

ment of informative truth and the provision of causal explanations); and so on.

Comparing the two usages, we may say that, to a large extent, while economists use the term 'realism' to refer to a presumed property of theories, philosophers use it to denote a theory of theories. I have already noted that the expression 'theory' in 'theory of theories' has to be understood in the plural: what we have in philosophy are realist theories (of theories and other things). It remains to be indicated that the same applies to the expression 'property' in 'property of theories': when using words such as 'realism' and 'realistic' economists are commenting on a variety of different properties of economic theories. As a rule, they do not acknowledge the ambiguity of 'realism' but rather use as if it denoted a uniform property.

Thus, two ambiguities characterize the use of 'realism' in relation to economics: one is between a theory of theories and a property of theories as its denotata; the other is between different kinds of properties of theories. The first ambiguity can be clarified by a terminological stipulation; the second can be settled by listing relevant properties that are denoted by 'realism' as used by economists.

The terminological stipulation is this (Mäki 1989, 1998c). Let philosophers keep the term 'realism' and let others, too, use it in roughly the way philosophers use it, namely as a name for certain philosophical theses and theories. Let us suggest that 'realism', as used by economists, be replaced by 'realisticness'. Thus, whenever an economist talks about the "realism" of this or that model or assumption, we may translate this into claims about the realisticness and unrealisticness of models and their assumptions. Thus, realisticness and unrealisticness are the relevant properties of theoretical representations commented by economists and philosophers of economics. The obvious virtue of this stipulation is that we can now more easily raise and discuss questions about how realisticness and unrealisticness as properties of theories are related to realism as a theory of theories.

The second clarificatory move in our pursuit of disambiguation is to list the relevant properties attributed to economic theories by the use of 'realisticness' and 'unrealisticness' (Mäki 1989, 1992a, 1994, 1998c). To give examples, here are some of the ways in which a theory, model or their elements may be said to be realistic or unrealistic: it refers or fails to refer to something that exists; it refers or fails to refer to something that is observable; it is true or false about what it refers to; it is abstract or it is concrete; it is broad, including lots of explanatory factors, or it is narrow,

excluding lots of factors; it captures the most important (e.g., the causally most relevant) explanatory factors or it misses them; it is well confirmed by evidence or it is unsupported or contradicted by evidence; it is plausible or implausible in light of our system of beliefs; it is practically relevant or irrelevant; it is practically useful or useless; and so on. It should be clear from this list that while some of these properties are essentially inter-related (truth and referentiality; practical usefulness and practical relevance), some others are only contingently related (truth and confirmation; truth and plausibility), while yet others are unrelated (truth and observationality).

Having come this far in the disambiguation project, we can then take a fresh look at the issue of realism in relation to the properties of economic theories. What we will see is that some forms of (un)realisticness are conceptually connected to aspects or forms of realism: for example, issues of reference, truth, and causal relevance are so connected. Some other forms of (un)realisticness are evidentially connected to realism at most; the non-miracle argument from technological success for realism provides an example. Questions can be raised about many others, and some of them will be considered in what follows. I will deal with issues related to observationality, truth and falsehood, narrowness, causal relevance, and plausibility. In each case, it will turn out that the connection between realism and realisticness is not as simple and straightforward as it might appear.

3. Theoretical concepts and the common sense

Some economists hold the view that it is a prerequisite of realisticness that a theory is about observables only and avoids employing theoretical terms which do not refer to observables. Paul Samuelson's theory of revealed preference was motivated by this idea: the theory is supposed to be about observable choices rather than unobservable utilities and preferences. This, of course, is in contrast with the realist solution to the so-called problem of theoretical terms in the philosophy of science. The realist in regard to this issue is portrayed as finding theoretical terms both as indispensable and as factually referential, while the instrumentalist is taken to treat them as non-referring expressions and the descriptivist is taken to be one who is keen on eliminating them in favour of statements phrased in observational terms. Thus, to cite the paradigm example, 'electron' is a theoretical term which does not refer to anything observable, yet, in opposition to the instrumental-

ist and the descriptivist views, the realist does not see this as an obstacle to treating it as an expression capable of referring to real electrons and as indispensable for attaining the explanatory goals of science. This means that an espousal of realisticness as observability runs counter to the realist position in regard to the issue of theoretical terms.

The example of revealed preference theory would seem to suggest that much of economics employs theoretical concepts, including those concerning mental matters such as utilities and preferences. This might be taken to suggest that there is an issue of theoretical concepts in economics analogous to what it is conventionally taken to be, say, in physics, and that the realist position involves defending their referentiality and indispensability. Physical theories postulate various unobservables, such as photons and quarks, and the realist is supposed to take them as candidates for reality. In analogy, one may think, economic theories postulate unobservables, such as transitive preferences and rational expectations, perfectly competitive firms and frictionlessly clearing markets, and so on -and the realist is supposed to take them as candidates for reality. But of course, the realist would appear to ridicule herself by doing so: we all know there are no such things as fully informed households, perfect futures markets, and instantaneous market adjustments. Something is wrong with the analogy.

The analogy fails because most of economics does not postulate theoretical entities of the sort we are expected to meet in physics. If there is an issue of theoretical concepts in economics, it is of a different character. Most of economics seems to be dealing only with observables of sorts. Theories talk about firms and households, and their properties such as preferences and objectives, beliefs and expectations; they talk about goods and their prices, costs and benefits, money and market exchange, contracts and property rights, labour and wages, investments and profits, taxes and welfare benefits, inflation and unemployment, imports and exports, and so on. These are entities that are very much part of the stuff of our commonsense experience, unlike photons and quarks.

Consider preferences and expectations. It is in such terms that the generic economic actor is depicted. Preferences and expectations, strictly speaking, are unobservable in the sense that direct sense experience about them is not possible. On the other hand, they are familiar folk psychological entities, articulated in a peculiar manner in standard economic theory and decision theory. It is one question whether this reliance on commonsense psychology has interesting consequences regarding the performance of economics as a science (see Rosenberg 1992; for a critique, see Mäki

1996b). Our focus is on philosophical interpretation and disciplinary comparison. My main point about the presumed analogy is that the analogy should be drawn between beliefs and expectations on the one hand, and trees and tables on the other: it is the analogy between two sets of commonsense entities. Another analogy could be drawn between photons and quarks on the one hand, and neurons and boutons on the other -the latter being neuroscientific posits. There is no such analogy between folk psychological entities on the one hand, and quarks and photons on the other.

We may put one aspect of the point in this way. In the case of photons and quarks, there is an ontological departure from the commonsense realm of tables and trees: there is a difference in kind between photons and quarks on the one hand and tables and trees on the other. In the case of preferences and expectations, firms and profits, households and wages, there is no such departure: no such difference in kind obtains. The ontological furniture of "folk economics" is shared by "scientific economics", while the ontological furniture of "folk physics" is replaced by "scientific physics". Economics does not seem to employ the sort of theoretical concepts we find in physics. (For a more extended argument, see Mäki 1996; for a suggested qualification in the case of macro entities, see Hoover 1995.)

Even if we were to grant that relative to choice behaviour, preferences and expectations are not observables, we may still hold that all of them are commonsense items, or folk items -in some broader sense they are observables. Thus the problem of realism does not take on the form of the standard problem of theoretical terms, nor does the realist position take on the form of affirming the (hypothetical) existence of unobservables. There are other issues of existence involved here -such as the existence of mental states- but they are not linked to the empiricist concern about observability in a broad sense. Economics is largely about observables -or "commonsensibles" as we might put it.

Alas, you will protest, the world as we know it on the basis of commonsense experience is not populated by perfectly competitive and fully informed firms devoid of internal organization, nor with always-in-equilibrium markets, nor with economy-wide representative agents with rational expectations, nor with consumers with complete and transitive preferences, nor ... This remark is well taken. To accommodate the point, we will move on to a brief discussion on methods of theorizing.

4. *Theoretical isolation*

Many of the posits of physical theories are based on postulating theoretical, non-observational entities such as electrons, photons and quarks. Many others are based on modifying entities by way abstraction and idealization -such as mass points and frictionless planes. Most, virtually all, posits of economic theories are of the latter kind rather than of the former. That they are not based on postulation in the above sense is implied by the suggestions of the previous section: there is no problem of theoretical concepts in economics of the sort that has conventionally been taken to exist in physics. (Note that I am ignoring the serious issue of whether there is any well-defined problem of theoretical concepts in physics.)

The suggestion is to view economic theories and models as largely based on what may be called the method of theoretical isolation (see Mäki 1992a, 1993a, 1994, 1996a). In some cases, this method may be considered in analogy with the experimental method: while the experimentalist purports to causally isolate a small system of interacting elements from the rest of the universe, the theoretician uses assumptions to accomplish an imaginary isolation in her model. Physicists and astronomers also employ the method of theoretical isolation when experimental isolation is not feasible. For instance, the planets and the sun are treated as mass points with a velocity but lacking all other features which they actually possess. Within the planetary system, the relationship between one planet and the sun is considered in isolation from all other planets and other features of the situation. Galileo's law of falling bodies -a popular example among economists since Friedman (1953)- is another lucid example of an isolative statement. It isolates the influence of the gravity of the earth on the behavior of a body from all other influences such as air resistance and the pull of other bodies. This is accomplished by assuming that the body falls in a vacuum and that other forces are nil.

These familiar examples indicate that theoretical isolation is often accomplished by using idealizing assumptions which help simplify the situation by assuming that some factor is not present or that some forces happen to be down to zero: the planets and the sun are dimensionless centers of gravity; other planets don't exist or their gravitational pull is zero; there is no air resistance, bodies fall in a vacuum. One can easily extend the list by including familiar examples such as ideal gas, rigid body, frictionless plane, planets moving in elliptical orbits.

The theoretical isolations of economics are mainly among commonsensibles rather than the sort of unobservables encountered in physical sciences. Models of closed economies assume that there are no exports and no imports. Models of the private sector may assume there is no government. Many models of the private sector assume that business firms have no internal organization and do not engage in rivalry with other firms and that they do not pursue innovations about production technology or the goods they produce. Many models of the market system assume that markets clear instantaneously, thus excluding the adjustment process from consideration. Most models assume that actors rationally maximize an objective function, thus excluding other goals as well as failures of rationality. Most models omit gender differences in their portrayal of economic actors.

5. Truth and isolation

I said earlier that the question whether the basic constituents of the economy -firms and households, goods and prices, money and taxes- exist, is not the primary concern in the issue of realism about economics; realism seems to be on the safe side regarding the existence of such constituents. It thus seems that the other major realist issue, that of truth, may adopt the center stage. This would appear to create a problem: realists are supposed to emphasize the importance of truth, but it seems difficult to find truth in economic theories and models.

Many economists tend to think that since any model excludes so much, truth will not be attained. What they have in mind is some idea of "the whole truth" which is being violated by models and theories which are inescapably partial. Indeed, isolative theories are partial in that they focus on tiny slices of reality, thus they violate the whole truth: they do not encompass most factors and features in a situation under study. Any economic model is about the economy rather than the whole of society. Any economic model is about parts of the economy (the labour market, industrial organization, public finance) and about no more than limited aspects of those parts (job search, vertical integration, tax evasion). There is nothing new or strange about this: any model excludes most of what there is. Yet, the question remains of how much of the world a good model or theory should encompass.

A related reason for thinking of models as false is based on putting the issue in terms of their implications concerning empirical phenomena. Since

isolative models cover so little, since they only pick out a small subset of all the causes that influence phenomena, their implications about these phenomena are bound to be inaccurate: what actually happens is a resultant of a number of causal factors among which are those that are not captured by the model. If "the laws of physics lie" (Cartwright 1983), so do the "laws" of economics -even more so, one might suspect.

As a rule, isolative models also directly violate truth in the sense of "nothing but the truth" in that the isolations are based on false assumptions about some of the items involved in the situation: assumptions about their constancy, absense, zero influence, and so forth -most of them false most of the time. It is no news that economists make such assumptions as part of their core activities: the economy is closed, information is perfect, goods and factors are perfectly divisible and substitutable, prices adjust themselves infinitely fast, transaction costs are zero, *ceteris paribus*.

Violations of truth are not intended to be pointless. At least two kinds of rationale can be conceived. One is tractability. The general form of this rationale refers to our cognitive capacities in general: there are limits to the size and complexity of the structures we are able to deal with, thus selective focus and piecemeal reasoning are required.

It simply is not possible to keep any substantial number of the causal links of reality in sharp logical focus simultaneously. We can make such sharpness compatible with adequate scope only by attending to different parts separately and with different foci (Nelson and Winter 1982, p. 52.).

There is a more specific form of the rationale of tractability: certain exclusions and idealizations are required to ensure that a model has appropriate derivational properties, given the mathematical framework in which the model is embedded.

The other kind of rationale is ontological, and it is this that should be specifically favoured by the realist. Economists entertain this rationale, using various formulations. The early pages of economics textbooks is often a good place to look for statements about these matters. Here is a representative example:

A model's power stems from the elimination of irrelevant detail, which allows the economist to focus on the essential features of the economic reality he or she is attempting to understand (Varian 1990, p. 2).

This gives us what we are looking for, provided we interpret 'irrelevant' and 'essential' as designating ontological attributes. It is akin to a principle formulated in his famous essay by Milton Friedman, the man usually accused of anti-realist instrumentalism:

A fundamental hypothesis of science is that appearances are deceptive and that there is a way of looking at or interpreting or organizing the evidence that will reveal superficially disconnected and diverse phenomena to be manifestations of a more fundamental and relatively simple structure (Friedman 1953, p. 33.).

Based on this principle, Friedman's maxim of theory formation prescribes that we should "abstract essential features of complex reality" (ibid., p. 7). By 'abstraction', I suppose Friedman means what we have called isolation (on the relationship between isolation and abstraction, see Mäki 1992a, 1993a). In Friedman's own terminology, it can be understood as a method of isolating the "essential features" or the "fundamental structure" of the economy. Violation of the whole truth is needed in the attempt to "focus on the essential features". This presupposes violation of nothing but the truth about the inessential or irrelevant features in the form of false assumptions about their constancy, absence, zero influence, and so forth.

Even if the whole truth is violated and even if nothing but the truth is violated in the case of relatively inessential or irrelevant aspects of the system examined, truth is not thereby denied the theory's assertions about what are regarded as the essential features of economic reality. More strongly, such violations are needed in order to attain the truth about the essential features. In Friedman's and Varian's terms, one has to "eliminate irrelevant detail" in order to "focus on the essential features" of the economy. In order to be realistic about the latter, economic theory has to be unrealistic about other matters. As Friedman states, it is "more 'unrealistic' in analyzing business behavior to neglect the magnitude of businessmen's costs than the color of their eyes" (Friedman 1953, pp. 32-33; for an interpretation of Friedman as a realist, see Mäki 1992b).

We may conclude that partiality and false idealizations, two major forms of unrealisticness, do not undermine realism, on the contrary. Realism about economics has to allow the use of unrealistic assumptions in these senses.

6. WWW: *The way the world works*

We have argued that plain falsehood does not matter; its presence in economic theories and models does not refute realism about economics. We are equally entitled to claim that plain truth does not matter. What should matter for the realist is significant truth, truth about the essentials of a situation. This idea can be construed in several ways. This section outlines one (see Mäki 1993b, 1998a, 1999).

How do we discriminate between various kinds of falsehood and truth? How do we tell harmful from harmless falsehood, and significant from insignificant truth? We might be able to state quite a few claims about the capacities and propensities of human beings which are close to the truth -but how do we identify those few that are relevant for explaining economic growth, or business cycles? The answer, I submit, lies in what may be called ontological considerations of a specific kind. There is, I believe, a set of ontological constraints helping economists discriminate between the significant and the insignificant.

Consider the positions of Friedman and Varian. They can be interpreted to hold a version of ontological realism according to which what there is divides into two broad categories, namely, "the essential features of the economic reality" which constitute a "fundamental and relatively simple structure", on the one hand, and "irrelevant detail" or the inessential features, on the other hand. This amounts to a series of ontological distinctions held by many realists in the course of the history of philosophy and the sciences. They can be variously formulated in terms of primary and secondary factors, essential and accidental properties, key features and incidental features, major and minor causes, causally more and less relevant factors, and so forth. We may say that significant truths are about the former, while many harmless falsehoods are about the latter.

The controversy over the assumptions of economic theories has often been construed as one between those who are in favor of realistic or at least more realistic assumptions as against those who are satisfied with unrealistic assumptions. It is one of the implications of the above suggestions that I find this construal of the controversy misleading. The real issue is rather about the significance of the truths and falsehoods included. Since all theories contain unrealistic assumptions, the real issue is -and should be construed as- one about the *substance* of those theories and assumptions, namely *what they exclude* as irrelevant or inessential and *what they include* as relevant or essential, and *what they say about* the included items. The issue is

one over rival conceptions of what Friedman termed the "more fundamental structure" of the economy, and of what economists such as Coase and Richardson have called "the way the world works" -the *www* for short (see Mäki 1992b, 1994, 1998a, 1998b, 1999).

The model of perfect competition is a paradigm case of a contested notion. The model depicts a situation where a large number of fully informed firms devoid of internal organization make decisions on the quantity to be produced while taking the price as given. Everybody agrees that the world is not quite like that. The issue is whether the model depicts the essential aspects of the world of competitive economies. While Friedman is among those who have expressed content with the model for many purposes, there are others who believe it distorts the way competitive market economies work, and should thus be rejected. Here is George Richardson:

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 (1960, p. 2; emphases added).

Richardson believes that there are certain "imperfections" -they count as such only from the point of view of the model of "perfect" competition- that simply cannot be excluded if we want to depict the way the world works. The assumption of full information violates this idea:

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 (1960, p. 81; emphases added).

The point is that certain unrealistic assumptions -such as that of certainty and full information- violate the *www* constraint: competitive economies are only able to work provided information is incomplete and there are other "imperfections" in play to help actors acquire the information they need. These other imperfections comprise institutional characteristics such as customs and conventions related to reputation, trust, and various forms of information sharing.

It is a common criticism of a theory that it has unduly missed important factors. The question is to ask, what is it that makes those factors *im-*

portant? Why are they claimed to be *unduly* excluded? Why should *precisely they*, and not some other factors, be included? The answer is that the important factors are necessary for the way the world works. Take away those factors, and you will have stopped the world. You have violated significant truths about the world.

Supposing we take the world's workings to be a matter of causal processes and causal mechanisms being in place (see Salmon 1984), then the thought we are here pursuing is that to miss essential ingredients of those processes and mechanisms is to disable them to do their job in the functioning of the world as we conceive it. This thought combines the realist concerns about truth and existence. A good theory is realistic in the sense that it contains significant truth, that it truly represents the way the relevant domain of the world works -if it captures the major elements of the causal processes and mechanisms responsible for its workings. The realist preference in regard to the issue of existence would be that these causal processes and mechanisms exist, that there is the way the world works independently of our inquiry into it.

Now one may say that it is the aim of theorizing to capture the way the world works. But one may also say that the *www* should impose a constraint on theorizing. The latter idea may be interpreted as involving the notion of an independent access to the *www* in order to compare it with one's theory. This notion can be understood in various ways. One may entertain an idea of some sort of non-conceptual access, and then reject it for good reasons. One may also hold an idea of conceptually mediated access. The outcome would be a conceptually framed outline or vision of some of the key features of the world thanks to which it is able to work, or to work roughly the way it is believed to work. It is this vision of the *www* that provides an ontological constraint on theorizing: candidates for acceptable theory are to be consistent with the *www* constraint.

The conceptual construction of the *www* constraint may draw from a number of sources, such as metaphysical theories and various scientific theories. In the case of economics, commonsense conceptions and everyday experience play a role -as can be expected in a discipline which is so closely linked with the common sense. The relevant experiences concern things such as running a business, buying food and furniture, getting hired and fired, paying one's taxes and exchanging currency. One does not need to invoke the theoretical resources of academic economics to have partial epistemic access to the institutions governing these activities so as to form a vision of how the economy functions, how it all ticks. This is exactly

what Richardson suggests to do: "Let us, therefore, put theory temporarily aside, and reflect on the situation in which the management of a business in practice finds itself" (Richardson, 1995) This is not at all to suggest that folk accounts of the functioning of the economy are reliable or privileged. On the contrary, the main difference between "folk economics" and "scientific economics" may lie in their conceptions about the way the world works -rather than in the basic entities they refer to. They may share the constituents while having different views about how the constituents are causally organised -about how the world works. Consider the invisible hand, one of the most celebrated discoveries of scientific economics: it is a matter of certain causal structures and processes being in place. From the commonsense point of view, the invisible hand is not immediately transparent, it rather represents a paradox (see Mäki 1991, 1996a).

7. Truth and rhetorical construction

We have dealt with one traditional attack on realism about economics, based on the observation that there appears to be little if any truth contained in economic models (and, one might add, those models appear to talk about imaginary worlds rather than the real world). We resisted this view by suggesting that models that involve falsehoods about many details may nevertheless contain significant truths about the real world, in particular about the causal processes constituting the way the world works.

There is another recent attack on realism about economics which should be briefly mentioned. It is based on the observation that theories and models are "socially constructed". This may mean a number of different things, and some of them are entirely harmless from the realist point of view. If we just claim that theories are the product of social interaction between the members of scientific communities (and perhaps others as well), nothing has been said that would threaten scientific realism (see Mäki 1992d, 1993b, 1993c). But if we claim that the truth values of theories and what theories purport to be about are likewise socially constructed, we will have challenged some of the contentions of a standard version of scientific realism.

The work by McCloskey (1983, 1994) on the rhetoric of economics comes close to the anti-realist view (even though it is hard to find full clarity and consistency in her writings on this matter). The idea is that theories are accepted and rejected based on the persuasiveness of the arguments pre-

sented in their support or against them. Persuasiveness is a function of various rhetorical ploys, including the use of metaphors and figures of speech, appeal to authority and tradition, as well as logical proof and statistical test. Truth is a legitimate category, but it is defined as a social -rather than semantic- property of theories. Truth is nothing but persuasiveness subject to some constraints. There are two such constraints that I have been able to identify in McCloskey's writings: a social constraint and a moral constraint. The persuasiveness that matters is persuasiveness among "well-educated" economists or some such, hence the social constraint. The moral constraint requires that the conversation of attempted persuasions conform to the canons of a conversational ethics. Whatever is persuasive subject to these constraints is true. Truth amounts to a socially and morally constrained persuasiveness. (See Mäki 1995.)

My realist response to these suggestions has been to argue that there is nothing in the very notion of rhetoric that would undermine realist ambitions concerning truth and existence. One may pursue significant truths about the way the world works (and succeed in this pursuit) while practicing as much rhetorical persuasion as one wishes. One may retain a notion of truth which is persuasion-independent and argument-transcendent and combine it with the view that economists' attitudes and decisions concerning theories (charm and contempt, neglect and fascination, acceptance and rejection, modification and application) are heavily influenced by various acts of persuasion by their fellow economists and themselves. On this image, rhetoric would only affect the pragmatic properties of a theory (persuasiveness, plausibility, acceptability, reasonability), but not its semantic properties (referentiality, truth). What the realist would hope is that the the social mechanisms -"the marketplace for ideas"- that govern the establishment of those pragmatic properties would be so constructed that they would enhance the attainment of significant truths about the economy. Rhetorical realism is a viable option (see Mäki 1988, 1993c, 1995).

8. Conclusion

The conclusions can be briefly presented. The use of unrealistic assumptions does not require economists to adopt an instrumentalist attitude towards theory. Unrealisticness in assumptions, even in the sense of falsehood, is consistent with realism. What one needs to accommodate falsehood in one's image of scientific realism is some notion of significant truth. Such a

notion was sketched above -and no more than a sketch was attempted- in terms of the ontological notion of the way the world works which in turn was conceived in terms of causal process. Nor does one have to rush to non-realist conclusions upon recognising that persuasion takes place in economics and that the attitudes and decisions by economists are influenced by rhetoric.

The suggestions should not be mistaken for a legitimization of any kind of unrealisticness in any parts of the structure of any economic theory, or any kind of rhetoric for or against any theory. The suggestion is that the basic issues should be reconceptualized and relocated. There is an appearance that economics is detached from the real world; this tends to be part of the public image of the discipline. Representing economics as toying with imaginary models which are inevitably false about the real world, or as true thanks to being persuasive among a selected audience, only serves to confirm this image. In contrast, representing economics as an attempt -or even as a potential attempt- to pursue significant truths about the way the world works will give us a chance to judge economic theories and models as such attempts. Viewed as such attempts, they can be assessed in terms of success and failure which are different and in some ways more ambitious than the notions of success and failure characteristic of rhetorical games.

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