

Explaining modern economics (as a microcosm of society)

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The persistence of mainstream economists with methods of mathematical-deductive modelling that, most agree, do not perform well is something of a puzzle. Here I show this phenomenon to be a special case of (gendered) tendencies in play in society at large, and I offer a psychological explanation.

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1. Introduction

This article is motivated by a puzzle. It has become commonplace to observe that modern mainstream economics is not too successful at providing insight. By modern mainstream economics, I mean that project distinguished by its emphasis, which is more or less an insistence, on the use of methods of mathematical deductivist reasoning. This noted lack of success is not only reported by critics of that project, but widely acknowledged by leading mainstream spokespeople themselves (e.g., Friedman, 1999; Hahn, 1994; Rubinstein, 1995). At the same time, viable alternatives do exist in heterodox contributions (including, for example, Feminist, post Keynesian, Institutional, Marxian, Austrian, Social and Green economics).

The puzzle, then, is why the mainstream emphasis prevails. Given that the persistent failing of the mainstream approach is so widely acknowledged, even by its own proponents, we might expect that the sorts of methods employed should be subject to some critical examination by their practitioners, and even for alternatives to be encouraged. Instead, mathematical deductive modelling remains the dominant, more or less obligatory, and not to be criticised (see below), approach in modern economics.

The emphasis on formalism in economics is hardly a recent development of course. As Tony Lawson (2003, especially chapter 10) has shown, the goal of mathematising the study of social phenomena has been in place for hundreds of years. But Lawson does not really explain why this goal continues to be accepted. The author focuses on the awe of

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mathematics felt by many following its successes in the natural sciences, especially since the Enlightenment.¹ And he emphasises the contribution of this awe as a cultural factor underpinning the original rise to dominance of the mathematical approach in economics. But the continuing insistence on formalism in the face of repeated explanatory failure suggests that a deeper explanation is required.

Such persistence with methods that seem not to be fruitful by their own (explanatory and predictive) criteria would appear to be akin to something pathological. In consequence, the sort of explanation that is likely warranted is one couched not only in socio-historical terms, but further, and more poignantly, in psychological terms.

Here I do advance a psychological explanation. However, I first argue that the noted state of affairs observable in mainstream economics is a particular manifestation of wider tendencies in play in society at large. In suggesting a psychological explanation for the latter, I shall be accounting for the situation in modern economics as a special case.

In the following, I shall first be substantiating my assessment of the state of modern economics. Second, I shall argue that the tendencies observed in the discipline are particular instances of wider ones in society at large. Thereafter, I elaborate and defend a psychological explanation.

2. The explanatory failures of mainstream economics

My first contention, providing an entry point for my analysis, is that much of modern economics is not in a healthy state. It has become disconnected from reality. Moreover, this lack of groundedness is widely associated with the emphasis on tools of mathematical reasoning. Many mainstream economists admit as much themselves.² Fortunately, this literature has been so widely surveyed that I barely need to touch on it here (see especially chapter 1 of Lawson, 2003).

As a quick summary it is worth recapping, perhaps, that the game theorist Ariel Rubinstein, when focussing on the mathematical nature of economics, concludes that ‘Economic theory lacks a consensus as to its purpose and interpretation. Again and again, we find ourselves asking the question “where does it lead?”’ (Rubinstein, 1995, p. 12), whilst Nobel Memorial Prize winner in Economics, Milton Friedman finds that ‘Economics has become increasingly an arcane branch of mathematics rather than dealing with real economic problems’ (Friedman, 1999, p. 137). Similarly, a second Nobel Memorial Prize winner, Ronald Coase, writes that ‘Existing economics is a theoretical [meaning mathematical] system which floats in the air and which bears little relation to what happens in the real world’ (Coase, 1999, p. 2). And a yet further Nobel Memorial Prize Winner, Wassily Leontief complains that ‘Page after page of professional economic journals are filled with mathematical formulas’, and that these lead us from ‘entirely arbitrary assumptions to precisely stated but irrelevant theoretical conclusions’; that mathematical methods are everywhere employed in economics, ‘without being able to advance, in any perceptible way, a systematic understanding of the structure and the operations of a real economic system’ (Leontief, 1982, p. 104).

In summing up this situation Mark Blaug has reason to formulate matters somewhat starkly:

¹ Thus, Lawson writes of the ‘the enormous, almost uncritical, awe of mathematics in modern Western culture. This impetus is a cultural phenomenon pervasive in society at large. The idea that mathematics has a significant role in so many spheres is deeply embedded in our cultural thinking’ (Lawson, 2003, p. 248).

² For a summary account of a heterodox critique of the state of affairs see Jeremy B. Williams (2003).

Modern economics is sick. Economics has increasingly become an intellectual game played for its own sake and not for its practical consequences for understanding the economic world. Economists have converted the subject into a sort of social mathematics in which analytical rigor is everything and practical relevance is nothing. (Blaug, 1997, p. 3).

It is perhaps worth emphasising that, since Rubinstein, Leontief and others made their critical assessments as surveyed by Lawson (2003), mainstream economists can be said to have moved into (or anyway become noticeable within) some new areas, such as information economics and most notably behavioural economics, which even has an emphasis on psychology (Davis, 2006; Elster, 1996). However, explanatory successes are not a notable feature of such developments. And whilst surveys of these recent developments, such as provided by David Colander *et al.* (2004), argue that the mainstream is currently being transformed quite significantly, the finding is nevertheless that the mathematical methodology remains compulsory:

modern mainstream economics is open to new approaches, as long as they are done with a careful understanding of the strengths of the recent orthodox approach and with a modelling methodology acceptable to the mainstream (Colander *et al.*, 2004, p. 492).¹

Thus, whilst the outcomes are not especially successful, the formalistic methodology remains dominant.

3. Explaining the failure

Why does mainstream economics, with its emphasis on mathematical deductivist reasoning, do so badly in terms of illuminating economic phenomena? The most compelling explanation, I believe, is that the world view presupposed by the reliance upon formal methods of mathematical-deductive modelling, including the applied branch of econometrics, is not only counterintuitive, but also inconsistent with what I regard as our best defended conceptions of the nature of social reality.

The point here is that all methods of research carry presuppositions about the way the world is, about its basic structure or nature; that is, they carry an implicit ontology. In particular, mathematical deductivist methods of the sort used by economists presuppose event regularities or correlations, which in turn presuppose a system of isolated atoms.² By atoms here I refer not to entities that are small, but to those that have a separate, independent and constant effect. The system of atoms has to be closed off from external forces to ensure nothing combines (or interferes) with their working, so as to allow event regularity and predictability. That this ontology is presupposed by mainstream methods is both previously demonstrated by Keynes (1939) in his discussion of econometrics, and more recently systematised by Tony Lawson (1997, 2003).

¹ Perceiving an 'elite' within the mainstream that determines which new ideas are acceptable Colander *et al.* also write: 'Our view is that the current elite are relatively open minded when it comes to new ideas, but quite closed minded when it comes to alternative methodologies. If it isn't modelled, it isn't economics, no matter how insightful' (Colander *et al.*, 2004, p. 492). And they add, with reason: 'Specifically, it is because of their method, not their ideas, that most heterodox find themselves defined outside the field by the elite' (Colander *et al.*, 2004, p. 492).

Focussing on the emphasis on psychology specifically, Peter Earl expresses similar sentiments: 'So long as the mainstream paradigm dominates, those who seriously embrace a psychological approach to economics will probably have a hard time placing in "core" journals articles that comprehensively depart from it ... Skilled technicians, such as Rabin, [...] are prepared to play mainstream publication games to get psychological ideas into core journals' (Earl, 2005, p. 918).

² In substantive contributions these atoms usually, though not inevitably, take the form of *homo economicus*.

Yet, social reality (which I take to be that realm of phenomena that depends at least in part on us for their existence) can plausibly be said to be (and many, e.g., Lawson, 2003, defend the contention that it is) of a different nature. Recent contributions to social ontology contend, in particular, that social reality is an open realm of emergent phenomena that are structured in nature, as well as being highly processual and interconnected. In other words, rather than consisting of isolated (or isolatable) ‘atoms’, social phenomena, whether we think of firms, universities, markets, money, human identity, language or whatever, are continuously being reproduced and transformed through practice (this is their mode of being). And they are constituted through their relationships to other social phenomena (employers to employees, teachers to students, money to markets, etc.) with the relationships themselves being continually reproduced and transformed through practice (for a lengthy exposition see, for example, Lawson, 2003, especially chapter 2). Once we are explicit in acknowledging such a conception, the continuing failures of the deductivist methods of modern mainstream economics are not really a puzzle at all.

4. The puzzle that remains

A feature of the situation that does remain a puzzle, however, is the determination of mainstream economists to persist with their deductivist methods despite the continuing record of failure. Frank Hahn seems to capture the sentiment of the discipline when he remarks of any suggestion that the emphasis on the mathematics may be misplaced—that it is ‘a view surely not worth discussing’ (Hahn, 1985, p. 18). In fact, Hahn later counsels that ‘we avoid discussions of “mathematics in economics” like the plague’, Hahn 1992 and he adds that economists are best off not giving much thought to methodology.

My central concern here is precisely to explain the puzzling phenomenon of the continuing failure of modern economics. Why, specifically, does the mainstream of the discipline persist in insisting on methods of mathematical-deductive modelling, even when the latter are continually found to perform badly, and when heterodox economists are able to point to alternative, more fruitful, approaches?¹

As already noted, a preliminary answer has been advanced by Lawson (2003, chapter 10) centring on the awe of mathematics felt by many following its successes in the natural sciences, especially since the Enlightenment. But as I also emphasised, Lawson does not really explain why economists continue to insist on the use of mathematical methods in modern times. After all, the mathematical project has, over the last 50 years or so, become dominant, and yet is repeatedly found to perform badly. In truth, the continuing insistence on formalism in the face of repeated explanatory failure suggests that a somewhat deeper explanation is required.

5. Reconceptualising and broadening the puzzle

Before advancing and defending my own explanation, however, I want to do two things. I want to unpack a little the noted puzzle of modern economics, and also (simultaneously) to show that the puzzle involved is a special case of a phenomenon that is found to crop up in society more widely.

Now the basic puzzle as so far described, to recap, is that economists persist with a particular form of method despite its continuing, and recognised, lack of success. Here I want to elaborate a little on what this situation involves.

¹ Why, I might also add, do other social sciences seem to be attempting to follow the route of modern economics?

Actually, a contributory, but rarely commented upon, further feature of the state of affairs is that mainstream economics is dominated by men. Thus, the gendered nature of dominant modern economic practice is itself something of which I might need to take account in my explanation below. For the time being, however, I want to focus on two further features of the situation in modern economics. These are:

- The widespread view within the economics academy that only those who adopt methods of analysis regarded as proper or legitimate (which happens, of course, to be versions of the mathematical-deductive method) be counted as ‘proper economists’; that those who do not so conform be treated as inferior, and so not be widely published or promoted.¹
- The emphasised content of the proper method, the insistence on mathematical-deductive reasoning in particular.

I now want to consider these two features of the situation of modern economics at length, in each case also indicating how they connect to wider tendencies in society at large.

6. Hierarchy in the economics academy

The first of the two features of the situation of modern economics that I have distinguished is something over and above the preference for formalistic method. It is the widespread insistence that *all* economists adopt the mainstream method (that, as it happens, is one of mathematical-deductive modelling), that, indeed, the application of the one favoured method is the only acceptable approach to economics, and that a reliance upon it is constitutive of what the mainstream supposes economics to be.

Notice that this form of hierarchical exclusiveness is more than being dualistic, although it involves the latter. Dualism tends to involve dividing the world into two mutually exhaustive categories. This actually is a practice widely adopted in economics as Sheila Dow (1990),² Deirdre McCloskey (1983), Julie Nelson (1992), Victoria Chick (1995), Fieke van der Lecq (1996), Roy Rotheim (2002) and Andrew Mearman (2005), amongst others, have often shown. My emphasis here though, is more on the way perceived differences (whether duals or not) are treated. The emphasis of mainstream economists to which I am pointing is that methods other than formalistic modelling should (*a priori* and without argument) be regarded as inferior and effectively excluded. My emphasis, in other words, is on the hierarchy that is created.

Again, this is something that is well documented elsewhere (e.g. by Lawson, 2003, chapter 10, and also see Strassmann, 1994, p. 154), and so I do not need to rehearse the argument here. Instead, I content myself with summing up the situation using the observations of Richard Lipsey (the author of a well known mainstream textbook) who reminds us what happens when mathematical modelling is absent not only from journal submissions, but even from seminars:

to get an article published in most of today’s top rank economic journals, you must provide a mathematical model, even if it adds nothing to your verbal analysis. I have been at seminars

¹ In similar fashion mainstream or mathematical economists perceive a dualistic hierarchy within the social sciences, between economics and other social sciences.

² For example, in her analysis of the thinking that underpins modern economics Sheila Dow suggests venturing ‘beyond dualism’, as ‘one possible alternative to the Cartesian/Euclidean mode of thought which underlies much of mainstream economics and the methodological principles on which this economics is based’ (Dow, 1990, p. 143).

where the presenter was asked after a few minutes, 'Where is your model?'. When he answered 'I have not got one as I do not need one, or cannot yet develop one, to consider my problem' the response was to turn off and figuratively, if not literally, to walk out. (Lipsey, 2001, p. 184)

Basically, according to the mainstream practice I am focusing upon, economists are placed into two categories: those who do mathematical modelling and those who do not. Posts and promotions go mostly to the former. Indeed, terms like 'proper economists' and 'economic theorists' tend to be reserved only for those who engage in formalistic modelling. The contributions and results of heterodox economists, are consequently not engaged with, but put aside as inadmissible.¹

7. Hierarchies in the wider society

At this point, I want to draw attention to the fact that this attitude of unfounded belittling of those who adopt practices different to ones own, is something that takes place in society at large. Whilst dualistic modes of thought themselves permeate the wider society,² my emphasis here is on how perceived or recognised differences are treated, that is, on how perceived differences (whether real or not) are turned into hierarchies (without good reason). Thus, men are largely portrayed (by men) as somehow superior to women, whites portrayed (by whites) as superior to non-whites, indigenous superior to immigrant, 'our' country or culture or religion superior to 'theirs', and so on.

In the context of hierarchies within the academy, it is not without relevance at this point to recall the early (late 1970s and early 1980s) feminist debates around epistemology. The background to these was the impression given by mostly white male scientists that their values and criteria were somehow superior to those held by others (particularly by women) perceived as different. The dominant message of these feminists was that a fuller vision of reality could be attained by drawing attention to gendered locations, that a theorising of gender was a useful way of shedding light on previously hidden aspects of the social process (see, for example, Chodorow, 1978; Keller, 1985). Of course, this feminist response was soon followed by an awareness that further hierarchical dualities (or, at least, white European centred approaches) were inadvertently being created by these second wave feminists themselves around differences of race, ethnocentricity, culture, age, and so forth.

But even in the 1970s and 1980s there was nothing very new about the creation of intellectual hierarchies in which women were placed in subordinate positions. Western thought, dating as far back as the ancient Greek era tends to portray women as limited in their capacity to pursue reason. And this line of thought stretches up through to the Enlightenment period, and still permeates current social scientific enquiry.

This portrayal tends to be rationalised³ in terms of women being embodied, literally, as mothers and further associated, metaphorically, with mother nature, the irrational, the

¹ Even papers like Akerlof's *Market for Lemons* (1970) was originally rejected because of its minimalist use of mathematics, which meant that it was regarded as trivial. Before the paper was eventually accepted by the *Quarterly Journal of Economics* it was rejected by the *American Economic Review* without even a referee's report being sent, because, as Akerlof recounts: the Review 'did not publish such trivial stuff' (Akerlof, 1995, p. 52). It was also rejected by the *Journal of Political Economy*, which at least sent a report. It also went to the *Review of Economic Studies* (on the urging of one of the editors) but 'was rejected on the grounds again that it was "trivial"' (Akerlof, 1995, p. 53).

² Dow in fact argues that 'Dualism has been endemic to a particular stream of Western thought since the Platonic distinction between mind and matter' (Dow, 1990, p. 143).

³ Though, as a referee points out, there are likely numerous additional, including competing, explanations to this attempted 'rationalisation'.

emotional, those aspects of 'womankind' that allegedly prevent enlightened scientific enquiry.¹ Susan Bordo notes, for example, that:

In the seventeenth century [the feminine orientation toward the world] was decisively purged from the dominant intellectual culture, through the Cartesian 'rebirthing' and restructuring of knowledge and the world as masculine. (Bordo, 1987, p. 100)

Needless to say, a serious historical examination quickly reveals that female scholars were never, in practice, the sort of irrational 'objects' depicted in western thought. And, of course, female scholars have critiqued the value structures propagated by male-dominated communities, not least their ranking of, and attributing hierarchies of values to, ways of being.²

I note, too, certain further tendencies that I take to be the wider responses to dualistic ranking in the academy. These are the emergence and reproduction of social relations and conventions everywhere that institutionalise the idea of (ungrounded) supremacy and allocate unequal opportunities to some over others. Thus, typically, men are advantaged over women, white advantaged over black, etc.

To sum up, then, my point is that the unreasoned (and seemingly debilitating) tendency in modern economics to create seemingly ungrounded hierarchical dualisms is but a particular instance of the behaviour that can be observed in society more widely. In seeking to explain the wider societal practice, I hope to account for the relevant aspect of the behaviour of mainstream economists as a special case.

8. Mathematics or prediction in the economics academy?

The second feature of the situation of modern economics distinguished is the emphasis on mathematical deductive modelling itself. This is something I now want to unpack a little. I am, as I say, entirely convinced by Strassmann (1993), Nelson (1996), Lawson (1997), Colander (2000) and others, that the emphasis of modern mainstream economics is upon the use of methods of mathematical modelling. It is also clear that the drive to mathematise

¹ Philosopher, physicist and mathematician René Descartes, along with many Christian and other male scholars, believed in the independence of mind and body. The body constitutes a non-essential and unnecessary feature of the essence of being (the latter being 'thought'). This is also known as 'Cartesian dualism'. To arrive at this conclusion, Descartes combined (in *Discourse on Method for Reasoning Well and for Seeking Truth in the Sciences*, 1637) two observations he thought had to be true: 'I think, therefore I am' and the idea that human beings were 'a substance the whole essence or nature of which was merely to think, and which, in order to exist, needed no place and depended on no material thing'.

² These structures are underpinned by a concern (of some) to be separate and controlling (of others) that feminists reject. I will have much to say on this further on in the paper. For the time being, I merely record that feminists, of course, seek not to reverse the hierarchical orderings, but to reject ungrounded hierarchies outright. In the context of modern economics the feminist position is well summarised by Julie Nelson (in her plenary address at the conference of the *International Association for Feminist Economics* in January 2001): 'Feminist scholarship does not suggest, as some infer before they engage with it, that one should turn the tables and reject, say, reason in favor of emotion. Rather, it has sought to redefine our epistemological understandings in ways that are more adequate to the search for knowledge, and less hedged around and distorted by an unreflective emotion-based psycho-sexual urge to be *separate and controlling*, by the backlash feeling that anything else is (in a telling choice of words) "impotence" (for example, Gillott & Kumar, 1997, p. 38). An important concept is what Keller (1985) called "dynamic objectivity" or what Harding (1993) called "strong objectivity": our ability to reach beyond our own subjective experience in claiming knowledge starts not in a stance of mythical detachment, but with an understanding of our own position and location in the world. At the level of epistemology, feminist theory suggests that the reliability of our knowledge is tested in the give and take of expanding communities, rather than assured by the adherence of the individual researcher to specified methods (Longino, 1990) ... that alternatives exist which, in place of control and domination, recognize mutuality and "personal power".' (Nelson, 2001, my emphasis).

the discipline has been in place for a very long time. However, I believe that one, and probably the most compelling, reason why the emphasis on mathematical-deductive reasoning is retained, despite everything, is that it facilitates a second orientation that is conceptually separate.

This is a concern with forecasting or *prediction*. Successful prediction has long been viewed as the primary goal of a respectable science, and economists are keen to be seen as scientists. The possibility of successful prediction relies on the occurrence of closed systems, those in which event regularities occur. And these, of course, are also precisely the required conditions for mathematical deductive reasoning to be practically useful, conditions therefore effectively presupposed by the (ubiquitous) reliance upon such methods.

In fact, it is possible that some economists associated with the mainstream believe (or anyway hope) that event regularities are a frequent occurrence in the social realm (thus facilitating event prediction) without being overly supportive of the insistence on the use of mathematics, always and everywhere. And this does seem to be the explicit orientation of a few. For example, Friedman complains that ‘Economics has become increasingly an arcane branch of mathematics rather than dealing with real economic problems’ (Friedman, 1999, p. 137). But this apparently sits alongside his firm belief in the centrality of the role of prediction. Indeed, in his famous methodological essay of 1953 Friedman writes explicitly:

The ultimate goal of a positive science is the development of a ‘theory’ or ‘hypothesis’ that yields valid and meaningful (i.e., not truistic) predictions about phenomena not yet observed. Theory is judged by its predictive power. (Friedman, 1999, p. 7)

Of course, it is conditional (not unconditional) prediction that economists are concerned with. If the rhetoric ever suggests otherwise, the seemingly unconditional forecasts in fact are implicitly backed up by event regularity formulations of the ‘whenever x then y’ sort, with the independent variable x assumed known and possibly under the agent’s control.

One way or another then successful prediction seems to be an accepted goal of modern mainstream economists, one implicit in the widely acknowledged emphasis on modelling.¹

9. Prediction more widely

Once more, the feature that we find in modern economics can be shown to prevail in society more widely. In particular, it is a feature of academic science and philosophy. For when we focus on the closed systems or event-regularity presupposed by modern

¹ Perhaps this will seem less true of so-called (pure) theorists who practice a form of mathematical deductivist modelling where empirical evidence is rarely sought. These ‘theorists’ do adopt the first noted tendency, that is they insist that what they are doing is superior to the practices of others in the economics academy. But in truth members of this group also orientate themselves to the goal of successful prediction. Thus, the axioms adopted take the ‘whenever this then that’ structure and typically serve to relate variables expressing types of events or states of affairs. And the models constructed are made available to econometricians who are expected to use ‘data’ to determine specific values of model parameters, and so forth. Even those like Frank Hahn, who seem sceptical about the uses of econometrics, ultimately take axioms to be justified claims about actualities of the social world, about events, etc., that actually occur: ‘It is not that [axioms] . . . are divorced from experience or observation but rather that they mark the stage beyond which one does not seek to explain’ (Hahn, 1984, p. 6). Elsewhere, and more generally, Hahn writes: ‘For I do not wish to deny that there are empirical regularities of economic behaviour awaiting discovery. But I claim that these will be, as it were, much deeper down, more elementary and closer to the form in which axioms are postulated than are the complex, institutional and history dependent “facts” of the econometrician’ (Hahn, 1984, p. 332). And elsewhere: ‘Axioms are not plucked out of the air and far from distancing the theorists from what somewhat mysteriously is called the “real” world, they constitute claims about this world so widely agreed as to make further argument unnecessary’ (Hahn, 1985, p. 5).

economists in their pursuit of successful predictions, we can also see that this resonates with the wider theory of knowledge systematised as positivism (drawing on Hume's empiricism) that dominated twentieth-century philosophy. Though modern mainstream economics is not a form of positivism, not least because it commits itself to the existence of unobservable phenomena (such as tastes, equilibria or utility), the two are united in presupposing that closed systems (supporting event regularities and predictions) occur in the social scenarios under study. Let me briefly elaborate.

Positivism, of course, was a force that influenced society at large. Auguste Comte (1798–1857),¹ who coined the term, identifies three phases in social progress: theological, metaphysical and positive (or scientific). The third of these stages, the positive era, is one in which all abstract and obscure forces are discarded and natural phenomena are explained in terms of law-like regularities connecting observable events (regarded as causal laws).² Furthermore, positivists advocate that natural scientific enquiry (construed in this particular way) be applied equally to social scientific enquiry. On this conception, societies, like nature, are thought to operate according to mechanistic laws.

In fact, we can view the rise of positivism as part of a broader development connected to the Renaissance (1450–1600), the Scientific Revolution (1600–1687) and Enlightenment (the mainstream thought of eighteenth-century Europe and America). Fundamental to this development was the notion that the universe was ordered and predictable. Here we need remember just a few of the central contributors. For example, the French philosopher, mathematician and scientist René Descartes (1596–1650) pioneered deductive reasoning, publishing *Discourse on Method* in 1637. The observations of German astronomer Johannes Kepler (1571–1630), Italian astronomer, mathematician and physicist Galileo Galilei (1564–1642) and the work of English mathematician and natural philosopher Sir Isaac Newton (1643–1727) were all held as legitimising evidence that successful scientific theory should be coupled with rigid experimentation. We might note too the related empiricism of the English philosopher, essayist and statesman Francis Bacon (1561–1626) and his defence of inductive method.

All these contributions, and others, gave credence to the idea that the lynchpin of science is successful prediction. As I say, I am not questioning the attachment of modern economists to formalistic methods. But once we examine the academy more widely, we can see that an emphasis on predictability, or (implicitly) closure, is in fact the dominant concern. From this perspective, we can more easily see that mainstream economics is a mathematical special case, where the mathematics and the world it presupposes allow for prediction.³

We can see, too, how the desire to predict is manifest outside the academy, in other institutions. For example, we can note the emergence of economic or financial consultancies, and such like, and the status or high prestige (or nowadays high fees) of those who set themselves up as experts in foreseeing the future (such as, financial analysts, or business gurus).

¹ Comte also coined the term *sociology* and is usually regarded as the first sociologist.

² Halfpenny's writes of positivism, that it 'is often taken as the embodiment of modernity, the vehicle that promised to deliver the fruits of the enlightenment to all disciplined human thought. Carrying such a baggage, positivism is notoriously difficult to define. Nevertheless, a quick characterisation for current purposes is provided by the deductive-nomological (d-n) schema: a satisfactory explanation is achieved when the explanandum is deduced from the combination of one or more laws and a set of initial conditions (Hempel, 1942). Even this simple schema can be extensively elaborated by varying the characterisation of laws that are central to its operation' (Halfpenny, 1997).

³ In sum, it appears, the orientation to prediction prevails, whether in abstract models or applied in econometrics, whether conditional or unconditional, and whether with or without insistence on the use of mathematics.

If social reality is open, successful prediction, even of a conditional sort, is likely to be a rarity with respect to actual events or outcomes.¹ When Lawson criticises the mainstream approach from an ontological perspective, he emphasises alternative dialectical procedures. But those like Friedman cannot go this far, because the desire to predict dominates, even when the (excessive) insistence on mathematical reasoning is questioned.

In short, it is clear that an important concern sustaining the emphasis on formalism in economics is the implicit commitment to seeking successful predictions. In that this commitment is not only revealed more widely in society at large, but also constitutes an unreasonable criterion of social scientific success, I shall seek to explain it in what follows.

Finally, I earlier briefly noted the additional feature of the situation of modern economics, that the mainstream practices that I am seeking to explain are pursued within a project that is dominated by men. As the discussion above suggests, we might now also note that in society more widely both the emphasis on prediction, as well as the construction of *hierarchical dualisms*, is more characteristic of one gender than another, namely of men than of women.² *Prima facie*, then, if there is a psychological explanation of the puzzling state of affairs before us, it will likely need to focus on ways in which the (psychological) development of men and women is systematically different.

10. Taking stock

In summary, with a bit of reflection we can see that the puzzle with which we started, namely the persistence of economists' practices that appear ungrounded, has aspects that find their counterpart in various activities found in society more widely. Specifically, there are two enduring tendencies in all spheres, and certainly within the academy, pursued especially by men, which can be seen to encompass or generalise the puzzling features of modern economics. These are:

- A tendency to create hierarchical dualisms between the self and others, between practices in which 'we' engage and those in which 'others' engage.
- A tendency to pursue practices that suggest that we believe we are in charge of the future, and most pervasively that we can predict what is going to happen.

Both sets of tendencies involve the construction of fantasies. First, the dualisms created mostly do not capture warranted hierarchies. To repeat, all things considered, mathematics is not universally superior to other (non-mathematical) approaches in economics, men are not superior to women, nor whites to blacks, calculative reason to emotion, employers to employees, indigenous to immigrant, 'our' religions to those of 'others', etc. Second, the idea that we can predict the future (at least in the ways the economists suppose) is not borne out in practice in the open world in which we live.

¹ Whilst our ability to successfully predict actual outcomes is mostly lacking in the social realm, we can nonetheless identify tendencies at work, even when outcomes themselves remain uncertain (see Lawson, 1997, chapter 20).

² Since I am seemingly accepting a particular hierarchical dualism of sorts here myself (though hopefully not adopting an orientation of reducing reality to hierarchies), it is important to emphasise (as in the passage above) that I use the terms 'man' and 'woman' to denote gendered (that is, socially 'constructed') subjects. For (claims about) differences that are biological I refer instead to male and female subjects. The distinction between sex and gender on which this conception builds derives originally from the work of the psychologist Robert Stoller (1968) who first formulated it to differentiate the socio-cultural meanings ('masculinity' and 'femininity') from those of biological sex differences ('male' and 'female') on which they were erected (see Oakley, 1972).

Let me refer to these noted fantasies as the *fantasy of supremacy* and the *fantasy of prediction*, respectively. My argument so far can be formulated as the contention that the fantasies of supremacy and prediction are tendencies in play in society at large, and that the situation of modern mainstream economics is but a special case.

If we look to the economics academy specifically, we have on the one hand a resulting state of affairs in which one approach to research is prioritised over all others, a situation, that is, of *epistemological domination*. On the other hand, we have a situation in which that epistemic approach is prioritised largely because it is thought to enable us to predict an open and unpredictable future, a situation, that is, of *ontological delusion* (or *inherent omniscience*).

I now need to explain the tendencies I have identified, and show why they persist. I also hope to account for the further observation that they appear to be pursued first and foremost by men. This is the set of the tasks that I undertake below.

Before embarking on them, however, I should briefly acknowledge that I am not the only one to seek a deeper explanation of the state of modern economics, looking in particular to psychology. The literature goes back at least to Peter Earl's (1983) *The Economic Imagination: Towards a Behavioural Analysis of Choice*; and includes Dow and Earl's (1984) methodological work, as well as Dow's output on dualistic thinking in economics (Dow, 1990), and also Victoria Chick's (2003) explicit linking of psychology to the teaching of economic methods that presuppose open and/or closed systems.

Psychologically oriented research of this sort also includes more recent feminist contributions to the discussion, and in particular Susan Feiner's (2003) argument for an 'erotic economy of sharing'. Whilst my own explanation shares a good deal with some of these, none of the latter, I believe, yet goes far or deep enough. Nor do they necessarily (and I shall return to them later in this paper) share the same goal or assessment of the nature of the problem.¹

Finally, at this point, I should also note that, although I have presented Lawson (2003) as focusing on the mathematical component of the mainstream, and this indeed has been his primary emphasis, his contribution, in truth, in some ways anticipates my own. For he asks:

is there also a deeper psychological explanation, turning, perhaps, on a fear of accepting the openness of society (and indeed of reality in general), the consequent fact of pervasive and fundamental uncertainty, and so the limited scope for predictability in life and thereby for control over what happens? And, if the latter putative psychological mechanism is at all contributory,

¹ For example, like me, Susan Feiner (2003) views mainstream economics as a highly gendered (masculinist) project. But she does not see the puzzle before us in quite the same terms as I do. Feiner calls for a psychoanalytical *reading*, when I seek a psychological *explanation* for the phenomena at hand, the fantasies of supremacy and prediction I have just described. Thus, she suggests: 'A psychoanalytic reading . . . sets the stage for a new, feminist understanding of economics which has the potential to recast the human activities of production, distribution, and consumption as relations of sharing rather than as relations of exchange. For the ability, capacity, and will to share are a loss long mourned' (Feiner, 2003, p. 180). Moreover, Feiner is concerned that modern economics legitimates hierarchical dualisms and 'constitutes "a system of hierarchical domination"'. Thus, according to Feiner: 'neoclassical economics in both scholarly and popular forms plays an important role in the reproduction of market-driven, male dominated society. It is not adequate to end with the recognition that neoclassical economics legitimates, justifies, or rationalizes inequalities of class, gender, and race. Instead, we must press beyond this to understand how this system of ideas and symbols constructs and constitutes "a system of hierarchical domination"' (Feiner, 2003, p. 181). In my own line of enquiry, however, I conceive of modern economics as dominating, because of its rejection of other, non-mathematical, approaches to economics. The 'rationalization of inequalities of class, race and gender' are then largely the result of the emphasis upon formal methods of enquiry, methods which (because of their ontological presuppositions of atomism and closure) are ill equipped to deal with the (relational) complexities of inequality.

there arises the interesting supplementary question as to whether, as some suspect, its influence is significantly gender-differentiated. I postpone setting out my own answers to questions such as these to a further occasion. (Lawson, 2003, p. 281)

My own explanatory contribution thus effectively starts where Lawson's leaves off.

11. Towards an explanation

The phenomena with which I am concerned are seemingly unreasonable, almost pathological, traits. My contention is that their explanation, in large part, is psychological, and bound up with early (gendered) modes of individual (infant) development. Thus, it is to the topic of infant development to which I now turn. I start, though, with that part of the child development that applies to both genders (I will turn to gendered differences in experiences in due course). I should give notice here that I must spend some time developing features of psychological theory that (it will turn out) are relevant to my explanation, before being able to show how they can account for the puzzling phenomena before us.

The psychological framework of analysis that I take to provide the best grounded account of identity formation is object relations theory. According to this theory (see, e.g., Chodorow, 1978; Greenberg and Mitchell, 1983; Klein, 1948; Kohut, 1971; Winnicott, 1953) we are, from early on, relation-seeking creatures (rather than pleasure seeking ones as Freud and others supposed). As infants, and as we move through life, we forge our identities as we seek to establish close relationships with significant others ('objects').¹ These relationships, then, prove fundamental to our self-development.

According to this conception, the infant from birth is, first of all, attachment seeking. It is at this point that the basic capacities for attachment and trust are laid down. Even so, there is little structure or differentiation: the 'I' is not yet differentiated from the 'not-I'. According to Althea Horner (1984), at the earliest part of this phase:

The undifferentiated images of self and object are not yet integrated, with disparate images existing side by side. Instead they are organised on the basis of the predominant feelings that go with the interactions between the self and the primary caretaker. (Horner, 1984, p. 76).

Soon enough though, the infant becomes attached to the mother (or primary care giver). In fact, the essential feature of the very early phase appears to be something like hallucinatory fusion with the (representation of the) mother (or primary care giver). That is, the child is under the 'illusion', best thought of as a delusion,² of oneness to the point of sameness with the mother. As Nancy Chodorow (1978) argues, the infant makes no differentiation

¹ The term 'object' was employed by Sigmund Freud to express anything towards which an infant directs drives for satiation. Since Freud, objects relations theorists such as Melanie Klein (1957), Erik H. Erikson (1950), Donald Winnicott (1953), W.R. D. Fairbairn (1963), Otto Kernberg (1966) and Heinz Kohut (1971) have found that humans, in order to forge their identity, have a primary need to establish relationships (giving direction to other [libidinal and aggressive] drives).

² David A. Gershaw summarises the distinction between illusion, hallucination and delusion in the following terms: 'An illusion is a misleading perception, usually visual. You see something, but you consistently misjudge its length, shape, motion or direction. To avoid further confusion, illusions are distinctly different from hallucinations—which involve sensing something that is not actually present. In contrast, illusions deal with stimuli that are actually present, but they are misinterpreted or hard to interpret ... On the other hand, a delusion is a deeply held false belief that is maintained—even when other information contradicts the belief. The contradictory information is either ignored completely or discounted in some way. Many prejudices rely on stereotypes that apply to a small minority in a group, but these stereotypes become delusional when they are used to judge *everyone* in that group. Beside race, religion, sex, ethnic group and nationality, occupational and age groups can develop stereotypes.' (Gershaw, 1998).

between its needs and the ability of the mother to fulfil them. As such, the infant has no notion of other(ness), or of difference. David Tishkowsky (2006) presents a similar view:

If the child is hungry, [it is] fed by the mother. If the child is distressed by a stranger, [it] is comforted by the mother. The child experiences a moment of illusion anytime [its] wishes and desires are met by the mother. (Tishkowsky, 2006)¹

If the infant's delusion is that the mother is an extension of itself, this amounts, in effect, to the infant having a sense of its own omnipotence (or total control). During the first three months of life, the breast or the bottle belong to the self.

The mother (or prime carer), however, cannot remain omnipresent, and she gradually withdraws her continuous and immediate response to the child's needs. At this point the infant begins to develop an awareness of its dependence on another. Gradually, the child establishes a sense of self through an expanded awareness of its own physical self. The infant begins to differentiate itself from the mother, as it becomes less dependent upon her.

There are two aspects to infant development and personality formation that warrant distinction here: the process of acquiring an awareness of some *other*, and the process of acquiring an awareness of being *dependent* (on that same other). Both bring a sense or awareness of separation (by which I mean coming to differentiate and recognise difference).² In the former case, the separation is from the other; in the latter case, the separation is from life eternal (in opposition to a perceived state of invulnerability and ultimately immortality).

Psychoanalytic theory is replete with assessments of how the processes of gaining awareness of (i) difference and (ii) mortality are anxiety provoking as the infant necessarily senses its lack of total control. The outcome, typically, is that the original delusion is (often painfully) replaced with a more realistic relation to the world (Mitchell and Black, 1995; Tishkowsky, 2006). But the process is one that is potentially traumatic and inhibiting (see, e.g., Freud, 1933; Klein, 1948; Kristeva, 1998).

A point central to my analysis here is a feature that psychologists have long recognised, namely that where anxiety is induced, the infant will tend to produce *coping* or *defence mechanisms* allowing the individual to regain a sense of control³ (see for example, Bordo, 1987).

In this regard, object relations theory identifies transitional objects as an important form of coping mechanisms. The theory emphasises how the developing child sooner or later finds, and becomes attached to, 'substitutes' or 'transition objects',⁴ enabling it to re-establish some sense of control.⁵ At first, transitional objects act as 'mother substitutes',

¹ This state Freud also refers to as 'primary narcissism' (Freud, 1914).

² I emphasise this because, of course, various philosophical and religious theories maintain that we are all always relationally connected, and in that sense share a oneness of sorts. I do not need to take a stand on this issue here. When I use the term separate from others I mean differentiated from, and not reducible to (or the same as), others. I remain sympathetic to the idea that we are at some level always connected, and in that sense share a oneness.

³ Indeed Bordo is explicit that where 'there is anxiety, there will almost certainly be found a mechanism of defence against that anxiety' (Bordo, 1987, p. 75).

⁴ Here I am drawing in particular upon the 'British School' of object relations theory associated especially with Donald Winnicott (1953).

⁵ According to S. A. Mitchell and M. J. Black, the transitional object 'cushions the fall from a world where the child's desires omnipotently actualize their objects to one where desires require accommodation to and collaboration of others to be fulfilled' (Mitchell and Black, 1995, p. 128).

providing a form of reassurance. Such ‘objects’ may include both people (perhaps the father or professional carers) and things (such as toys, pets, clothing, etc.). Eventually, (possibly changing) transitional objects and the developing child’s relationship with them are incorporated into a self as building blocks¹ of the self-system (Winnicott, 1965).

The resort to these coping mechanisms are not restricted to infant experiences of anxieties. As we grow older, we tend actively to reproduce those relations with (self) objects that forge our identity, providing a form of reassurance (a frame of reference) at all stages in life. In this regard, object relations theorists describe

a course of transactions between self and other(s) that help form our first subjectivity and sense of self, and [. . .] throughout life are renegotiated to recreate the sense of self and others in term of connection, separation and in between. (Chodorow, 1978, p. 10)

On this conception, it is our interactions with significant ‘objects’, that come to shape our personalities, where the process of identification with (parts of) objects (including people) is the crucial means by which we come to ‘live out’, express and accept the processes of differentiation between ourselves and others, and between life eternal and mortality.

12. Dealing with extreme forms of separation anxiety

The process of separation, of gaining the awareness of other(s) and our mortality, can be more or less traumatic or anxiety inducing. Sometimes it is especially traumatic. How does the infant deal with this?

I have already mentioned how coping mechanisms are produced to deal with situations of anxiety. These mechanisms are basically attempts to *control* any given scenario in a manner, or to a degree, such that the trauma is not so much alleviated (or overcome) as *avoided*. The individual, however, always treads a fine line, as there is no guarantee that, in a world that is open, inherently relational and unpredictable, control can be maintained (paradoxically, it is when control is lost that the possibility to *resolve* earlier traumas arises).

Now these coping mechanisms take varying forms and, especially in severe cases, some such forms may be more extreme than others. A specific example of relevance here is the resort to fantasy,² and in particular fantasies involving either denial of, and/or control over, features associated with the source of the anxiety (Kernberg, 2005),³ or with what has been ‘lost’ (Morgan, 1999; Rosenfeld, 1987).⁴

¹ Kohut uses the idea of self object as vital building blocks for the infant to create a sense of self in the face of separation. But the same object can be *distorted* and lead, precisely, to the feelings of grandiosity that inhibit realistic and tolerant relation to what is ‘other’ or different, setting up instead an equally distorted version of one’s relation to the world. In Kohut’s words, the ‘equilibrium of the complete security of the child is disturbed by the inevitable limits of maternal care, but the child replaces the previous perfection (a) by constructing a grandiose and exhibitionistic image of the self, the grandiose self, and (b) by assigning the previous perfection to a venerated, omnipotent (transitional) selfobject, the idealized parent imago’ (Kohut, 1971, p. 43).

² The term fantasy, in opposition to imagination, has been used by some to denote delusion or a denial of reality (see especially, Murdoch, 1977).

³ Otto Kernberg describes the role of controlling objects in dealing with fear: ‘At a further level of development, the wish to make the bad object suffer shifts into the wish to dominate and control the bad object in order to avoid fears of persecution from it; now obsessive mechanisms of control may psychopathologically regulate the suppression or repression of aggression’ (<http://www.toddlerstime.com/dx/borderline/bpd-kernberg.htm>).

⁴ In her discussion of Rosenfeld, Mary Morgan (1999) points out that the difficulty and failure to recognise separateness can lead to distorted relations with objects, where, moreover, such objects are being controlled to ‘dissipate anxiety’.

In the case where the severe difficulty or trauma arises from separation from others, the result of the consequent anxiety may be a depreciation¹ of the former source of dependence, and, more generally, a depreciation of the other.² Typically, this involves a distortion of (a denial of the true nature of) the difference between the self and the other, as a first form of fantasy.

In the case where the severe difficulty or trauma arises from gaining a sense of mortality, the result of the consequent anxiety may be a denial of mortality by way of pretence of control over the future (typically taking the form of making predictions expected to be successful),³ as a further form of fantasy.

From infancy onwards, memories of anxiety provoking situations are often 'stored' (repressed) in the unconscious (Freud, 1933). And when these are recalled or triggered, they are (again) anxiety provoking. Indeed, there is a tendency, if not a compulsion, to repeat initial anxiety provoking situations throughout adult life.⁴ This occurs as the individual tries, over and again, to overcome the aspect of the situation found to be distressful, in the (typically unconscious) hope of finally being able to deal with them.⁵

Thus, to the extent that anxiety inducing processes have impeded the 'stable' development of the infant's personality and the yielding of an accomplished sense of self, early experiences of lack/loss of control will tend to be repeated and re-enacted throughout the individual's life (as long as the earlier trauma is 'successfully' kept at bay). In such cases, the various symptoms—the adoption of particular objects, relations or attitudes—usually indicate attempts to resolve earlier traumas by way of coping mechanisms for seeking control over others and/or the future.

And in cases of extreme trauma, the two above noted fantasies—involving a distortion of the true nature of the difference between the self and the others, and/or a denial of mortality by way of pretence of control over the future—can themselves be reproduced. It is important, of course, not to be overly deterministic here. Individuals can overcome early traumas. However, the deeper the trauma, and the older the individual, the more difficult this tends to be.

¹ Mary Morgan puts it quite explicitly: one 'of the main aims of projective identification is to get rid of unwanted experiences and aspects of the self, whether good or bad, and to control the object now identified with these split off parts of the self. In the course of normal development the infant grows and develops a stronger ego which then makes possible the recognition and taking back of projections. As a result of this process both the individual and other objects are experienced as more whole and separate' (Morgan, 1999). Where stable development is impaired however, the projections remain in place.

² Note that in rejecting the mother, the infant rejects part of that which it had come to think of as an extension of itself. This process leads to a 'splitting', a separating out of the 'good' and the 'bad', attributing good and bad features to whole or part of objects and/or persons (perceived as an extension of itself, whether the mother, the breast, the teddy bear and so on). It will repress/reject those features that it perceives as threatening (and therefore bad), and introject those that it perceives as self enhancing (and therefore good). The result is that the depreciation is not only towards others, outwardly, but necessarily and simultaneously towards it or the self. The inward or self depreciation only serves to amplify the rejection of otherness as a threatening reminder of what it refused to keep as a part of its identity.

³ Control is here the more general coping device, the feelings of vulnerability that arise in the face of uncertainty about the future may be reduced by attempting to predict it. Note that attempts to control others (for example, by classing them as inferior, and so to be placed under one's authority), as a way of controlling outcomes, may similarly (appear to) reduce uncertainty and vulnerability. Thus, control over the future and control over others are mutually reinforcing.

⁴ In Freud's words, the person is doomed to 'repeat the repressed material as a contemporary experience [instead of] ... remembering it as something belonging to the past.' (Freud, 1920).

⁵ Margareth Bergman explains the compulsion by stressing the need for resolution: '...old, partially unresolved sense of self-identity and of body boundaries, or old conflicts over separation and separateness, can be reactivated (or remain peripherally or even centrally active) at any and all stages of life' (Bergman, 1975, p. 83).

13. Psychological development as explanation

Here then we have an explanation of the phenomena we are seeking to understand. For the coping mechanism involving the distortion of differences and the rendering of them as hierarchical is none other than the *fantasy of supremacy*. And the coping mechanism involving a denial of mortality by way of pretence of control over the future is in effect the *fantasy of prediction*.

Both coping mechanisms basically work by allowing the individual to feel 'in control'. They serve to compensate for the loss of control that derives from the recognition of, first, different others and, second, mortality. In the former case, the emergent fantasy entails demeaning different others, thereby rendering the differences somehow less threatening. In the latter case, the fantasy entails treating the future as open to manipulation, thereby rendering our mortality somehow less real.

The puzzle of modern economics with which I started, as I say, can clearly be seen as a particular manifestation of the fantasies in question. First, the emphasis of mainstream practitioners on the unquestionable superiority of their methods, and (so) output, over any heterodox alternative is a particular example of the fantasy of supremacy. Second, the emphasis on formalistic economic modelling, is a playing out of the fantasy of prediction¹.

14. From fantasy to reality

Where the coping mechanisms adopted to deal with the traumas of separation produce fantasies, the unreal nature of these fantasies does not preclude consequential material developments in conformity with, or even due to, their occurrence. Marks of difference (skin colour, gender, age, etc) are thus used to allocate individuals to different positions in social hierarchies, where the fantasy of supremacy becomes socialised into wider culture, and results in the oppression of certain groups or individuals. And forecasting groups (for example, financial consultancies conditionally predicting what will/would be achieved if the customer does what they are advised to do) become institutionalised in society, attracting huge resources through mystifying claims of expertise, and encouraging a widespread acceptance of the idea that predicting the future is really feasible.

And, to illustrate the fantasy of prediction giving the impression of control in the context of economics, it is the case that macro-econometric models are made use of in policy

¹ To elaborate a little, it may at first seem that the fantasy of prediction is not only not the same as, but actually inconsistent with, a feeling of being 'in control'. For if we can predict the future, it is already determined, and there is nothing we can do about it¹. However, as we saw in the case of discussing modern economics especially, the sort of prediction typically entertained is *conditional* (rather than unconditional); the goal is to predict some value of an event *y* given some chosen value of some other event *x*, with which the former is assumed to be correlated, and where it is assumed we have some control over the latter.

But professed expertise in conditional prediction is not the prerogative of economic modellers. Would-be forecasters in all walks of society advise that things will be wonderful or gloomy depending on whether we do or do not change our ways. Experts in all fields advise that we can achieve/avoid scenario *y*, if we do (or no longer do) *x*. The presumption in all such predictive claims is that we have control over our destiny if only we choose to act appropriately.

The impression of control is effectively achieved in three steps. First, regularities of the form 'whenever event *x* then event *y*' thought to facilitate conditional prediction are posited. Second, such 'regularities' are used to determine the value of the conditioning event (say *x*) that corresponds to the most preferred (conditional) prediction of the dependent event (say *y*). Third, that value of the conditioning event *x* that corresponds to the preferred predicted value of the dependent event *y* is chosen or recommended giving the impression of achieving/facilitating/allowing a very significant degree of control over the future.

It is in this way that the fantasy of prediction (albeit with respect to prediction of a conditional sort) grounds the impression that we can achieve control over the future.

analyses. Here, it is assumed that at least a subset of the independent variables, for example, tax rates, levels of government spending or borrowing, etc., are matters that are under the control of some agency such as the government. Simulations are carried out with such models, employing a *range of values* for the independent variables assumed under the agency's control, to see what predictions are generated for some 'dependent' (and ultimately controllable) variable y (e.g., level of employment, growth rate of output, or whatever). Any recommended choices of tax rates, etc., are determined on the basis of (the desirability of the corresponding or predicted level of the dependent variable y). Thus, belief in the possibility of conditional prediction seems to afford control over the future.¹

Notice that the emphasis on formalism in modern economics incorporates, *at one and the same time, in the same practice*, both the fantasy of supremacy and the fantasy of prediction. For it is the continuous wielding of mathematical methods that both presupposes the possibility (and so carries the fantasy) of prediction, and is also the mark of the mainstream's fantasy of supremacy over heterodox alternatives.

This is why at the outset I suggested that characterisation of the mainstream advanced by Lawson and others needed to be resolved into separate components. It is correct to characterise the mainstream according to its insistence on mathematical modelling. But this has two central aspects: the *exclusive* use of the method and its *content*. The one relates to the perceived superiority of those who employ mathematical methods over those who do not; the other relates to the perceived attainability of successful event prediction. We have here not one but two problems or conditions, which earlier I characterised as those of *epistemological domination* and *ontological delusion* (or *inherent omniscience*), respectively.

To relate these specific features back explicitly to object relations theory, it follows that where particular scientific communities relentlessly pursue certain scientific practices, to the exclusion of all other practices, irrespective of how well they perform by scientific criteria, we can interpret them as doing so for the reassuring aspects of these practices, namely that they allow a sense of control to be regained. For these practices, and in particular the techniques utilised, can be seen to form objects reminiscent of earlier experiences of attachment, dependence and vulnerability, typically to the prime carer, which continue to be sought after as they act as a form of reassurance, a transition not completed.

Let me stress that it is this relentless pursuit of, or reliance upon, formalism that is defining of the mainstream project of modern economics. And it is the relentlessness of this pursuit in the absence of explanatory successes that suggests the need for a psychological explanation here. I should stress that there is no desire to invert the hierarchy. There is no specific set of heterodox methods to be prioritised over those of the mainstream. The heterodox tradition in economics is inherently pluralistic.

No doubt, there will be usually be a degree to which a lack of control in early childhood is experienced by us all, and ensuing anxiety coping mechanisms will likely be activated. But this is not to suppose that the explanation of (the puzzling) mainstream persistence with, and insistence on, certain practices that I am advancing here need apply equally to any application of a research practice. The salient point is that the heterodoxy

¹ Micro models are used in a similar fashion to draw conclusions about how individuals or other agents might control a world that conforms to the modellers' constructions. Such models may or may not be empirical. Pure 'theorists' too, though not confronting their models with data, experiment with their models by investigating the results (outcomes) that can be deduced (predicted) when different assumptions about (absolute or relative) parameter sizes are made.

does not insist on a fixed set of methods irrespective of how successful they are. Rather, as I say, modern economic heterodoxy is avowedly pluralistic in its methodology. In particular, the aim of heterodoxy is not to exclude methods of mathematical deductivist reasoning from the economist's toolbox at all (see Lawson, 2003). Rather, modern heterodoxy is conceived not in opposition to the use of formalistic procedures of the mainstream *per se*, but precisely in opposition to mainstream's methodological hierarchy, one that involves its chosen methods being *insisted* upon in *all* contexts (see, e.g., Lawson, 2006).

The mainstream, though, does seem to carry a pathological dimension in its adherence to certain practices. I am suggesting that object relations theory provides a likely explanation. The reassuring 'epistemic objects' encountered in mainstream economics and in positivism, typically take on the form of closed systems, pursued for their apparent control and prediction facilitating nature, be they at the expense of realism. In fact, their lack of realism is, if anything, further indication that earlier anxiety inducing experiences (or even traumas) are being 'played out' in so far as the objects chosen are a way to escape from reality, rather than engage with it. And it is these very epistemic 'objects', in the form of methods that presuppose closed systems, that result in domination in the form of the hierarchical binaries permeating modern economics and western thought more widely.¹

15. The question of gender

If my account so far points to tendencies capable of explaining prominent features of our society bound up with both the rendering of difference as hierarchical, and also the pretence of control over the future, there remains within it a glaring weakness or limitation. For, as I have noted on several occasions, the practices in question are pursued far more by men than by women. This is the case both in society at large, and in economics academics.

In fact, when it comes to modern economics, feminist economists, echoing earlier (1970s and 1980s) second-wave feminist critiques of scientific work more widely, have frequently been driven to criticise the mainstream modelling activities as masculinist. More generally, as we have seen, the general feminist reaction to classical Greek thought through to Enlightenment thinking and beyond is one of criticism and resistance to practice seen to be inherently bound up with the male gender (Bordo, 1987; Dow, 1990; Harding, 1993; Irigaray, 1987; Keller, 1985; Longino, 1990; Nelson, 2001). How, then, can this gender-biased orientation be explained?

Anxiety resulting from the processes of separation of the sort described above affects most, if not all, of us to varying degrees. But there is a systematic tendency for it to be experienced more starkly by boys, and ultimately by men. Gender identities are formed mostly out of family relations (Chodorow, 1989; Gilligan, 1982; Mitchell, 2003). Typically, the mother-child relation is the earliest most important one. Clearly, there is an asymmetry, as (usually) girls are cared for by adults of the same gender, whereas

¹ Of course other modes of control will also be in play. Some, merely by working to preserve a status quo, whatever that may be, will in fact serve to reinforce the more specific mainstream thinking, hence preserving tendencies focussed upon above. For example, Paul Albanese (2002) examines the behaviour of scholars as they come under pressure. His suggestion is that PhD protégés are not 'weaned off' their habitual ways of thinking, that is, they are made to 'cling on to their supervisors', rather than being encouraged by the latter to develop as independent thinkers. Difference is perceived as threatening to the preservation of identity, and in this instance it becomes specifically discouraged.

boys are not. This bears crucially on the processes of separation, or of coming to recognise and accept differences. Boys react and develop by registering their difference from the mother, and the emphasis becomes precisely that of (a sense of) separateness (Chodorow, 1989). This process is said to involve a degree of necessary differentiation and rejection (also involving splitting), as well as desire and/or envy (Klein, 1957).

Girls, on the other hand, in identifying with the same sex carer, will tend to develop a more relational way of being, seeking continuity over rupture. They react by perceiving sameness, and the emphasis becomes that of interdependence (association or relationality), rather than independence. Conversely, mothers are close to their infant sons, but they view their male children as different (both physically/bodily and socially, and in many ways of which they are not easily conscious), and do not share with them the same sense of 'oneness' that they experience with their daughters.

Of course, other cultural forces will bear on such issues, including parental desires about how boys and girls turn out. Typically, the latter will likely reinforce the mechanism I am emphasising. In other cases, the parents may seek to resist the wider cultural forces, and hope to render infants boys and girls more alike. The point remains, however, that so long as the dominant tendency is for women to be the sole or prime carers, the mechanisms I am identifying will likely be in play and making a difference, even where parents otherwise seek to counteract what they regard as undesirable differences in the paths of development of infants gendered as boys or girls.

Thus, so long as women remain the prime carers, and in so far as boys, significantly more so than girls, develop their identities as other than their prime source of dependence and vulnerability, conditions for anxiety due to separation, whether from others or ultimately from life, are likely to be significantly more pronounced for the male gender.

The resulting nature and degree of the ambivalence in the boy's (or man's) relation to 'always different and separate others' and to mortality will depend, in part, on the process of separation from, and rejection of, the love object, where the process may be more or less difficult and traumatic. For one, a potentially (very) negative view of women and of (always) different others may ensue. And this may further lead to a *difficulty to tolerate* differences more generally, be they sexual, religious, cultural, and so on.

It is the *particular* ways in which men are thus socialised and, specifically, the path-dependent ways in which they produce anxiety coping mechanisms (or defence mechanisms) that can help us explain how *epistemological domination* and *ontological delusion* figure more prominently in male dominated epistemic communities.

In other words, such outcomes are explained by the particular attempts of masculinist communities to control anxiety resulting from the difficulties associated with the need to separate from (or to recognise differences with) the prime carer, and the need to separate from (or to differentiate death from, that is, to recognise the impossibility of) life eternal. For women, the anxiety resulting from individuation will tend to be different than for men, given, once more, that girls are socialised differently.

Girls, typically, learn to live with, and accommodate, the set of ambivalent feelings caused by the all-at-once (perceived to be) gratifying and potentially threatening carer (for being capable of abandoning the infant). This is so just because the emphasis in identity formation for girls is on relationality, on maintaining the relationship with the mother. Boys, on the other hand have no such 'need' to learn to deal with the noted ambivalence. They can be seen to prioritise autonomy and separation from the mother in the forging of their identity. We can reasonably expect these differences to underpin the gendered differences in the academic practices earlier noted.

As I say, there will always be a degree to which a lack of control in early childhood is experienced, and ensuing anxiety coping mechanisms activated. But it is plausible to suppose that the tendency to develop the noted defence mechanisms is most present in those men with more extreme histories of separation anxiety in early childhood. This is not to say that girls (and women) do not need to (and indeed find) ways to deal with anxiety.¹ But the point here is crucially that their identity is not founded on a radical form of (a sense of) separation, one that leads to a tendency to seek to suppress and subsequently devalue the feminine, and/or to deny mortality.

16. Collective tendencies

I think, moreover, that the tendencies in question are likely *generalised* to an extent across the male scientific community, by way of the operation of socially reproduced and reinforcing mechanisms.² Hierarchical binaries permeating modern western thought are, in this sense, a *cumulative* or *collective* response to a universal *tendency* to experience anxiety in the face of separation and loss of control, as dealt with by communities of scholars of masculine orientation.

Let me elaborate this latter qualification by focussing on the situation of modern economics faculties explicitly. Lawson (2003) shows that the drive to mathematise the social sciences has long been in play. The reason this tendency has been stronger in economics is, as Lawson argues, no doubt connected with the widespread belief that phenomena regarded as the purview of economics (prices and quantities, including of money) are more measurable than are those of the other social sciences. How the mathematical method became dominant is a path dependent political/historical story, well set out again by Lawson (see chapter 10).

My primary concern is with why such a situation, one recognised by so many to result in a discipline that has become unsuccessful on its own terms, continues (though the explanation arrived at clearly also bears on why there was such a drive to mathematise the discipline). If my account is correct, then the mechanisms I focus on will be playing a major role in preserving the puzzling state of modern economics. But they will likely be doing so in complex ways.

As I say, a feature of the situation is that in recent history the drive to mathematise has become dominant in economics. In particular, the structuring of courses in modern economics faculties, such that almost nothing but mathematical modelling is taught, will very possibly attract, and even more likely serve to select out, those who (for reasons relating to circumstances that preceded their entry into the academy) have developed

¹ But we can expect their mechanisms to be different ones. One possibility is that their anxiety is more likely to manifest itself by seeking to wield influence and control through relationality and closeness. If girls develop their identity by identifying with the female carer then anxiety may lead to over identification, for example.

² Simon Baron Cohen and his team made comparative studies of the sexes and their ability to distinguish open (that is relatively unpredictable) systems, from closed ones (characterised by event regularity and predictability) (Baron-Cohen *et al.*, 2004; Lawson, J., 2003, 2007). The results, the authors indicate, show more boys to have a tendency to perceive and characterise systems as closed when they are in fact open. This is not to say that no man or woman can be found at either end of the autism spectrum of possibilities (that is, either autistic, with a tendency for misconceptualising open systems as closed, or, to the contrary, most capable of recognising and conceptualising complex and unpredictable situations as such). The Post Autistic Movement is, of course, one that insists that the openness of the social realm be recognised, and, as such, its appellation seems rather appropriate.

a tendency to seek comfort in the resort to coping mechanisms that involve the fantasies of supremacy and prediction.

But perhaps at least as significant is the fact that others not so disposed, or already compelled to deploy such defence mechanisms, will, given the (historically contingent) situation that mathematics does now dominate modern economics faculties, be confronted by a scenario in which these very fantasies are widely played out in the local culture, functioning, in effect, as ideologies.

This latter group will undoubtedly be affected by any such prevalent culture. In particular, those who enter the academy will effectively be joining a community that, in many ways, escapes from and distorts reality, by way of methods that take the world to be closed (where it is in fact open), and by way too of hierarchies that cast heterodox economists as inferior, as not worth engaging with (when there is little obvious reason to suppose the orthodoxy is somehow superior).

No doubt too, that consequent disengagement with the real world, will lead these new entrants to the profession to experience, at some level, a sense of insecurity, if only because once removed from reality, the effective control over it can only diminish. So those who enter the academy will be prone to adopting the very fantasies (associated with coping mechanisms) that involve a lack of realism. The fantasies thus become effectively self-reproducing.

To add to all this, the community entered into offers little in the way of possibilities to create and develop one's identity constructively and individually. In particular, those joining the academy at a stage of their life when they may be not especially self assured will be vulnerable to an environment in which authority is dogmatic, practices distorting of reality, personal creativity and inquisitiveness discouraged, and the price of challenges to the status quo likely exclusion.

So, knowingly or otherwise, one way or another, those who arrive as students, or novices, that are hitherto relatively unaffected by the fantasies of supremacy and prediction, will nevertheless likely become acculturated to the ideas that mathematical modelling ought to be everywhere employed, that it affords a sense of control over a predictable future, and that those who suppose otherwise are somehow inferior, or not to be taken seriously.

I want to emphasise that nothing in all this can be considered as fixed. Forces are in play to undermine the mainstream dominance, and with time they will likely prove successful. My concern is with explaining why the mainstream project has managed to maintain its dominance as long as it has, despite its lack of explanatory successes.

I should stress that things are not fixed between genders either, and that if men and women have a different take on science and its methods this is because of their situatedness, resulting in their being socialised in particular 'masculine' and 'feminine' ways. Changes in lifestyles and upbringing are, to some degree, changing. As a result, we may hope for men and women to become less starkly differentiated in their roles and identity along masculine and feminine lines, respectively.

17. Connections with other theories

I am aware, finally, that in advancing a psychological explanation of the continuance of the project of modern mainstream economics, in the face of its ongoing failures, I have omitted to make very significant reference to others thinking along similar lines (though I do provide some referencing in a number of footnotes). The reason for this omission

(so far) is simply that I wanted to avoid detracting from what may seem, to many, to be a rather long and complex argument. However, the thrust of my paper supports a pluralist and inclusive orientation, and it would seem inconsistent of me if I did not take some space to refer to complementary projects. Let me then briefly indicate some other, related, contributions.

I have adopted a version of object relations theory as the basis for my explanation. But it may be (as some certainly suppose) that we need not restrict ourselves to this specific psychological theory and its take on identity development. For example, the contribution of George Kelly—which was introduced in economics by Peter Earl (1983, 1986), and further explored by Brian Loasby (1983)¹—sets out to understand the defensive behaviour of specific communities without invoking object relations theory. Yet Kelly's Personality Construct Psychology appears to fit with my earlier interpretation of events. His analysis of control and prediction on the one hand, and of avoidance of situations that are not 'mastered', on the other, can be understood in the light of my own analysis.

Specifically, Kelly's observation of avoidance behaviour is congruent with the creation of hierarchies in which actors depict different others as inferior to themselves. In this way, the actor avoids dealing with anxiety provoking situations, in which particular differences would otherwise need to be acknowledged and taken into account (which would further constitute a threat to the actor's self image). This form of behaviour is to some extent related to the fantasy of supremacy, whilst Kelly's observations on prediction bear on issues connected with the fantasy of prediction.

Turning to other, related, contributions, the sorts of phenomena I have sought to explain in my paper have been noted in feminist writings especially, and in particular in those feminist contributions that question how the supposed legitimacy of scientific work is determined.² In consequence it would not be surprising to find elements of the thesis advanced here echoed elsewhere in feminist thought. And indeed this is so.

Susan Bordo's analysis of scientific epistemology, for example, we can pull out some arguments similar to my own. The author first argues that scientific approaches are a response to separation and anxiety. Second, she characterises the academic knowledge system as being clearly the product of a masculine community. It is no coincidence, or so she argues, that these two facts combine to give modern western thought its particular nature. For, given that men and women are, as I have argued, socialised differently (and develop different gendered identities) as a community, it is not surprising that they can be observed to deal with anxiety differently. Third, Bordo concludes that the masculine expression of anxiety (which I have argued results from the original *two*-fold separation,

¹ Loasby used Kelly's personality construct psychology to analyse changes in organisations, in which scientists seek to control and predict, and avoid areas where they have not developed workable ways of doing so.

² Feminist scholars who have come to question what counts as legitimate (social) scientific enquiry include Bordo (1987), Alcoff and Potter (1993), Garry and Pearsall (1996) and Keller and Longino (1996). Some of this literature includes a focus on the formalistic nature of mainstream economics (Nelson, 1996; Strassmann, 1993). I have discussed elsewhere, at some length, that it is unlikely that we encounter closed systems, to which such methodology is suited, in the social realm (Bigo, 2006). Others have also pointed to the open nature of the social world (Chick, 2003; Dow, 1990; Harding and Hintikka, 1983; Nelson, 1996; Northover, 1999; Perona, 2004). And these theorists are seen to defend a different, more relational notion of being, as well as tending to favour greater use of qualitative research methods that reflect the existence of complex human relations in the social realm. Female scholars, it would seem, though they surely need to control their anxiety, tend to deal with their anxiety differently from male scholars. This is especially so since their processes of individuation are different and thereby too their source(s) of anxiety, and so their ways of dealing with separate others and mortality.

namely from others, and ultimately from life) is, in effect, a reaction that is marked by an opposition to what is considered to be female or feminine. Thus, in her *The Flight to Objectivity*, Bordo writes:

The 'great Cartesian anxiety,' although manifestly expressed in epistemological terms, discloses itself as anxiety over separation from the organic female universe. (Bordo, 1987, p. 5)

This Cartesian 'anxiety' is seen as resulting from separation from mother nature; the rational norms of clarity and distinctness are read as symptoms of this anxiety.

Where there is anxiety, there will almost certainly be found a mechanism of defence against that anxiety [. . .]. As in much of early modern science and philosophy—in Bacon, most dramatically—the dream of knowledge is here imagined as an explicit revenge fantasy, an attempt to wrest back control from nature. (Bordo, 1987, p. 75).

My thesis is consistent with Bordo's, but goes further. In particular, I posit a distinction that is at best implicit in her analysis. I argue that epistemologies pursued by male scholars are characterised by a reaction to basic fears of separation in two ways; first, in the explicit attribution of better ways of being and of acquiring knowledge; second, in the choice of methods that favour (and are more appropriate to) closed systems and, as such, allow for prediction. In particular, the practices based upon epistemological closure effectively amount to generating a conception of reality as a closed system, related to a difficulty to recognise open systems when they occur. Thus, my emphasis is on the two epistemological practices, as acts of control, which I have characterised as *epistemological domination* and *ontological delusion*, as *specific instances of the more widely observed fantasies* of supremacy and prediction.

Turning to economics specifically, Victoria Chick observes the problems that economists have in accepting ambiguity in place of definiteness and certainty:

Teaching open systems [or what I take to be methods that presuppose open systems] will give rise to problems beyond the usual ones of doing something which is not mainstream. One will confront some psychological barriers. Chief among these is an adverse reaction to the lack of definiteness or certainty . . . they are expected to sustain various ambiguities, to work somewhere between perfect knowledge and total ignorance, to accept apparent contradictions, to think in terms of both/and instead of either/or (what determines investment: cold calculation or animal spirits?—both). All this goes against the Cartesian mode of thought which has dominated Western thinking for a very long time (Dow, 1996). (Chick, 2003, p. 6)

Here I think Chick (like Dow whom she quotes) is implicitly getting at some of the ideas I have systematised as epistemological domination and ontological delusion. In particular, she refers to the Cartesian mode of thought as having been dominant for a very long time, resulting in a continuous reliance upon (or dominance of) methods that presuppose closed systems. In my own analysis, as we have seen, I argue the domination to be a form of hierarchical dualism adopted as a defence mechanism associated with the difficulty to differentiate, in the face of the reality of dependence on someone other than one self, that is, when confronted with difference. What is more, I have argued that in addition to the fantasy of supremacy, the fantasy of prediction serves to reassure in the face mortality, something Chick refers to as 'the lack of definiteness or certainty', where methods that presuppose closed systems give comfort of prediction.

Chick further makes reference to Abraham Maslow's (1968) theory of needs to explain the source of the quest for, and refuge in, intellectual safety that comes with, conforming to authority. Thus, she states that:

It is evident that part of the explanation for the reliance on authority which characterises the closed mind can arise in childhood, while the first two sets of needs are being met by parents and other authority figures. (Chick, 2003, p. 7)

In other words, Chick suggests that conformity with authority be associated with the first two needs that emerge at the earliest stages of life, the physiological and the safety needs, and engender, in the case of the academy, the 'closed mind'. In my own account, I unpack the observed need to conform as involving *both* the adoption of a defence mechanism that I characterise as ontological delusion, *and* (or at the same time) the adoption of a defence mechanism I term epistemological domination. For, once the mind is set on methods that facilitate prediction, then a challenge to these will become classed, in what is a further form of resistance to difference (and separation or separateness), as inferior.

In a yet further contribution, Roy Rotheim (2002) points to the relation between the ability to experience ambiguity, uncertainty and openness on the one hand, and the formation of a stable self on the other:

Not being able to focus on the present moment causes one to lose the ability for generating knowledge from the inside ... With an internally generated sense of self ... [one can] safely experience ambiguity, uncertainty and openness. (Rotheim, 2002, p. 69)

By and large, I find the insights of these accounts of the attitudes of mainstream economists to be coherent with my own arguments. Mostly, they focus upon one or other of the fears and anxieties, to some degree present in us all, and associated with identity development in early infancy. The explanations provided tend thus to make (implicit) references to and, in effect, presuppose the defence (or coping) mechanisms I have advanced so far, which are the fantasies of supremacy and prediction. Notably, however, in their discussions of psychological attitudes to openness, the analysis of the economics academy provided by many, of which Chick, Earl, Loasby and Rotheim do not extend to an explanation that takes into account gender differences. Where gender is part of the analysis, the explanation arrived at is couched in terms that do not capture certain features and distinctions I centrally develop.

17. Conclusion: moving forward

In summary, this paper comprises three components. First, I show that certain puzzling features of the practices of modern mainstream economists are forms of fantasies encountered in certain practices in society at large. Second, I point out how the practices in question can be explained as manifestations of mechanisms of defence against (real or perceived) separation anxiety. And I trace these mechanisms back to infant development and identity formation, in so far as they constitute a 'blueprint' for dealing with differences and uncertainty later on in life. Third, I observe that the communities in which the fantasies are most prevalent are predominantly masculine in their orientation. Since boys and girls are socialised differently, especially in respect of separation, I infer that an understanding of the puzzle before us, that is, of the persistence with (and indeed insistence upon) methods that are seen to fail, warrants a gendered analysis, one that I supply.

I conclude this section by questioning whether there is a better way to proceed. For, clearly, fantasies of supremacy and of prediction that lead, respectively, to unwarranted hierarchies and to research being pursued with unsustainable goals, are at best unhelpful

(diverting and wasting of resources) if not outright harmful, not least to academic endeavour and contributions.

A solution seems to exist, at least in part, in more balanced family relations than we have hitherto experienced, and in the sharing of caring responsibilities conducive to a greater identification with the attributes traditionally associated with the feminine gender.

Of course, to the extent that differences between boys and girls and men and women are sustained by forces acting outside the family, or by family members seeking to maintain the existing gender patterns, any changes that I am emphasising may not be supported, and may not be sufficient in and of their own even were they to be widely embraced by carers.

The sorts of changes do, however, seem necessary. And if widely adopted, then, given the importance of family life in most societies, there should be grounds for optimism that significant improvements are achievable. At least, this is the hope and assessment. Others express similar views. As Nancy Chodorow puts it, if children were dependent early enough on *both* genders to establish ‘an individuated sense of self in relation to both, [. . .] masculinity would not become tied to denial of dependence and devaluation of women’ (Chodorow, 1978, p. 218). Or, as Marie Maguire (1995) argues, the envy, fear and vulnerability associated with building identities in a world of stark gendered differences can only be resolved if both sexes identify with the psychological qualities of the other.

To finish on an optimistic note, then, the psychological mechanisms described in this paper suggest that a reconfiguration of family structures could give rise to individuals that are better able to deal with difference (different and separate others), as well as with the uncertain nature of our existence. That is, the result may be individuals that can recognise and emphasise complementarity in difference, rather than stark and competing oppositions *per se* and openness rather than closure.

Focussing on scientific communities such as economists specifically, with such a reconfiguration it might be that we can look forward to a greater degree of social scientific endeavour, which recognises people as separate and different, standing in interdependent, yet equal relations to one another.

Of course, it can hardly be speculated that all social scientific enquiry characterised by epistemological domination and/or ontological delusion can necessarily be eliminated. But if the conditions described were to be achieved, there would be reason to expect far more scholarship that embraces *tolerance* and *realism*, a stance not conditioned by fear and anxiety, and by the *particular* ensuing defensive mechanisms hitherto encountered in communities of a masculine orientation. Indeed, such conditions seem as relevant as any for securing a society of the sort in which (i) differences (rather than being made into discriminatory hierarchies) are accepted as a basis of the flourishing of all; and (ii) researchers (instead of misconstruing openness as closure) seek methods appropriate to the nature of the objects under study.

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