

sanity, humanity and science

# post-autistic economics review

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## What would post-autistic trade policy be?

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The theoretical case for free trade continues to crumble under the assault of New Trade Theory. But what actual policies does this imply? Unfortunately, this is unclear, as New Trade Theory is a mess. Once one leaves the autistic fantasy world of free trade's *laissez-faire* economics, one also leaves behind its tidy-but-false policy implications. Post-autistic trade economics must reconcile itself to inelegant theory – and almost certainly to catch-as-can policymaking closely dependent upon the economic experiences of the particular nation in question.

Because New Trade Theory implies that optimal trade solutions vary from nation to nation, and depend upon empirical facts that change over time, there is no universal solution to derive. We can only familiarise ourselves with the fundamental *logic* of the solutions New Trade Theory implies.

Let us take the United States as the test case, because it is the US retreat from free trade, given its size and command position in the world economy, that will probably bring about the global end of free trade. Not only is American support of the World Trade Organization the driving force for the expansion of free trade as a legal construct, but America's willingness and ability to sustain huge trade deficits is the anchor of the present global trading system. Furthermore, the US economy is most familiar to readers around the world, and it is a broad-based, not a niche, economy, and thus raises the key economic issues that concern us here.

National self-interest is assumed below to be the objective of trade policy. While this is dogmatic from an ideological point-of-view, it makes the policy logic tractable, and is a fairly reasonable assumption (although not the only possible one) about how the political systems of the US and its trading partners would behave.

The first big question of the post-free trade environment is the choice between uniform and strategic protectionism. Uniform protectionism means a policy that does not vary, like the same tariff on all imported goods. Strategic protectionism means a policy that varies according to the product, the country of origin, or some other variable. Obviously, tariffs aren't the only alternative to free trade; there also exist quotas, national content requirements, offset requirements, and a host of other policies. But we shall look at tariffs below simply because they are the simplest to analyse, and thus a good place to begin.

The key advantage of uniform protectionism is that it doesn't require knowledge, presently under-developed outside the sophisticated neo-mercantilist states of East Asia, of how to implement strategic protectionism correctly<sup>1</sup>. For example, a strategic tariff that varied by industry would be vulnerable to lobbyist manipulation, or to mistaken technocratic decision-making by the tariff-setting agency. And right now, it would be impossible to give a straight answer about exactly what a strategic tariff would involve. How could any elected official, subject to the usual pressures of an electoral democracy, vote for such a policy when he could not be told what it would do to the industries in his district?

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<sup>1</sup> See Fingleton, Eamonn. *Blindside*. New York. Houghton Mifflin Co, 1995.

Unfortunately, choosing a flat tariff means foregoing the economic gains a strategic tariff could have produced. Furthermore, without understanding strategic protectionism, uniform protectionism will be a 'black box' policy, and the electorate won't understand how or why it works. This will lead to misunderstandings about its costs and benefits, producing unnecessary political conflicts and bad policy decisions on domestic economic issues affected by it. More crudely, the problem with uniform protectionism is that even the most autarkist economist will admit that a tariff on bananas is not in the national interest.

A nation will be richer, by definition, if its economy concentrates on the production of high-value goods, which implies its optimal tariff policy is one that pushes its economy in this direction. But this means pushing it *away* from the production of low-value goods like bananas, which it should aim to import instead. But, at least to a first approximation, uniform protectionism protects, and thus promotes, domestic production of low and high value goods equally. This means it would give an advanced economy like the US more low-value industry, and less high-value, than successful strategic protectionism.

In essence, a flat tariff would force Americans (or the consumers of any other advanced industrial nation) to buy expensive domestically-produced goods that they could have sourced more cheaply abroad without economic harm. The jobs 'lost' to imports would be low-paying ones in low-grade industries that the nation had deliberately chosen to abandon in favor of more lucrative ones. Now a strategic tariff is designed to avoid this problem. If implemented correctly, it will produce significantly better results, as it will help the national economy systematically 'cream off' the most lucrative industries in the global economy.

The catch? It is very tricky to get right, and very costly to get wrong.

For a start, what is a high-value industry? Merely expensive products do not automatically make an industry high-value: Pakistan produces expensive Oriental rugs, but by means of huge amounts of low-paid labor, so this is not an industry a high-income nation should covet. But even having a higher tariff on industries with high productivity per man-hour, the fundamental basis of sustainable high wages, won't suffice. If Singapore has locked up the computer disk drive industry with a huge amount of sunk capital and accumulated know-how, then the cost of clawing one's way into this industry against an entrenched competitor may be more than it is worth. Particularly since out-competing the established Singaporean industry may mean driving down the price of the product on the world market to the point where it is no longer such a lucrative industry after all.

So is the answer, perhaps, to chase some industry that is *not* already locked up by a dominant producer? Unfortunately, that does not guarantee results, either. The US could have declared a tariff on supersonic passenger planes in 1965, to help Boeing, not the Anglo-French consortium that built the Concorde, win dominance in this then-promising industry. In an alternate universe, this might have been a great move, and 200,000 high-paying jobs might now be in Seattle and Long Beach, not Toulouse and Filton, because of it. But the industry turned out to be a dud.

Free traders' *laissez-faire* warnings against letting government pick winners are invalid if elevated to a universal dogma. But they are absolutely correct that one needs convincing reasons *why* government knows better than the free market, when one proposes to intervene with protectionism in an industry. The market isn't always right, but one cannot

outsmart it without knowing something it does not know, or applying some analysis it does not apply.

What analysis would do this? Such an analysis would require a valid theory concerning which industries to protect, how much, when, and how. At present, we have only glimmers of this Theory of the Optimum Tariff. We have some good critiques of free trade, an understanding of how some fragments of the alternative might work, but there is no great protectionist synthesis. Logically, that synthesis would have to begin with the various refutations, within accepted mathematical economics, of free trade. That New Trade Theory already does. Then, it would deduce what the refuting theories imply would constitute effective protectionist policies.

New Trade Theory makes basically two lines of attack on free trade. The first pokes holes in the theoretical core of the free-trade position: the venerable Theory of Comparative Advantage. The second argues that even *if* the Theory of Comparative Advantage is true, free trade can *still* be sub-optimal. Let us look at the latter arguments first, simply because they're easier to understand.

The most obvious argument is simply income distribution. Even if free trade does maximise economic output, it can still cause an increase in income inequality that outweighs this for most earners. It could expand output by 3%, but this could consist of a 4% drop in the output received by the bottom 90% of the population, plus a 20% increase in that received by the top 10%.<sup>2</sup> Let us assume that we, as a political value-judgment, care about the *distribution* of goods; free trade theory only cares about maximising output. So it is technically true, but mismatched to our social objectives.

The policy implication of this argument? Restrict those aspects of foreign trade that increase income inequality. This question is complex, but it is clear that trade *must* increase income inequality, other things being equal, insofar as it forces low earners into competition with cheap foreign labor *more* than it does high earners. This would happen, for example, if it were easier to import goods whose production requires low-skill labor, like cheap manufactured goods and call-center services, than goods requiring high-skill labor, like accounting, legal services, business management, and surgery.

It follows that, hypothetically, one could blunt the increase in income inequality by making low earners less exposed to competition from foreign labor. Logically, one would do this by restricting imports of goods produced with low-skilled labor. This is not absolutely impossible, but it would be cumbersome to implement, and would tend to bias the economy in question towards the production of low-skilled goods. Unfortunately, this is actually the *last* thing we want, as these will, by definition, tend to be low-paid. When free traders charge protectionists with 'preserving today's jobs at the expense of tomorrow's,' this is usually what they are talking about. They are wrong, if their argument is elevated to an absolute, but right, as a caution.

The essential problem is that the value of protecting low-end jobs entirely depends on whether the workers in question would otherwise hold better or worse ones. Saving rust-belt assembly line jobs at General Motors is good, if the alternative is working at Wal-Mart for half the pay. But it is bad, if it means locking up the nation's finite human and financial capital in aging factories when they could have been invested in new industries that pay better. New

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<sup>2</sup> The numbers work if you remember that initial income distribution is not equal.

Trade theory recognises this fact, but disavows the possibility of an easy formula to discriminate the two cases, particularly *ex ante*, which is of course when policy must be made.

The next major argument against free trade, associated with Ian Fletcher<sup>3</sup>, is that differences between nations in their preference for short vs. long-term consumption can make free trade, when running a trade deficit, merely the most efficient way to splurge on short-term consumption and long-term bankruptcy. If free trade is just a way for chronic deficit nations like the US and UK to eat more apples today, with the nations they run trade deficits with ending up owning the orchards tomorrow, they could be better off, paradoxically, with a policy *less* efficient than free trade. Efficient self destruction is not a good thing! And the analysis reveals they don't even have to be *outright* decadent, just *more* decadent than their trading partners, for free trade to gradually bleed them of their wealth.

Although it is open to any number of solutions, the interesting thing about this argument is that it reminds one that it is possible to attack the problem of trade not head-on, but by way of trade's necessary counterpart: the payments a nation's residents give to foreigners in exchange for the imports. When a nation engages in deficit trade, it must, unless it is trading with Father Christmas, *always* be paying for its imports either by assuming debt to foreigners, or by selling off existing assets to them. Therefore, limitations on the ability of its citizens to assume foreign debt, or sell assets to foreigners, would combat its trade deficit. Any international system that regulated capital flows, as Bretton Woods did, could hypothetically opt to do this.

The difficulty here is that there exist perfectly legitimate reasons for individuals and corporations to assume foreign debt and sell assets to foreigners. And it is only changes in the nation's *net* debt and asset position that matter, so any given transaction means nothing. Furthermore, because foreign debt, and foreign equity in a nation's assets, are sources of capital for its economy, limiting them would tend to raise the price of capital, i.e. interest rates. So this policy would only be viable if combined with a rise in its savings rate, so that domestic capital could make up the shortfall.

The remaining arguments about post-autistic trade policy concern the theoretical heart of the free-trade case: the venerable Theory of Comparative Advantage.

The most profound such attack is that of Ralph Gomory and William Baumol<sup>4</sup>. They observe that the Theory of Comparative Advantage conceals hidden assumptions. For a start, it presumes that the free international market will automatically shunt every nation into producing that which it is best at, by the same invisible hand that operates in the domestic economy. But real-world industrial history reveals that which nation captures which industry is often quite arbitrary, a matter of 'who got there first' and other historical accidents. There is no *natural* reason why Switzerland should long have dominated the watch industry, or Taiwan dominate the laptop industry today. In the language of technological history, these outcomes are path-dependent.

This insight is a part of the burgeoning economics of 'multiple equilibria:' the free market sometimes gives no *one* right answer, only answers that are 'locally' optimal, i.e.

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<sup>3</sup> Ian Fletcher, "A Neoclassical Hole in Neoclassical Free Trade", *post-autistic economics review*, issue no. 26, 2 August 2004, article 5, <http://www.paecon.net/PAERReview/issue26/Fletcher26.htm>

<sup>4</sup> See Gomory, Ralph & Baumol, William. *Global Trade and Conflicting National Interests*. MIT Press, 2001.

better than similar alternatives. They are not necessarily 'globally' optimal, i.e. better than any feasible alternative<sup>5</sup>. But if this is true, then the equilibrium the market settles on is not necessarily more efficient than others it might have settled on, and there is no absolute necessity to defer to it.

Of course, this doesn't mean that any outcome policy-makers might wish to impose is an equilibrium, even a local one, or can be produced by the fiat of policy. Neither does it mean that getting from one quasi-arbitrary equilibrium, to a better one, is easy. It just means that the free market won't necessarily deal a nation the best hand it could possibly have obtained, as classic Ricardian trade theory claims it will do.

Autistic economists hate multiple equilibria, but they are hard to explain away. What they imply, is that in the world economy, some industries are 'retainable:' once established, they are to meaningful extent sheltered from the full blast of competition, and can rack up exceptional profits – and pay exceptional wages – as a result.

The most familiar case of this concerns so-called 'infant industries.' But it is not a matter of infant industries only, or only of newly-industrializing nations, as the continuous technological evolution of the world economy means that parts of many industries are always 'infant.' The global economy has a continuously-evolving cutting edge, in which retainable industries are being won, and free trade is not necessarily the way for a nation to win them.

Thus there can be<sup>6</sup> a conflict between a nation's most efficient choice in the short run – stick to what it produces best, as revealed by the international free market – and the possibility that sacrificing a bit of short-term efficiency could help it win more lucrative industries in the long run. The Theory of Comparative Advantage is intrinsically short-termist, because it only analyses how a nation may best exploit the comparative advantage it has *today*, and says nothing about how a nation can shift its comparative advantage, over time, up the rungs of the global economy. But it is this upwards evolution – and avoiding its downward converse – that ultimately matters more to a nation's standard of living than whether it squeezes every last drop out of the comparative advantage it has today.

The catch, of course, is that there is no easy formula for winning at this game. Japan protected its car industry and developed a world-beater. Brazil protected its computer industry, and got stuck with expensive and mediocre domestic computers.

One indication that Gomory and Baumol's critique is really onto something is that their theory predicts the world economy will exhibit intense rivalry between nations, as they jockey for industrial advantage, not the celestial harmony free trade theory predicts, in which only foolish nations, which don't understand the Theory of Comparative Advantage, waste their time rebelling against the natural order. Their theory is thus the perfect theoretical underpinning for a counter-hegemonic critique that recognises the dishonesty of the dominant economic powers of the day preaching the 'naturalness' of this order to everyone else, but is

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<sup>5</sup> Do not confuse the use of the terms 'local' and 'global' here with their geographic sense. Their use here concerns mathematics, and has only an indirect connection to globalism or the global economy.

<sup>6</sup> Though there may not be; this is the maddening thing about New Trade Theory: it depends upon circumstances. New Trade Theory's mathematics will accommodate any set of genuine empirical facts, rather than telling hard data it can't possibly exist, as classic free trade theory tends to do. The price one pays for this is a lack of one-size-fits-all prescriptions for what nations should do.

realistic about the failure of the old-fashioned socialist economics that is usually offered as the alternative.

A related insight is that productivity growth in the trading partners of an advanced economy like the US does not necessarily benefit that economy. Paul Samuelson recently published a paper demonstrating this mathematically<sup>7</sup>. Once again: the Theory of Comparative Advantage only tells a nation what its best move is under *present* conditions; it says nothing about whether free trade may help the rest of the world economy evolve against its interests over time. The disturbing thing about this critique is that it appears to imply that, under some circumstances, advanced nations have a real interest in 'holding others back', something that has been suspected by Marxist critics for a long time<sup>8</sup>.

The classic Theory of Comparative Advantage also suffers, like much of autistic economics, from the problem of externalities. The key issue here is the poorly understood economic ecology of supporting-industry networks, which can collapse as described here:

'At aircraft maker Boeing Co, for example, "the more Boeing outsourced, the quicker the machine-tool companies that supplied it went bust, providing opportunities for Chinese competitors to buy the technology they needed, better to supply companies like Boeing."<sup>9</sup>

The policy implication here is unclear, beyond a strong suggestion that the evolutionary economics of industrial ecology may have a larger role to play in future trade policy formation than is presently realised. The value of an industry network is greater than the sum of the value of the firms in it, and cannot be measured by conventional economic measures, which only take the aggregate of individual firm values into account.

Another critique of the Theory of Comparative Advantage is by Paul Craig Roberts.<sup>10</sup> He argues that it presupposes facts that were once at least mostly true, but no longer hold today. For one, that capital and technology are fixed, not mobile, between nations. In 1950, it would not have been feasible for General Motors to relocate its plants to India, because India in 1950 was a socialist country that wouldn't have wanted a capitalist behemoth like GM, and because the technology of 1950's auto production depended on a vast installed base of plants, human capital, and supporting infrastructure, which India didn't have and GM could not have built there at feasible cost. But in 2006, companies face no such constraints, and relocating white-collar work to India, and blue-collar work to China, is easy. This critique would seem to imply that the advantageous policy for advanced nations is to resist the 'leakage' of their capital and technology to newly-industrialising ones. The nationalistic implications of this may be disturbing, but under some circumstances, they may be validly drawn.

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<sup>7</sup> [http://econ-www.mit.edu/faculty/download\\_rp.php?id=50](http://econ-www.mit.edu/faculty/download_rp.php?id=50)

<sup>8</sup> Though of course, New Trade Theory does not license elevating this to a political dogma, as it reveals that under some circumstances, the dominant economic powers have much to gain, selfishly, by promoting growth in under-developed nations!

<sup>9</sup> Kyngé, James. *China Shakes the World*. New York. Houghton Mifflin Co, 2006.

<sup>10</sup> Testimony before the U.S.-China Commission Hearing on China and the Future of Globalization. ([http://www.uscc.gov/hearings/2005hearings/written\\_testimonies/05\\_05\\_19\\_20wrts/roberts\\_craig\\_wrts.htm](http://www.uscc.gov/hearings/2005hearings/written_testimonies/05_05_19_20wrts/roberts_craig_wrts.htm))

Post-autistic trade policy is in its infancy. Given that global free trade is unlikely to outlive the looming collapse of the dollar<sup>11</sup>, there is an urgent need to work out these principles. Otherwise, the end of free trade may simply produce a policy vacuum that will be filled by irrational nostrums derived from populist demagoguery, special-interest corruption, and misunderstood history.

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<sup>11</sup> These words were written in mid-December, 2006, at which point the dollar had already slid somewhat.



# On the need for a heterodox health economics<sup>1</sup>

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## Introduction

This paper is a plea for greater cognizance of the errors of omission and commission committed by mainstream health economics, and the potential orientation in treating health and health care as (metaphorical) commodities that the unfettered influence of health economics may be prompting. Economic criticisms of mainstream health economics are evident, especially in the collection edited by John Davis (2001), but tend to be rather fragmented and lacking in credibility with our mainstream brethren. Contentiously, seeking the approval or otherwise of the mainstream is perhaps not as important as in other areas of economics, if indeed it is the case at all, but gaining the attention of other social scientists, medics, and policy makers may be of considerable consequence. The paper does not seek to speculate on strategies for addressing these bodies; instead it concentrates on the nature of the message.

It is frequently argued that *all* health care systems share a universal feature: a predisposition for cost escalation that results in health care “consuming” ever greater proportions of GDP (see for example, Newhouse, 1992). Health economics, given its emphasis on scarcity, opportunity costs and efficiency (Fuchs, 1996; Birch and Donaldson, 2003, etc.) would seem to be well placed to contribute to policy discussions on this seemingly inexorable growth in health care expenditure, both in tracing its sources; such as ageing populations, the rising costs of medical technologies, and/or misaligned incentives, and in addressing the problems this pattern may pose. Despite Victor Fuchs’ (1996) protestations, health economics is displaying increased currency among policy makers. In the UK there has been a substantial growth in the number of institutions offering courses in health economics and in research institutes commissioned to contribute to policy evaluation. Indeed, the World Bank’s website highlights the importance of health economics. Culyer and Newhouse (2000: 1) observe, “... by almost any criterion, health economics has been a remarkably successful sub-discipline”, and Fuchs (2000) optimistically considers that the “strong demand for health economics will continue”.

Yet, as Fuchs recognises, as it is presently constituted, health economics demonstrates weaknesses (Fuchs is bullish about overcoming those weaknesses he identifies, I am much less so). Evelyn Forget’s (2004) excellent paper on the contested histories of health economics reveals some of the dangers of a fallacy of omission in a lack of historical consciousness. Forget considers that health economists are indelibly ahistorical (which Fuchs comes close to acknowledging), and consequently have little acuity of alternatives: the ground is set; a variation of *de gustibus non est disputandum*. Famously, for Stigler and Becker (1977) tastes were taken as stable and given; for health economics it’s an unquestioning taste for Paretian-Utilitarian and Cartesian foundations that masquerade as scientific “objectivity”, and posit the individual as socially disembodied. These fallacies of commission are fairly well recognised by critics (see for instance, Cohen and Ubel, 2001;

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<sup>1</sup> This paper represents an overview of part of an on-going exercise exploring conceptual issues in health economics. I am grateful to the participants, too numerous to identify, of various conferences and workshops for their insightful and helpful criticisms, observations, and encouragement. I am also extremely grateful to John Davis for his comments on this paper and for his collegiality on other related work. Of course all errors, omissions and views expressed are mine alone.

Davis and McMaster, 2005; Hurley, 2000), but the potential ramifications tend to be under-emphasised. Of course, much of the foregoing is not unique to health economics *per se*, with mainstream economics, *in toto*, often being accused of demonstrating such contested traits. This aside, there are several factors that accent the significance of this area of criticism of health economics: First, as Forget identifies, its employment of cardinal utility measures embodies certain uniqueness. Second, as noted, the health economics project has experienced a remarkable growth in the past twenty-five years, and concurrently its influence on policy has also burgeoned. Arguably, more than any other area of applied economics is the reductionist calculation mode of reasoning of the mainstream likely to have such a direct short-term impact on people's lives. Third, health economics may also have the potential to act as a conduit to a fundamental shift in the praxis of medicine. For these reasons, and undoubtedly for others, health economists', perhaps unintentional, propensity for *de gustibus non est disputandum* requires to be challenged.

The remainder of the paper is structured as follows: the following section offers a brief characterisation of health economics, endeavouring to avoid constructing a straw man. The third section considers some of the potential ramifications of the basis of health economics in terms of theory, and method. The final section urges the deployment of a heterodox approach(es) to offer greater pluralism in the theatre of health economics.

#### **A résumé of (mainstream) health economics: Of Pareto, Descartes and Utilitarianism?**

Mainstream health economics textbooks adopt a familiar structure in that material is organised according to the neoclassical dual of demand and supply, and then usually followed by issues of economic evaluation. Nevertheless, from the emergence of the sub-discipline many core neoclassical tenets have been queried, with health economists prominent in questioning their "validity" (for example, Culyer, 1989; Rice, 1998). The "distinctive features" of health and health care as "commodities" likely to invoke market failure are highlighted, with the latter exhibiting the characteristics of a derived demand (consumers are presumed to demand "health", and only demand health care as a means of attaining better health); interdependent demand and supply sides; externalities; information asymmetries between providers and patients; and the frequent uncertainty over the efficacy, and outcome, of medical procedures. There are those who dissent from this emphasis. For example, Pauly (1988) has argued that a significant proportion of medical care procedures are sufficiently routine to consider them analytically equivalent to other consumer-initiated purchases. Indeed, in a foreword to a recent World Bank publication Julian Le Grand (2003) makes a related point in arguing for the potential expansion of private sector participation in health care provision. He states (2003: x):

"Quite why it should be morally objectionable to make profits from the provision of health care than in other areas of equal or even greater importance to human welfare where private provision was common, such as food or housing, was never made clear".

Modelling the demand for health adopts a decidedly Beckeresque construction. Grossman's (1972) seminal contribution draws heavily from the human capital literature identifying health as an analogue to a commodity possessing both investment and consumption properties. Like Becker, Grossman assumes that households produce as well as consume health. Individuals are endowed with a "stock" of health that they can choose to

invest in by engaging in activities that contribute to this stock (including health care) and offset depreciation; subject to constraints, such as income and, more controversially, educational attainment. Grossman portrays an intriguing exercise in the extension of rational choice over an extended time frame. The simpler version of the model implies that the rational individual can, in effect, calculate her/his optimal lifespan subject to changes in discount rates. Thus, a possible interpretation is that poorer, less well-educated people die earlier as low income acts as a more binding constraint in the optimising algorithm: it is “rational” (sic) for them to die earlier.

Grossman's model bridges the supply and demand sides of health, and this is analytically reproduced to some extent in the analysis of health care provision. The development of agency models in health economics departs somewhat from the standard framework. This is partly a vestige of health economists' delineation of the characteristics of health care, especially “uncertainty”, and the theoretical acknowledgment of interdependent utility functions. Health economic approaches tend to model patient-physician interactions as principal-agent (see, for example, Dranove and Satterthwaite, 2000), where the clinician-agent gains utility directly from either acting in a patient's best interest or from vicariously experiencing a patient's recovery. This reflects the inclusion of medical ethics in the physician's utility function (Arrow, 1963; Mooney and Ryan, 1993; McGuire, 2000), a “caring externality” (McGuire, *et al.*, 1982), or a “humanitarian spillover” (Culyer, 1976). The literature considers that different physicians may have different propensities in this, suggesting that health care is an experience good where the “consumer” (sic) faces an adverse selection problem. Indeed, McGuire (2000) argues that differences in physicians' “caring” is analogous to brand differentiation. Of course, the foregoing is subject to constraints, and the “caring externality” is potentially tradable should the circumstances dictate. US health economists, in particular, have contested that physicians will have incentives to engage in some form of supplier-induced demand, where clinicians manipulate patients' demand for services to the benefit of the former as opposed to the latter (Evans, 1974; Fuchs, 1996; McGuire, 2000). Conceptually, supplier-induced demand is a potentially invidious source of inefficiency.

As with mainstream economics generally, efficiency is the dominating rubric, and is manifest most obviously in the economic evaluation techniques that dominate the literature (see for example, Donaldson, *et al*, 2002). Health economists have been among the most innovative (and controversial) in their development of evaluation procedures. It is in this area that health economics is evoking considerable policy interest. Economic evaluation is firmly embedded in the cost-benefit architecture, with two broad approaches discernible: cost minimization studies of interventions with identical outcomes, and allocative efficiency analyses of different types of procedures with no common unit for outcome measurement. It is in this latter area that most work is concentrated, with a range of techniques emerging in the literature: from cost-utility analysis to contingent valuations (of willingness to pay) based on discrete choice in conjoint analyses (see, for example, Ryan, 1999). There is a quest for fungibility in each of these approaches, frequently through monetization, with the controversial QALY<sup>2</sup> (quality adjusted life years) measure of health states retaining some popularity among health economists. Here welfare economics exhibits an obvious influence (Culyer and Newhouse, 2000; Hurley, 2000), although there has been recent debate between “extra-welfarists” and “welfarists” regarding the form of this influence<sup>3</sup>. Birch and Donaldson (2003)

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<sup>2</sup> QALYs is claimed to permit direct comparisons across diverse health care procedures and interventions as it furnishes a measure for the quantity of life (mortality) and captures changes in life quality (morbidity).

<sup>3</sup> Extra-welfarists are associated with Culyer's (1991) attempts to integrate Amartya Sen's capabilities approach in an economic evaluation framework through the incorporation of non-goods characteristics into a

and Hurley (2000) argue that the two share key elements; principally, a consequentialist orientation and limited capacity to accommodate equity concerns. The latter are frequently invoked by health economists as a check on an efficiency rubric. Hutton and Maynard (2000: 92) express this in stark terms,

“... no country is interested in efficiency alone in its health care system: if countries used the efficiency criterion alone, many low birth weight babies would be left to die!”

That there is an overtly normative element in health economics (in its own terms) is well recognised by health economists (Culyer and Newhouse, 2000; Fuchs, 2000). This adopts a particular appearance, being shaped by utilitarianism and Paretianism. Sen’s (1987) discussion of ethics in economics characterises utilitarianism as: consequentialist; welfarist, and as sum-ranking. Of course, mainstream discourse has arguably retained its consequentialist credentials through instrumental rationality, whilst shifting away from sum ranking and welfarism following the rejection of interpersonal comparability, the adoption of ordinal and revealed preferences, and Pareto optimality. Nevertheless, as argued above, such a retraction is not as marked in health economics, where there is evidence of sum ranking via the persistent invocation of cardinal utility (Forget, 2004). Culyer (1998) considers that one of the advantages of the Pareto criterion is that it affords the minimisation of any infringement of “personal values” by invoking a criteria that any change should not be to the cost of any individual, which for Culyer (1998: 364) “seems innocuous enough”. As Culyer recognises, the Paretian metric requires “demanding” conceptual assumptions that may render it inoperative in health care: hence his advocacy of extra-welfarism. Despite Culyer’s reservations, Pareto remains the litmus test for many health economists. Whynes (1996) is typical of mainstream economists in his appeal to two philosophical foundations in his analysis: utilitarianism and Paretianism (see also, for example, Diamond, 1998, and Birch and Donaldson, 2003). From the perspective of the argument presented here there is also a discernible Cartesian flavour in health economics, principally through Cartesian dualism and rationalism<sup>4</sup>. These views are substantiated upon below, as are the potential ramifications for the analysis of health care provision.

### **Ramifications and the nature of a critique**

In a thoughtful and reflective piece on the future of health economics, Fuchs (2000) lists five areas where health economics makes a substantial contribution: endogenous preferences and technology; social norms; principal-agent relations; human behaviour, and the measurement and analysis of quality of life. He then catalogues what he considers as the weaknesses of current health economics’ practice as: psychological experimentation, the use of survey research, and most importantly (given the space dedicated by Fuchs) an insufficient

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social welfare function, typically featuring subjective assessments of health (as measured by QALYs) as the maximand. Birch and Donaldson (2003) provide an example of the criticisms of extra-welfarism. They argue that extra-welfarism through its “narrow” focus on health as a maximand ignores trade-offs between health and other commodities and/or characteristics, and consequently furnishes a restrictive account of opportunity costs.

<sup>4</sup> Descartes’ dual is associated with his delineation between mind and body, where the essence of the former is self-conscious thinking, whereas the latter is matter. The body is conceptualised as a machine operating according to mechanical principles. Cartesian rationalism is Platonian in that it considers that knowledge is derived from innate ideas and constructed by reason. For Descartes only eternal truths, such as mathematics, the epistemological and metaphysical foundations of sciences, were derived from reason alone. There is a role for experience in generating other forms of knowledge.

consideration of institutions. Fuchs (2000: 149) states, “Institutions *matter* ... particularly in health care ... in part because history matters” (original emphasis). This is a highly refreshing recognition of the institutional lacuna in health economics, and Fuchs is to be commended for this. However, Fuchs shows no cognisance of the sources for this omission. Despite Fuchs’ laudable message there are compelling grounds to conjecture that the core propositions of health economics will not enable Fuchs’ lacuna to be addressed. There is insufficient space here to take issue with Fuchs’ “strengths” of health economics; only some indicative remarks are offered by way of a critique. Obviously the general criticisms of the underlying philosophical foundations of health economics have a similar currency of applicability to health economics itself. This section, however, concentrates on three areas: health and health care and clinical-medical care as commodities<sup>5</sup>, the resulting reliance on quantification, and the conceptualisation of care.

*Health, health care and clinical-medical care as commodities?*

As is well known, Marx (1990) observed that commodities possess both use and exchange values. It is in the latter that their defining feature may be discerned: as a commodity is an entity that may be potentially monetized. In short, the distinguishing characteristic of a commodity is that it can be sold for money (Fine, 2002), is produced *for* sale in a market (Polanyi, 1944), and therefore property rights to the entity can be defined and transferred. This is of considerable import, as treating health and health care as analogous to a commodity can be viewed as an attempt to create commensurability in the measurement of the value of the activity.

The process of commodification has two major ramifications with relevance to the discussion here: first, commodification engenders a particular pattern of social relations broadly but not exclusively, encapsulated in markets. For Radin (1996) and O’Neill (1998) commodification denotes a particular form of social construction and process of valuation of things that can be apprehended as commodities. It is this specific social arrangement that founds a particular means of valuation that is highly contested for some activities. However, for some commentators, markedly Gary Becker and Richard Posner, all aspects of social interaction are, and can be, treated as commodities. Becker’s treatise on family relations is the exemplar par excellence: children are treated as commodities, and all household decisions and interactions are consequences of rational choice.

Radin (1996) argues that, analytically, Becker may be employing ‘children as commodities’ as a rhetorical device. She distinguishes between literal and metaphorical commodities: the latter permits what she terms as “universal commodification”. Thus, individuals can be considered as commodity traders, either buying or selling at particular episodes: interaction is exchange, and the value of interactions corresponds, or is reduced, to exchange value. Radin identifies this commodity trading via ‘universal commodification’ as a central aspect of a particular conception of human freedom, rights, and autonomy (see also, O’Neill, 1998). Trading, and trading possibilities, represent both the exercise of choice and choice sets respectively. If the market exchange of commodities, both literally and

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<sup>5</sup> It is possible to distinguish between health care and clinical-medical care. The former is more general than the latter, whilst the latter can be viewed as a sub-set of the former. A broad interpretation of health care can invoke a host of measures, actions and commodities. As Hurley (2000) observes crash barriers on roadways may be conceived as health care given that their intention is the prevention of serious injury. By contrast clinical-medical care is usually provided within a particular institutional arrangement centring on the relationship between the clinician and patient (see McMaster, 2006).

metaphorically, constitutes human liberty, then why should health and health care be any different? It is a powerful, albeit highly contentious rhetoric and mode of thought that has informed the trajectory of policy in recent decades. Thus, in health economics Grossman's rhetoric of health status as a capital stock that the individual may choose to invest in depending on constraints bears all the features of the freedom of choice. Health stock may be traded for other commodities should the circumstances (incentives) dictate.

A reading of Grossman produces some interesting explanations. For instance, the average life expectancy for males in some parts of Glasgow, Scotland is declining and is now in the region of 68 years: similar to levels recorded in the 1940s. Following Grossman, a plausible explanation (requiring empirical testing) would be along the following lines: income constraints are becoming more binding for certain groups, or their tastes have changed, in this particular locale and accordingly rational individuals reduce their demand for health, implying that their health stock depreciates more quickly. Like Becker, instrumental rationality is at the centre of Grossman's explanation. Here the association between poverty and poor health status is recognised as a constraint: the individual trades-off health stock for other utility yielding commodities subject to a more binding constraint. The individual is socially disembedded in an institutional vacuum.

Famously, Marx (1990: 163) referred to capitalism as generating "commodity fetishism", which he regarded as the tendency to view a proportion of one commodity to be worth the equivalent of the proportion of another, and hence confined to exchange values, which reveal little or nothing of underlying social relations. Marx was in effect advocating an analytical focus on socially embedded relations that admit historical specificity.

This recognition of social embeddedness keys into Polanyi's seminal work, and his notion of a "commodity fiction". The fiction is perpetrated on the basis of a failure to appreciate the definition of a commodity. Moreover, as Polanyi goes on to demonstrate, *treating* all entities *as if* they were commodities, as in metaphorical representations, is a dangerous fiction that entails a self-regulating market without the social protection for individuals or the environment. It is a consequence of a failure to recognise the social embeddedness of markets. Markets are inherently destructive as well as constructive: it is obviously the former property that presents considerable dangers for civil society.

From here, exchange as embodied by commodification entails a reductionist disembedded representation of social connections: what Georgescu-Roegen (1971) and Potts (2000), drawing from the philosopher Alfred Whitehead, have described as the fallacy of misplaced concreteness. Yet, for the mainstream economist who conceptualises connections in a singular fashion questions remain: is there really a problem of "commodity fetishism" and "commodity fiction" as reference to Marx and Polanyi, respectively, suggests? Is there a dichotomy between commodities and gifts (the latter frequently associated with the delivery of medical care)? In other words, does the commodification of health care drive out the altruistic or gift elements of health care and render it incompatible with the enhancement of human capabilities? *Prima facie*, the answer would appear to be no. After all, a Cartesian interpretation would formulate bodily health in the mechanical terms of its functionings. Moreover, critical elements of medical care are commodities. Health care, however, encapsulates considerable differences in the process of provision: the process of *care*. Drawing from Polanyi, it is this process of care that is altered through the commodification of care: it is the social embeddedness of care that is crucial, and what is missing from mainstream analysis (Davis and McMaster, 2005). In Polanyi's terms, the social relations

typifying health care provision, the patterns of social integration, come to be overwhelmingly dominated by exchange: what Ouchi (1980) has referred to as the transformation from clan to market exchange.

The potential theoretical expression of Polanyi's "commodity fiction" and Radin's "universal commodification" in health economics can be further demonstrated in the principal-agent model. The conception of clinician-agency and patient-principal, inculcates the notion of patient as consumer or client. This is suggestive that the 'demand' for health care (and health) is broadly comparable with the demand for commodities generally (as Le Grand, 2003, cited above appears to suggest). Rice (2001) notes that 'consumer choice' in health care is not always desirable: there are important impediments to the process of choice. To note one major constraint: consumer choice is predicated on consumer sovereignty, which in mainstream economics, is grounded on the agent possessing information of the relevant costs and benefits of an action, presuming its outcome is knowable. As noted, mainstream health economics explicitly recognises this.

Yet this is a partial recognition. The relationships between conceptions of need, exigencies, necessities and wants are as complex as they are subtle, and some health economists have contributed highly insightfully to this area (see Culyer, 1995, and Williams, 1988) Yet mainstream health economists persist in employing the term commodity (see Rice, 1998)<sup>6</sup>. It is only possible here to engage with this in an exiguous fashion. Needs, exigencies and necessities can be associated with basic human rights, whereas wants are less convincingly associated with such rights. Moreover, needs, exigencies and necessities possess a fundamental quality that eludes wants. Thus, Boulding (1966) talks of health care as frequently meeting fundamental need and explicitly not a want. Following Galbraith (1979) commodities are associated with wants, and treating needs as wants conflates their meaning. The commodification of needs *is hardly analogous to the exercise of a human right* (see Anand and Wailoo, 2000), as commodities are coupled with markets, prices and property rights, none of which resonate with the universality of provision. Wants, on the other hand, are not fundamental, and as Galbraith *et al.* have noted, may be moulded by corporations and other institutions that potentially generate frivolous wants; health care is not exempt from this<sup>7</sup>.

Conceptions of need and necessity can be traced to the Ancient Greeks. Aristotle identified several senses of necessity. The most apposite for the argument here refers to that which an organism cannot live without: it is intrinsic to the functioning of an organism; something that wants are not. Obviously classifications of commodities, such as the generic term 'food' may be deemed as necessities. Thus we *need* food and nutrition, but may *want*, or desire, particular foodstuffs. Fuchs (2000) claims that health care, more accurately clinical-medical care, is a necessary commodity. Necessary commodities serve universal needs; not wants. Clinical-medical care is focussed on the individual, although medical facilities are not.

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<sup>6</sup> Mainstream health economists are not the only culprits, as Hurley's (2000) critical coverage of the normative basis of health economics continually refers to health and health care as "commodities".

<sup>7</sup> Following this line of argument, pharmaceutical companies have an interest in creating new markets to perpetuate and expand demand; perhaps it is overly cynical to suggest that there is an incentive to create new illnesses! Nonetheless, Reinhardt (2004) reports that pharmaceutical corporations' outlays on marketing activities are approximately double research and development expenditure (see also Dunn, forthcoming, and Keane, 2002). Moreover, pharmaceutical and other medical supplies companies may be unintentional beneficiaries of the marketing activities of corporations in the alcohol, food, and tobacco industries, which aims to increase consumption in those industries, but has a deleterious impact on health (Fine, 2002, see also WHO, 2002).

This is an important distinction. Individual clinical need is contingent upon certain circumstances, which may or may not be socially constructed, and accordingly is not universal. It is conceivably the case, even in contemporary society, for an individual to go through life without *requiring* clinical-medical care (Sulmasy, 1993). Thus, clinical-medical care is primarily relational, i.e. institutional, and is state contingent. It does not serve a universal need in the sense of water, vitamins, air, and food do. *Pace* Fuchs, it is not a necessary commodity, or indeed a commodity.

The wants-needs conflation is compounded by a further conflation apparent from the information-theoretic basis of the agency approach – agency advantage stems from information asymmetries – implying a conflation of information with knowledge. Theoretically, by generating greater information about the “value” of services and procedures agency advantage is eroded and the consumer is again sovereign. Such a notion is predicated on deeply flawed bases that there is no distinction between know-how and know-that, knowledge is codifiable, as well as needs being analytically identical to wants, and hence influenced by price<sup>8</sup>.

In short, mainstream health economics’ Paretian and utilitarian underpinnings are consistent with a mechanistic tendency that is supportive of a flawed institutional analysis that endorses the notion of universal commodification. It is a short step to presuming that markets are an entirely “natural” provider of health care.

#### *Commodification and quantification*

As Marx and Polanyi clearly recognised, commodification by requiring fungibility engenders an increased concentration on potentially quantifiable performance outcomes, usually expressed in the single dimension of money. Porter’s (2004) recent references to a “culture of quantification”, and Shenav’s (1999) and Dupré’s (2005) distinctive yet complementary works challenging a mechanistic scientific approach resonate with this. Broad social changes that institute and legitimize an “objective” status on systems predicated on value-laden assumptions, such as efficiency, maximization, and standardization, can be traced (Shenav, 1999). This is related to increased reliance on quantifiable outcome measures, which Porter (2004: 168) argues:

“... I [associate] the modern role of calculation, and particularly the spirit of the “bottom line”, with democratic *distrust*, and with an ethic that reins in experts even if it assigns important decisions to them” (emphasis added).

Porter’s reference to the effective codification of rationality not only signals distrust, but that decision-making out of the defined parameters may be indistinguishable from *ad hocness* or even corruption – it ceases to be legitimate.

In economics Georgescu-Roegen (1971), like Dupré, was highly critical of a “mechanistic tendency” that assumed the ubiquity of measurement on a numeric scale. Famously he reproached this trait as an “ordinalist fallacy” where there is,

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<sup>8</sup> Indeed, the separation between patients and clinicians implied by the commodification of health care and the resulting agency relationship may inadvertently undermine any promotion of preventive care activities. The potential patient as consumer may well be motivated differently from the potential patient as a member of a mutualised body exercising a human right. Simply, the former has an emphasis on individual consumption and exclusiveness, as opposed to universality (see also Keane, 2002).



“A measure for all uncertainty situations, even though a number, has absolutely no scientific value, for it can be obtained only by an intentionally mutilated representation of reality ... It was under the influence of the idea ‘there is a number for everything’ that we have jumped to the conclusion ‘where there is ‘more’ and ‘less’ there is also ‘quantity’, and thus enslaved our thoughts to what I have called ‘the ordinalist’s error’ – which is to hold that wherever there is ordering there is also measure ...” (Georgescu-Roegen, 1971: 83).

Economic evaluation techniques in health clearly encompass recourse to quantification. Usefully, this may be viewed as means of enhancing agents’ accountability, and of furnishing “objective” evaluations of procedures to produce the greatest net benefit, and hence ration health services in an “efficient” fashion. Nonetheless, the unfettered adoption of economic evaluation techniques must be cautioned against. The more general criticisms of mechanical quantification and scientism are amplified in health care provision. Economic evaluation presumes a relatively straightforward subjective-objective dual, and promotes a particular form of information as more ‘scientific’ without sufficiently recognising the framing effects involved in measuring, interpreting and judging data (see Hildred and Watkins, 1996). To be sure, quantification relies on certainty and confidence in the processes of measurement, yet many medical activities are profoundly uncertain and heterogeneous<sup>9</sup>. An emphasis on measurable outcomes as the principal, or only, metric has the potential to distort activities in unintentional ways, such as narrowing the focus of behaviour to centring on financial outcomes (Keaney, 2002), and may relegate the process of health care (Daniels, 1998).

*Where’s the ‘care’ in health (care) economics?*

Daniels raises an important issue. As noted, health economics treats “caring” as an externality, which is identical to the more general conceptualisation of altruism in mainstream economics. Comparably, altruism is viewed as an argument in an individual’s utility function: a preference. Thus, altruism takes the form of agent X’s preference for satisfying agent Y’s preferences (Folbre and Goodin, 2004), or, as, for example, Khalil (2003: 116) defines it, the altruist (qua charity) lowers, “... his interest in order to buttress the recipient’s interest”. Khalil distinguishes three rationalistic approaches to altruism: “egoistic”, where altruism revolves around the expectation of future benefits accruing to the benefactor; “egocentric” (associated with Becker) where the donor’s utility reflects the utility of beneficiaries, and “altercentric”, where altruistic actions are associated with a personality trait.

In health economics where “care” is explicitly considered, it has the properties of the instrumental rational Beckerian “egocentric” orientation (Davis and McMaster, 2005). The employment of medical ethics as a constraint on utility maximisation is a similar methodological device inferring some notion of care by limiting the pursuit of purely self-interested activities. In effect, care is manifest as other-regarding, but, following metaphorical commodification, limitedly so since arguments in the individual’s utility function may be traded off against one another following some exogenous change. Thus, an individual, specifically the representative agent, may care less following, for example, an increased flow of information regarding the recipients of care, which the agent finds distasteful. This implies an efficiency loss if the same level of care is maintained despite the preferences of the

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<sup>9</sup> Obviously the heterodox critique of formalism and unconsidered theoretical closure is of considerable currency here (see Chick and Dow, 2001).

representative agent. In effect, the “caring externality” is diminished. There are very obvious ethical ramifications following such a scenario that potentially conjure issues of ageism, racism and sexism, to name but a few.

The foregoing notion of altruism has been heavily criticised, and by extension much of this criticism may be applied to the (limited) mainstream notions of care (see Davis and McMaster, 2005, and van Staveren, 2005). For instance, if a caring externality implies a trade-off in terms of lost income to support the provision of health care, then the well-known challenge of individual free-riding surfaces from within the parameters of the model. Indeed, the question arises as to why anything other than free-riding would occur. Khalil further raises empirical and conjectural objections to the egocentric account: the former relates to altruistic donations even in circumstances where the benefactor cannot conceive of the recipients’ condition. The egocentric approach presumes that the altruist can engage vicariously in the utility-raising activity: hence, in interpreting the standard health economics approach, altruists can identify with health care, and so are willing to fund health care provision (Culyer, 1976). However, altruistic donations are also forthcoming as a response to events such as famines: a phenomenon unlikely to be encountered by many who donate in western countries. Khalil thus argues that the egocentric account of altruism can be equivalent to masochism! Masochism implies that in order to vicariously gain utility the rational masochist has to appreciate the persistence of the wretched state of the parties (s)he contributes to in order to continue benefiting from her/his donations.

Accepting Khalil’s conflation of egocentric altruism and masochism and applying it to the egocentric account of care/altruism in health economics suggests a potential absurdity in Culyer’s idea of “humanitarian spillover” and in the interdependence of clinician and patient utility functions. It is hardly humanitarian, or caring in a positive sense, that others’ misery continues in order to generate vicarious utility for the (representative) altruistic/caring agent when (s)he has knowledge of how to relieve this misery. Similarly, *in extremis*, a “caring” physician may enter upon an infinite regress in gaining utility from easing a patient’s pain, only to desire to establish the *status quo ante* in order to vicariously experience the process again, presumably after calculating the discounted disutility of inducing the initial state! Under this conception medical cures are the last thing physicians wish: therapeutic treatments are ruled out, and medical procedures are reduced to some form of intermittent palliative episodes of “care” followed by periods of a toleration for a patient’s worsening medical condition, to be followed by yet further episodes of palliative “care”, and so on. Khalil’s masochist transforms into a sadomasochist with a stethoscope. Obviously Arrow’s “medical ethics” *constrains* a physician’s toleration of a patient’s deteriorating condition, but it is only a constraint: the logic of the mainstream conception of vicarious utility implies a physician *motivated* to behave in the manner outlined.

This limited conception of care reflects mainstream economics’ Cartesian, Utilitarian, and Paretian underpinnings: Cartesian in that care is analogous to a mechanical element in an individual’s utility function<sup>10</sup>; Utilitarian in that the process of care has no intrinsic value,

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<sup>10</sup> Kennedy (1981) in his influential and highly controversial book, *The Unmasking of Medicine*, argues that the medical profession has extensive power through its ability to diagnose illness and set standards of care. He queries whether this power should rightfully reside within the medical profession, which he contests gains legitimacy by recourse to special expertise. However, this scientific expertise is based on the Cartesian notion of the body as a machine (Kennedy, Ch. 1): humans are reduced to machines. This he considers to be a “fundamental” misconception in the philosophy of medicine: it dehumanises and diminishes the very people medicine seeks to help.

and in that it is an instrument in the quest for utility maximisation<sup>11</sup>; Paretian in that there is an inherent default predisposition for the *status quo*. According to Williams (1985) and Maclean (1993), instrumentalism removes care from the realm of ethical consideration<sup>12</sup>. For Williams, the outcomes of actions certainly warrant classification as ethical considerations, but so also do obligations and duties as do character dispositions (virtues), given that they affect how individuals' deliberate in undertaking actions, or avoiding actions, of certain types. Williams' and Maclean's, *et al.* arguments stress deontological value and the social embeddedness of the individual (see Davis, 2003). In contrast, a health economics based on socially *d*isembedded individual imparts, at best, a thin notion of care, and moreover, has the potential to generate egregious explanations.

### **Towards a heterodox health economics?**

Fuchs' (2000) reference to the absences of institutional and historical contexts in standard health economics is, though he may not appreciate it, effectively a plea for a heterodox agenda. Following Davis (2006) the nexus of mainstream economics may be typified as rationality-individualism-equilibrium, with possibly exchange as an adjunct. By contrast heterodox economics may be categorised as an institutions-history-social structure nexus (with production as an additional sphere). This nexus offers the potential for a more lucrative explanation of health care provisioning issues, and in explicitly recognising the importance of social embeddedness and deontology in the provisioning of care. Likewise, such a nexus also affords the opportunity to offer an effective challenge to the reductionist Cartesian, Paretian and utilitarian variants of mainstream health economics. This is not say that important works do not already challenge the standard economic approach. The collection edited by Davis (2001), and the substantive works by Tom Rice; Joshua Cohen and Peter Ubel (2001); Evelyn Forget; Jeremiah Hurley; Michael Keaney; latterly Geoff Hodgson (2006) Gavin Mooney (2001), and Stephen Dunn (forthcoming) and many others offer exciting prospects. Nevertheless, heterodox economics as a whole has not paid sufficient attention to this important area. As far as I am aware there are few references to health care economic issues in many of the main heterodox journals. This needs to be addressed.

Also, heterodox contributions are embryonic in that they mainly offer, like this paper, critiques of the established mainstream. Some coherence in constructing alternative coalitions is required: Mooney's (2001) recent contributions on communitarianism is an initial example. Perhaps Fuchs' (1996: 16) allusion to Adam Smith's definition of a necessity as commodities that are indispensable in the support of life that "... renders it indecent for creditable people, even of the lowest order, to be without" provides a useful initial reference point that emphasises the importance of language and underlying values. Cohen and Ubel (2001) have exhorted that the language of health economics is critically analysed and its framing effects appreciated. Second, Fuch's reference to Adam Smith is only partial. Smith's (2000) *Theory of Moral Sentiments* furnishes an instructive guide for heterodox health economists. Here Smith expansively investigates the importance of conscience and duties on

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<sup>11</sup> Culyer (1998), *et al.*, proposes the notion of "process utility", i.e., the patient may gain utility from how care is provided, the *process* of care. In advocating this Culyer presumes that processes are the *consequences* of decisions. This appears to advance a dubious conflation between process and outcome; the former subsumed into the latter.

<sup>12</sup> Williams denotes ethics as a reflection on morality, which he views as a narrower conception of the former, where ethics discusses what constitutes the "good life". Morality refers to particular views on how the individual should live.

an individual's conduct. In effect, Smith explores the importance of deontology and context. In language redolent of Thorstein Veblen Smith states:

"When ... general rules ... have been formed, when they are universally acknowledged and established, by the concurring sentiments of mankind, we frequently appeal to them as the standards of judgement ... Those general rules of conduct, when they have been fixed in our mind by habitual reflection, are of great use in correcting the misrepresentations of all self-love concerning what is fit and proper to be done in our particular situation" (2000: 226).

Smith avoids a solely instrumentally rational account of conduct/action, and his reference to rules as both constraining and enabling is entirely consistent with Veblen. In the context of health economics, Smith's *Theory of Moral Sentiments* stresses the importance of the critique of the mechanistic framework fostered by Cartesian, Paretian and utilitarian influences in mainstream health economics. Hippocrates may yet be influential in shaping a richer economic approach to health, health care and clinical-medical care.

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## True cost environmental accounting for a post-autistic economy

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It has become clear in recent years that environmental policy must do more than simply combat harmful substances or put a filter on each exhaust or waste pipe to reduce pollutants to an “acceptable level.” The catalytic converter is a good example of the problem, with almost 3 tons of non-renewable resources invested in each one (Schmidt-Bleek 1998, 1999). We need to rethink production to make it cleaner and more sustainable by improving our accounting (Bainbridge, 2006).

As the eminent British economist A.C. Pigou (1920) noted early in the last century, the market will fail unless it includes all costs. If the market were complete, any attempt at separate environmental and social accounting would not be necessary, and Milton Friedman’s (1970) dictum, “*A company’s only responsibility is to increase profits for stockholders*” might suffice. However, the flawed and incomplete market we have today, with enormous uncounted costs and incorrectly attributed costs, performs very poorly. It considers only a small fraction of the total transaction cost, leaving many “externalities” out of the picture (Bainbridge 1983, 2004, 2006; Antheaume, 2004). If full costs were known many current market transactions would not occur, and we would face a much more hopeful, secure and sustainable future (Ròbert et al., 2002; McDonough and Braungart, 2002; Young, 2006).

To reduce consumption of non-renewable resources and limit adverse impacts we need to understand the input and output of companies and the life cycle costs of products, from the cradle to the grave (made, used, disposed) or cradle to the cradle (made, used, recycled, reused, or returned to nature). This is the goal of most sustainability reporting, from the Eco Management and Audit Scheme to the Global Reporting Initiative (McDonough and Braungart, 2002; IEFÉ, 2005; IFA, 2005; GRI, 2002). It will not be easy, because we haven’t studied these issues very often, and the flow pathways and impacts can be complicated and long term. The poor Inuit for example are facing severe health problems from PCBs, a chemical not used in their culture or region—but carried in by air pollution and fish and mammal populations, biomagnified in food chains and deposited in their bodies (Pereg et al., 2002). How do we account for these and other legacy pollutants? Synergistic impacts between multiple pollutants?

To understand both social and ecosystem effects we would like to know much more about material flows (Brigenzu et al., 2000; Palm and Jonsson, 2003; Hansen and Lassen, 2003; Pedersen and de Haan, 2006). We should be able to clearly describe:

1) What is the spatial distribution?

How much is there? Where does it come from? Where does it go? Does it move in air, water, food, dust? Is it local or global? Concentrated or diffuse? Are materials bio-magnified?

2) What secondary effects or pathways are there? Are metabolites or breakdown products more hazardous? Even when materials are non-toxic to humans they can lead to ecosystem catastrophes. Ecotoxicity is common for many materials that are used or emitted from power plants and cars, or used in buildings and equipment. Nitrogen, phosphorus and zinc are common examples (Günther, 1997; Vitousek et al., 1997; Karlen et al., 2001; Reck et al., 2006).

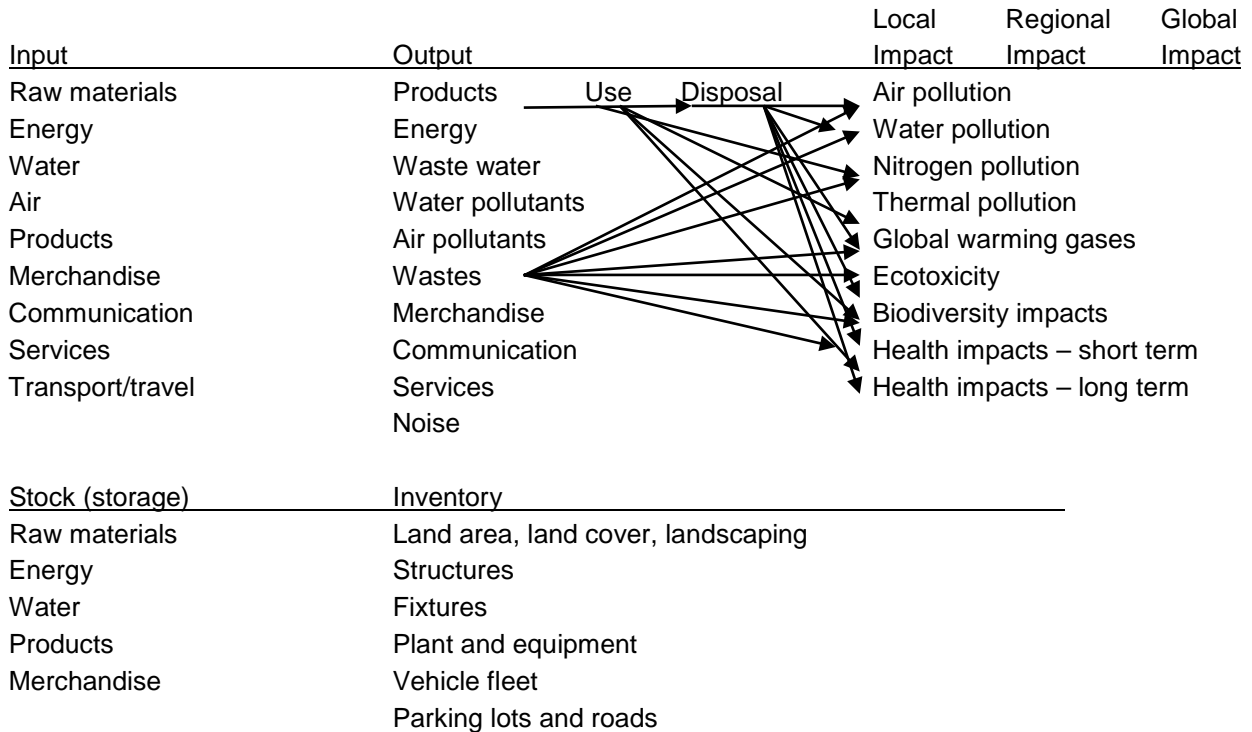
3) Are effects cumulative or instantaneous? Lethal? Mutagenic? Teratogenic? Can we and/or ecosystems shed materials if exposures are infrequent, or do they build up over our lifetime?

4) How persistent are the materials in the environment? Do they break down in hours? Days? Years? Millennia? Can they be collected and destroyed or recycled?

We also need to consider natural and human disasters. What happens to all the hazardous and ecotoxic materials in a fire? Flood? Hurricane? Tornado? This can be a major source of pollution. Each home may only have 10-20 kg of toxic materials and chemicals at any one time; but if 250,000 homes are destroyed (as they were in Hurricane Katrina) this can lead to the uncontrolled release of more than a million kilograms of hazardous materials into the environment. In addition, building materials, furnishing or electronic appliances that burn may release mercury, lead, chromium or be transformed into much more toxic materials such as PVC into dioxin. Large quantities of industrial, commercial and agricultural chemicals are also released in natural disasters, adding to the magnitude of the catastrophe and making cleanup much more difficult.

To understand these issues better we need to improve company balance sheets and update them regularly. These balance sheets will evaluate facilities, production, operation, maintenance and service (Sigma Project, 2002; ISAR, 2004; IFA, 2005). Only a few of the possible flow paths are shown for clarity.

**A Company Balance Sheet**



Some input data already exists in most companies and is usually much easier to find and record than output data. Middleware should be able to mine billing and accounts records to retrieve and update input figures. Some types of output are already recorded because they are required by service providers (waste water, solid waste) or laws (toxics, larger amounts of air pollutants), but impact data is much more challenging to find and often doesn't exist. Additional research is critically needed to develop this



information, and to refine the cost of lost ecosystem services (Howarth and Farber, 2002). Data mining middleware can help track down historic and ongoing research, impact calculators and conversions, to help converting output data to impact estimates and costs.

As an example, suppose we run a small manufacturing firm in San Diego. We want to account for our energy use, this includes:

<b>Input</b>	<b>Output</b>	<b>Impacts</b>	<b>Information needed</b>
Electricity (KWH)	air pollution	global warming gases	utility production mix from SDG&E
		health impacts	Dept of Health medical cost impacts, asthma, pulmonary disease and treatment cost
		ecosystem impacts	hydropower environmental impact air pollution impacts thermal pollution impacts nuclear pollution impacts
		nitrogen pollution	and CalEPA, CEC or EPA production impact data
		financial impacts	decreased tourism near coal power plants from smog
Natural gas (therm)	air pollution	global warming gases	loss factors in transport and use
		health impacts	pollutant emissions (manuf. or CEC, AQRB, EPA or CalEPA)
		ecosystem impacts	air pollution impacts water pollution impacts
		nitrogen pollution	efficiency factor (appliance manuf.)
Gasoline/diesel/jet fuel (gallons)	air pollution	vehicle emissions	(DOE, EPA, CalEPA,
		global warming gases or APCD)	
		nitrogen pollution impacts	
	water pollution	health impacts	Dept. of Health
		ecosystem impacts	
		increased costs	Wastewater Treatment City Stormwater, RWQCB
		ecosystem damage and restoration costs	DFG, FWS
	war fighting cost	military equipment and training energy cost environmental costs of war	DOD, Congress

If we are being responsible, we would also account for the employee commutes, by miles driven and/or gallons of gas and diesel burned. This may be one of our largest impact factors.

We then need to look at all of our other material and resource flows (in and out), starting with the most hazardous, ecotoxic and common. We should look carefully at water and waste water, because it would be easy and is important. We should also consider stormwater impacts. We should evaluate our use of materials, steel, aluminum, plastics (by type), paints, dyes and other finishing materials. And we should include paper, paints and packing materials. For key resources we might try to compare alternative sources of more sustainable materials – recycled steel and aluminum, eco friendly paints and packaging materials, and more sustainable shipping practices (train instead of plane).

Material flow analysis can help with dematerialization and creation of more sustainable industrial ecologies (Orbach and Liedtke, 1998; Bainbridge et al., 2004; Jacobson, 2006). To redirect the economies of the industrialized countries back onto a more “sustainable path,” the enormous quantities of materials that are moved in order to provide people living in industrialized countries with their prosperity may need to be reduced by a factor of 10 or more (Schmidt Bleek, 1998; Røbert et al., 2000). Sufficient examples exist to show that this is possible, but true cost environmental accounting will be needed to drive the process.

The development of an environmental accounting spreadsheet for a more complicated multinational corporation will be considerably more challenging but is also more important. We would want software/middleware that could easily develop detailed information across the firm and across the globe. We would, for example, want to know the numbers of vehicles (gas, diesel, biodiesel, ethanol, LPG), fuel use, and the miles or km driven each year (Forum for the Future, 2003). Middleware data mining might be used to develop this information from vehicle inventory data bases and fuel billing. If we wanted to be more accurate we would also want to know the type of driving, city or highway, and where it took place: so we could better estimate impact per mile and distribution of impacts. This may eventually be done by data mining the vehicle fleet global positioning records This would also require area specific impact factors – by nation, state or province. Texas has made a start by offering a set of calculators for some types of impacts, ECALC (2006), and others should follow suit.

Although much progress has been made in environmental accounting (Gray et al., 1995; Rikkhardsson et al., 2002), the work has really just begun. Much more accurate and complete information is needed on a wide range of costs and benefits (Bainbridge, 2006). It also has to be made much easier. If we undertake this type of accounting today it is labor intensive and therefore costly. What we need to do is develop the tools that make this efficient and easy for even small firms to use to their advantage. For larger firms this software/middleware might interact with Microsoft, SAP, Abacus and other office accounting and management packages. For the smaller firm it would be ideal if it could be integrated with Quicken or Quickbooks. Quality assurance and auditing systems will also need to be refined (Beets and Souther, 1999; Wallage, 2000).

Database developers, information source managers, and accountants must also be educated on the importance of this work and the need for readily accessible information (Daly and Cobb, 1989; Lintott, 1996; Gray and Collison, 2002; Chua, 2006; Wallage, 2000; Bainbridge, 2006). Considerable additional research and increasing integration of information across disciplines is needed to make sustainability reporting faster, cheaper, more effective, and more fun: but it is perhaps the most important work in the

world for the next decade. If we can't convert to true cost accounting we are unlikely to prosper, and may not survive.

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## Web resources

Environmental Management Accounting Research and Information Center	<a href="http://www.emaweb.org">www.emaweb.org</a>
Environmental Management Accounting Network-EU	<a href="http://www.emanu-eu.net">www.emanu-eu.net</a>
International Federation of Accountants	<a href="http://www.ifac.org">www.ifac.org</a>
Global Reporting Initiative	<a href="http://www.globalreporting.org">www.globalreporting.org</a>
US Society for Ecological Economics	<a href="http://www.ussee.org">www.ussee.org</a>
International Society for Industrial Ecology	<a href="http://www.is4ie.org">www.is4ie.org</a>

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## Does John Kenneth Galbraith Have a Legacy?\*

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To many in the 1980s, it seemed as if Keynesianism was gone forever--and some, such as Bob Lucas and Friedman, welcomed its death with open arms. But a funny thing then happened: Keynesianism's greatest challengers themselves failed, and rather quickly. Monetarism was tried by Paul Volcker and the Bank of England--and abandoned. Supply Side was embraced by Ronald Reagan and David Stockman--and failed. New Classical economics proved worse at prediction and explanation than Larry Klein's adaptive expectations models. And in development economics, the heady proponents behind "the Washington Consensus," "structural adjustment," and "shock therapy" all came up with dry wells, one after another--so dry that the World Bank and IMF have been publicly apologizing for trying them, and have made "poverty reduction" their mantras for the past decade. (One mustn't be too cavalier here: the failures of development policy needlessly cost many lives, and in the world's poorest countries--especially in Africa--by common agreement left behind a tragic "lost decade" of development.)

But what's all this got to do with Kenneth Galbraith? Let me start an answer by invoking a quote from the great *Annales* historian Fernand Braudel: "Events are the ephemera of history." Now he of "la longue duree" of course was signaling our need to think in epochs, and yet Galbraith--who lived to be 97--on a purely human level surely embodies the notion of the "longue duree" as an individual. He was born when Teddy Roosevelt was president, amidst the old Progressive Era. That is important--as is the fact that he arrived for the first time at Harvard in 1934, 72 years ago, in the midst of the Great Depression, when a second Roosevelt was president. We are stamped by our times, and Galbraith was stamped by his.

Economics before the 1950s was not the mathematical discipline it has since become--and yet remarkably it produced its fair share of better than average economists. Smith, Ricardo, Marx, Marshall, Pigou, Ely, Veblen, Commons, Keynes, Schumpeter can't simply be dismissed as "sociologists"--that epithet modern economists like to fling about when they mean to dismiss an opponent. Sadly though, I hasten to add, I would guess 90% of economics graduate students nowadays could tell you nothing about half those names, and know little beyond the names--and perhaps the title of a work or two--for the other half.

This ignorance of one's professional ancestors, of course, was largely seen as an advantage in post-World War II economics--certainly it was my experience as a student taught the discipline in the late 1960s and early 1970s. Mathematical models and mathematical techniques were our meat and potatoes--and if we learned something about our ancestors, it was almost by accident. The promise of economics was in the present and future. The Neoclassical Synthesis--that shotgun marriage of Keynesian macro-theory and pre-Keynesian micro-theory--reigned, and the cross in front of which we learned to bow was the IS-LM cross that Hicks had taught as the essence of what Keynes meant. Those were the heady days of game theory, of econometrics, of computer-based forecasting (done, I might add, with punch cards on mainframes, a horror I hate even to mention to students today). What we all knew though was that we were the van of a remarkable revolution that was in the midst of being won; and toward those, like Kenneth Galbraith, who were warning us of revolutionary excess, we were taught to display impatient contempt.

But what was Galbraith warning us about? Several things, I believe. First, that mathematicization of economics--not the individual techniques so much as the belief that we were the new physicists of human relations--was a dangerous assumption that carried risks at least as large as the clear opportunities we saw. Human beings, he said, weren't simply atoms or electrons, or whatever else was considered the fundamental unit of physics before pi-mesons or string theory. They (we) weren't quite rational either--especially when in groups--in the strict ways that the micro-assumptions of the Neoclassical Synthesis, even when it tried to tuck this problem behind the veil of Revealed Preference, said they (we) were.

Human beings, Galbraith insisted from his own observation and experience, were subject to all sorts of "irrationalities"--passions, miscalculations, misunderstandings, pressures to conform and pressures to obey--that made our models (especially when too tightly drawn) unstable, and our predictions prone to error. We needed, he said, to understand that in large groups--especially nations--human beings acted out of collective beliefs ("conventional wisdoms," he called them) that reflected and reenforced both the unequal distributions of power and wealth that everywhere and always exist, and the ideological justifications that groups--especially dominant groups--impose on the rest of a society and era.

That made for a "softer" sort of economics than my generation was being taught at the time--and made it child's play for us to sneer and dismiss Galbraith then. In middle age, however, I've had to rethink (as all of us should, but not all of us do) my youthful confidences. And in that process, I've come to believe that Galbraith has proved, in many absolutely important ways, ultimately "wiser" than the "smarter" and "harder-minded" economics inscribed in rigorously-mathematical models--especially when those models treat government and the politics behind governance either as exogenous to primary models of the market, or simply as a beneficent, wise and evenhanded helpmates in realizing the market's genius, as many of his Keynesian colleagues did, thinking themselves perfectly able to manipulate aggregate demand in order to achieve permanent growth as the solution to ancient problems of inequality.

I think it would behoove all of us today to attend, rather more humbly, to three fundamental objections that Galbraith raised almost a half century ago. The first was that power will always and everywhere be present in both economics and politics, and that economists who thought the "natural laws" of the market would felicitously trump the use of power by the powerful to gain unnatural market rents were wrong. In this of course he was guided by Berle and Means, by Robinson and Chamberlin, and in a way by Schumpeter--to whom he owes much, especially in his first major work, *American Capitalism*, and in key elements of *The Affluent Society* and *The New Industrial State*. At the simplest level, here Galbraith kept reminding us that wage markets behave differently from capital markets and capital markets from technology and natural resource markets, that time is not homogeneous or continuous, that the future is at best imperfectly known--I'm putting this as neutrally and in as familiar terms for my colleagues as I can, not precisely in Galbraith's words--and finally that all this (plus that stubbornly irreducible question of power) bears large implications for the possibilities, real or heuristic, of any equilibrium-based model--as well as for the future of the world.

Especially in *The Affluent Society* and beyond, he emphasized two features of that reality. Here first was that America had moved by the 1950s into a post-scarcity age (not nearly so transient as an era, nor--as he reminded us in talking about the role of nuclear weapons--not so surely permanent either) and that in this new age the parsimonious definition

that Lionel Robbins had famously given to economics--a study of allocation under conditions of scarcity--therefore no longer operated with the same force or had the same importance it once had. (Sen's work on modern famine as principally a distributive, rather than an absolute scarcity, issue reminds us indirectly of this as well--though I daresay neither he nor Ambassador Galbraith would consider, say, India an affluent society.) His other point here was that the great corporation--that distinctive institution of modern capitalism--through advertising, branding, marketing, et cetera--now and hereafter would exercise a major influence over the nature and shape and intensity of consumer demand not wholly subservient to either the consumer nor the market.

The second major argument Galbraith made was that politics was and is universally important to economics. Not just in government's conservatively-imagined role as a night watchman, but in its active manipulation of markets and their behavior for more liberal ends. This was not just to point to the extensive system of legal regulation that was well established by the mid-20th century, but to the unprecedented size of government income and spending relative to post-World War II GDP--a third to as much as half of GDP in fact in the modern advanced industrial economies. It was this achievement of an enormous economic scale--beyond its regulatory scope--that, in Ken's view, made our world so different from the 19<sup>th</sup> and early 20<sup>th</sup> century world Marshall and his colleagues had described.

These facts about our age--and I do think we must call them facts, rather than Galbraithian hypotheses--of affluence, of the market power of great corporations, and the giant presence of modern governments in economies, combined to make his final point: that to a great degree, the important decisions about the overarching shape and direction of economies--versus the relatively trivial questions of the price of this good or that service, negotiated in the classic equilibrium-seeking "tapping" models of Walrasian markets themselves--had become the issue of our times. But this then led, if one stipulated that democratic theory was capable of evolving, to a powerful inference,: that those great decisions were fundamentally--while capable of being clarified by economists--at the heart of democratic politics, and the informed interplay of democratic citizens.

But what were those key decisions that citizens needed to make? Here I shall conclude by once again citing Braudel on events as "the ephemera of history." The large questions for citizens, according to Galbraith, now were how to sustain an essentially equitable prosperity that attended to the private markets's habits of distribution of wealth and income; that recognized that public goods in an era of prosperity were quite often more important than private goods, and needed public action sustained by public ideology--not just private markets--to achieve them; and that war--war in an age that had finally discovered how mankind could end all life on the planet itself — made even prosperity and the right allocation of public and private goods--ephemeral to mastering the dark forces of Mars in our midst.

Growing up, as a boy Kenneth Galbraith had seen his father in World War I join the local draft board in order to exempt unwilling Canadian farmboys from the slaughter of Flanders Field. At the end of World War II, both in the Strategic Bombing Survey and his brief excursion into the State Department in 1946, he had seen firsthand the feckless and horrific consequences of rational strategic bombing policies and the ways power and irrationality, masquerading as purposeful reason, had given birth to the Cold War and the thermonuclear age. It was these experiences--and the bipartisan ideological prison that held American liberals and conservatives, as well as the capitalist west and communist east in its grip--that informed his views of Vietnam in the 1960s, views I might add which led him to begin warning

President Kennedy of what an American war in Vietnam would do to America, do to the Democratic Party and to American liberalism, and do to a humane realization of Keynesian ideals--a realization that would move beyond the military Keynesianism we had so far then achieved--as early as the spring of 1961. Let me repeat that: the spring of 1961. Kennedy, I might add, heard Galbraith's warnings--and tried to act upon them, ordering McNamara and the Chiefs to begin withdrawing the relative handful of US soldiers we had there by the spring of 1963. But he did not live, of course, to see his own orders fulfilled--and all of us have paid the price ever since.

Economics today is a very different discipline than it was in those years. In a major study by the American Economics Association a decade ago, nearly two-thirds of American economists openly agreed that the profession had become "overmathematicized and too unrelated to the real world." Today, after thirty post-Golden Age years, it is fair to say that while there is still some agreement about methodologies in economics, larger agreements still elude us about purposes and goals and visions. And that is a tragedy for the world because it has helped validate a kind of new fundamentalism that Keynes, and Galbraith, and Samuelson (and Solow and Arrow and a host of other heroes of my teachers' generation) rightly tried to destroy.

We see that new fundamentalism everywhere around us--in shape and size of Washington's most recent tax cuts, in our military actions in the Middle East and South Asia, in the angry assertions that "the market" --whatever that truly might be -- "always knows best," and that those who would interfere with "the market" are uselessly acting to hold back the natural tide. And not least in the censorious rebukes hurled at those who would challenge these "new" truths. *Times* columnist Tom Friedman has a pungent phrase to describe the "market as god" core (as Harvey Cox has put it) of this view--but is more sympathetic than Cox. Friedman argues that we live in a world of "golden handcuffs" and ought to get used to it, and indeed celebrate our guilt shackles because of the ever more comfortable world to which they are leading us.

Galbraith doesn't think so, and neither did Keynes--and in a world today where the economics "Nobel" was given recently to a psychologist, for god's sake, for investigating the behavioral irrationalities that trump the antique idea of rational maximizing agents, when the promise of game theory has proved greater in nuclear war planning than explaining the ways of markets, when most computer-based forecasting is good for a matter of weeks and months rather than years, and when econometrics, in the words of Lawrence Summers, has never been decisive in settling any economic question of consequence, we ought to at least give pause to think back to the ways in which Prof. Galbraith's work anticipated every one of these facts that have been discovered in the last 20 years about limits of his and my beloved profession.

Paul Samuelson many years ago remarked of Galbraith that he was the era's best-known economist for non-economists. There is a slighting tone in that remark--at least when heard by economists--that I think we ought to revisit and reexamine. I think too that Samuelson himself--surveying the post-Golden Age world--would admit now his words contain a useful, second interpretation: that in fighting to make economics available to non-economists, to make sure that economic questions are understood as political and diplomatic and *morally significant* questions that democratic societies must engage at a deeper level, his friend Ken Galbraith has enriched us all.



After 70 years at Harvard, after four dozen books that together have sold more than 7 million copies, let me conclude by suggesting that I think we would all do well to reconsider in this new century what made Ken one of the very *wisest* economists--*not* the *smartest* or *most technically-gifted*--but the *wisest* of the past century. To do so would, I believe, then help us decide what questions *we* intend to ask--and what answers *we* intend to give--in a world that spends more on arms than aid, in which two billion people live on less than \$2 per day, in which 12 million children die each year from preventable disease and malnutrition---that's a *Holocaust of children every six months*--and in which power and wealth still seem to hold such unnecessary sway.

Those were his questions. What we owe him is not just our thanks for asking them but our own answers.

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## **Labor Rights in China<sup>1</sup>**

Tim Costello, Brendan Smith, and Jeremy Brecher (USA)

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A major debate is underway in China on a proposed law that would grant new rights to Chinese workers. The debate has not been widely reported outside of China; until recently it has been almost entirely ignored by media in the United States. But when the Chinese government opened a 30-day public comment period this spring, it received nearly 200,000 comments, the majority from ordinary workers. But some comments also came from big U.S.- and European-based global corporations and their lobbying groups. These powerful forces squarely opposed the new law.

Wal-Mart's recent agreement to recognize unions in China has made headlines worldwide. But Wal-Mart and other corporations, including Google, UPS, Microsoft, Nike, AT&T, and Intel, have acted through the American Chamber of Commerce in Shanghai (AmCham) and other industry associations to try to block Chinese legislation that would significantly increase the power and protection of workers.

This corporate campaign contradicts the justifications that have been given for public policies that encourage corporations to invest in China. U.S.-based corporations have repeatedly claimed to be raising human and labor rights standards abroad. For example, the American Chamber of Commerce in Hong Kong asserts among its "universal principles" that "American business plays an important role as a catalyst for positive social change by promoting human welfare and guaranteeing to uphold the dignity of the workers and set positive examples for their remuneration, treatment, health, and safety." But U.S.-based corporations are trying to block legislation designed specifically to improve the remuneration, treatment, health and safety, and other standards for Chinese workers.

At a time when China exerts a growing impact on the global economy, efforts to improve the conditions of Chinese workers are profoundly important for workers everywhere. As U.S. wages stagnate, many Americans worry that low wages and labor standards in China are driving down those in America. Improving labor conditions in China can thus help workers in the rest of the world resist a race to the bottom that threatens to bring global wages and conditions down to the level of the least protected.

China's proposed legislation will not eliminate its labor problems. The law will not provide Chinese workers with the right to independent trade unions with leaders of their own choosing and the right to strike. But foreign corporations are attacking the legislation not because it provides workers too little protection but because it provides them too much. Indeed, the proposed law may well encourage workers to organize to demand the enforcement of the rights it offers. And the prospect of independent, organized labor in China has pushed corporations to do some organizing of their own.

### **Corporate Campaign**

The Chinese government released its Draft Labor Contract Law, whose proclaimed purpose is to protect workers' rights and interests, in April. The corporate campaign against

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<sup>1</sup> This article originally appeared in [Foreign Policy in Focus](#).

the law began soon after, spearheaded by three major organizations representing foreign corporations operating in China: the American Chamber of Commerce in Shanghai (representing over 1,300 corporations, including 150 Fortune 500 companies), the U.S.-China Business Council (representing 250 U.S. companies doing business across all sectors in China), and the European Union Chamber of Commerce in China (representing more than 860 members). All three have sent the Chinese government extensive attacks on the proposed law. The statement of AmCham in Shanghai runs to 42 pages.

These organizations have also issued barely veiled threats that foreign companies will leave China if the new legislation is passed. According to AmCham comments on the draft legislation, the law may “reduce employment opportunities for PRC workers” and “negatively impact the PRC’s competitiveness and appeal as a destination for foreign investment.”

“Business is attracted to China not only because of its labor costs but also because of its efficiency,” states Dr. Keyong Wu, an expert for the British Chambers of Commerce. “If regulation starts to affect that and flexibility, then companies could turn to India, Pakistan, and South-East Asia.”

American corporations have so much affection for the status quo in China that they have gone out of their way to preserve current Chinese labor law. As the AmCham document proclaims, that labor law has “significantly promoted standardized operation of enterprises and establishment of modern enterprise system.” AmCham criticizes the proposed changes in the law for making it harder to fire workers and for “rigid” restrictions on “business administration of enterprises,” and concludes that “we doubt whether it is necessary to carry out such significant changes.”

### **Why the Opposition?**

The extraordinarily rapid growth of the Chinese economy has depended a great deal on foreign corporations. According to Morgan Stanley’s chief economist Stephen Roach, 65% of the tripling of Chinese exports—from \$121 billion in 1994 to \$365 billion in mid-2003—is “traceable to outsourcing by Chinese subsidiaries of multinational corporations and joint ventures.”<sup>2</sup> The export surge blamed on China is primarily an export surge of global corporations using low-wage Chinese workers. Foreign corporations thus fear that the law protecting Chinese workers may eliminate their cheap labor costs.

Foreign corporations have another, less obvious, motive for opposing protections for Chinese workers. The ability to hire cheap labor in China has put downward pressure on wages and workers’ conditions around the globe. China plays a key role in setting global wage norms. It is the linchpin of what Morgan Stanley chief economist Stephen Roach has called “global labor arbitrage” in which corporations move from one labor market to another to take advantage of cheaper labor. The result is a global “race to the bottom” in which workers and their communities are put into competition with each other to see who can provide the lowest-cost labor and the most corporate-friendly conditions. According to Roach, this global labor arbitrage is also now acting as “a powerful structural depressant on traditional sources of job creation in high-wage countries such as the United States.”<sup>3</sup>

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<sup>2</sup> Stephen Roach, “How Global Labor Arbitrage Will Shape the World Economy,” *Global Agenda*, 2005 Edition.

<sup>3</sup> Stephen Roach, “False Recovery,” *Global Economic Forum*, Morgan Stanley, January 1, 2004.

China's downward pressure on the world's wages is enormous. Harvard economist Richard Freeman estimates that the entry of India, Russia, and China into the world economy in the past few decades has doubled the workforce employed in the global economy. China alone accounts for 50% of this increase. And because these countries did not add significant capital to the global economy, more workers are competing to be employed by essentially the same amount of capital. This unbalanced equation has increased the bargaining power of capital, decreased that of labor, and substantially contributed to wage stagnation or decline in countries around the world. Chairman Ben Bernanke of the Federal Reserve Bank recently stated that the rapid integration of China, India, and the former Communist bloc into the world's economy in the space of a just a couple of decades has "no historical antecedents."<sup>4</sup>

Andrew Ross of New York University, who recently spent a year in China studying how workers are coping with the rapid changes of the last decade, notes that foreign corporations can use the wages and working conditions in their Chinese operations to drive down labor conditions for workers at all levels worldwide:

No industrializing country has been able to compete for the top-end slot at the same time as it absorbs jobs lower down the production chain ... To command this spread—from the lowest assembly platform work to the upper reaches of industry and services—is to be in a position to set the global norm for employee standards as never before. Given the chronic disregard for job security and workplace rights in China's foreign-invested private sector, such a norm is a clear threat to the stability of livelihoods everywhere.<sup>5</sup>

## **U.S. Responses**

The exposure of the role of U.S.-based businesses in trying to block new rights for Chinese workers—in a report by Global Labor Strategies—has struck a responsive chord. A front-page article in *The New York Times*, drawing largely on the report, triggered a widespread discussion in the media, on blogs, and throughout the labor movement.

Members of the U.S. Congress quickly stepped forward to address the concerns raised by the report. U.S. Representatives Lynn Woolsey (D-CA), Barbara Lee (D-CA), George Miller (D-CA), Barney Frank (D-MA), and 23 other House members sent a letter to President Bush "protesting the efforts of U.S. corporations to undermine the most basic human rights of Chinese workers and block proposed new worker rights and labor standards protections in the proposed new Chinese labor law."

According to Lynn Woolsey, "We are appalled that the American Chamber of Commerce in China and some of America's most-prestigious, brand-name corporations are leading efforts inside China to weaken, if not block altogether, significant worker rights and protection provisions in the proposed Chinese labor law. This shameful lobbying campaign is totally inconsistent with our country's long-standing commitment to promote respect for

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<sup>4</sup> Krishna Guha, "Bernanke Calls for Fairer Globalization," *Financial Times*, August 25, 2006.

<sup>5</sup> Andrew Ross, "A Fast Boat to China," delivered at the Cornell Global Labor Conference on February 10, 2006. Ross is author of the book *A Fast Boat to China: Corporate Flight and the Consequences of Free Trade; Lessons from Shanghai*, (Pantheon, 2006).

fundamental worker rights in law and practice everywhere. It is challenging enough for hard-working Americans to compete in the new global economy without having U.S. corporate leaders seeking to play them off against the least-protected and lowest-wage workers in the world.”

Specifically, the congressional letter calls upon President Bush to instruct the U.S. ambassador in China and the U.S. Trade Representative to deliver letters to Chinese government officials in support of worker rights and protection provisions in the Draft Labor Contract Law; repudiate the efforts of any U.S.-based corporations and their representatives doing business in China to weaken such provisions; and urge pertinent U.S.-based corporations and their representatives doing business in China to reverse their opposition and make clear their commitment to the universal rights of all Chinese workers and to improve their working conditions and living standards.

Both major U.S. trade union federations, the AFL-CIO and Change to Win, are planning to make the opposition of U.S. corporations to expanded rights for Chinese workers a significant focus of attention in upcoming political battles over the response to globalization.

### **Linking Workers**

The spread of globalization brought U.S. companies to China. The media has often focused on how the Chinese government was suppressing workers' struggles and not enforcing existing labor law. But in a globalized world, the Chinese government is no longer the only or even the major actor in this regard. Global corporations or their subsidiaries and suppliers are exploiting millions of Chinese workers. Indeed, nearly two-thirds of the increase in “Chinese” exports actually represents non-Chinese corporations and their subsidiaries and suppliers.

Public policy in the United States and other countries has allowed these corporations to realize immense benefits from the low pay and poor conditions under which their Chinese workers work. These policies have been justified largely on the grounds that foreign corporations operating in China would elevate labor and human rights standards.

But these corporations have not raised the standards. And it is, ironically, the Chinese government that now wants to improve the situation, albeit in incremental ways. By opposing a labor contract reform law that would elevate labor and human rights standards, American and other foreign corporations are aggravating the very conditions they claimed they would ameliorate. Their campaign against the law blocks protections for Chinese workers and continues protections for corporations that would exploit them.

China's new labor bill faces a third reading this fall. If passed, it will come into full effect in March 2007. U.S., European, and other global corporations have already weighed in on the bill. They want it gutted.

Corporations and business organizations in China, and their political allies, should hold to their original promises to improve the conditions for Chinese workers. They should immediately reverse their opposition to the draft labor code and publicly support further legislation to ensure the basic human right of Chinese workers to organize, choose their own leaders, bargain collectively, and strike.

Here is an issue that links the interests of workers not only in the United States and China but everywhere. Higher wages, better working conditions, and the right to organize independent unions help workers everywhere to draw a line against the race to the bottom.

There is no need to travel to Beijing to fight for the rights of Chinese workers. The headquarters of the corporations opposing reforms for Chinese workers are in New York and Brussels, Los Angeles and London, and other cities and towns around the world. Washington, too, must make a choice. Will it support the rights of workers in China or the profits of U.S. corporations?

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## **Endogenous growth theory: The most recent “revolution” in economics?**

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In his very interesting and provocative book, David Warsh (2006) offers that there has been a recent “revolution” in economic science, “a new economics of knowledge.” While Warsh is sensitive to the history of economic thought and offers some critical insights into how it “progresses,” a 1990 essay by Paul Romer is credited with precipitating this recent revolution. As Warsh writes: it was not until 1990, when “Romer published a mathematical model of economic growth in a mainstream journal that the economics of knowledge at last came into focus, after more than two centuries of informal and uneasy presence in the background” (2006: xv). But Warsh is ambivalent on the question of a whether there really has been a revolution. On the one hand, he has a chapter entitled “The Invisible Revolution” which seems to imply that few have noticed what should be a revolutionary shift in thinking. Moreover, as regards his “tale of how one paper in technical economics” precipitated “a new economics of knowledge,” he asks, “What has changed as a result” and answers “not much—at least not yet” (Warsh, 2006: 408). We need to consider this provocative ambivalence in what follows. Part of the answer resides in considering the considerable continuity in the history of economic thought, and part of the answer resides in clarifying the “technical question” which Romer’s paper addressed. This question regards solving a problem which first appeared in Adam Smith, runs throughout the history of economic thought and then recently surfaced as the problem of explaining growth “endogenously,” that is, in a competitive market can a firm employ new knowledge to achieve increasing returns to scale?<sup>1</sup>

In Smith’s famous pin factory example there was an unresolved contradiction: The specialization which comes with the division of labor allows for remarkable increases in productivity. But up to a point at least, the bigger the pin factory the greater the possibilities of specialization and thus of increased efficiency—technically, increasing returns to scale. But since larger firms can achieve a larger scale than smaller firms, there will be a tendency toward monopoly—as Marx had insisted. Smith’s more famous metaphor, the invisible hand, however, requires many competitors in which no firm can achieve market control: In this condition, returns to scale will be diminishing rather than increasing. Since growth occurs all the time, how then to resolve this paradox?

We need a bit of history here, but my approach will be different than Warsh’s. Warsh’s history is strikingly whiggish, arguing that “economics makes progress over time,” and that, fortunately, there is “technical economics—mathematical, empirical, free to make its own mistakes—and an indispensable guide to the modern world” (2006: 408). I am not convinced of this. My suggestion is that economics remains caught in a set of assumptions which not only serve enormously important ideological purposes, but also offers little help in understanding the modern world.<sup>2</sup> To see this, we need to notice that economics is a discipline which in fundamental ways has changed little since its early articulation, that

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<sup>1</sup> In his review, Krugman (2006) expresses doubts both whether the Romer essay can bear the weight Warsh puts on it, and, more important, whether, “increasing returns really did transform our understanding of economic growth.”

<sup>2</sup> The ideology is neo-liberalism, of course. For an insider’s view, see Joseph E. Stiglitz, (2002). For a provocative history of economic analysis which shares much with my sketch, see Roncaglia, (2005).

despite a series of putative “revolutions” which greatly changed the character of economic analysis, the discipline has maintained what Schumpeter termed a “vision” of the economic process. This vision is well captured by Smith’s powerful metaphor of the “invisible hand.” Assuming what is sometimes termed “methodological individualism,” market outcomes could be explained as the joint product of the actions of self-interested and more or less atomized persons interacting in society. The stunning feature of this interaction is that in a perfectly competitive economy, all this behavior adds up to order—indeed, to an efficient allocation of resources and perhaps also, to a just distribution of these. The idea that explaining outcomes required a focus on individuals was sound, even if Smith (and the other classicists) were unclear about what had to be assumed and even if some of the more obvious assumptions were obviously not true, including doubts about whether perfect competition could reasonably be assumed. That is, part of the power of the vision is the fact that it makes good sense to try to explain, for example, a market price in terms of the decisions of households and firms. But important problems arise in what is left out and in what is imputed to these actors, whether, for example, they are rational in the sense of the theory--whether they have the requisite information and capacities, and, for example, whether theory can ignore processes that may or may not enter into the constitution of markets. The strength of these problems is to throw doubt on the entire enterprise of mainstream economics.

So-called “classical theory” from Smith to J.S. Mill, gave way to “neo-classical” theory, constituting what is usually termed “the marginalist revolution.” W.S. Jevons, Carl Menger and Leon Walras each quite independently arrived at the main ideas, the heart of what today is called “micro-economics.” While the idea was implicit in the metaphor of the invisible hand, Walras, along with Pareto and then Pigou, specifically introduced into this body of theory the idea of general equilibrium—a condition in which the prices and quantities of all products and factors that would be bought, given pure competition, is completely determined. As an amplification of the invisible hand, this is also a powerful idea. On this view of the matter, what might seem to be a very messy process or, worse, a very messy set of processes turns out to be a fully understandable and rigorously theorized and generalized market process.

Still, as Schumpeter has argued, the “marginalist (neo-classical) revolution” was not a revolution if by that one means that the neo-classicists offered important changes in the fundamental assumptions of “classical” theory (Schumpeter 1954: 892-944; Chapter 7), or in the conclusions that the theory generated in terms of government policy. Rather, by generalizing the idea of the “marginal” to cover both production and consumption, these writers were able to develop a “model” of the economic process which was far superior, in terms of both its clarity and its power, to the one offered by the classicists. But the idea of “the invisible hand,” the question of what had to be explained, and how it was to be explained was essentially the same as that of the classicists. (Neo-classical theory was indeed a *new* version of classical theory.) Thus, for example, “rational behavior” could now be unpacked in terms of optimizing “marginal utility,” and production decisions unpacked in terms of minimizing “opportunity costs. And despite Marshall’s “glance” at descending cost curves, pure competition remained the taken-for-granted “normal” case (Schumpeter 1954: 892).<sup>3</sup>

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<sup>3</sup> Neo-classical theory has never been without its critics. These begin, perhaps, with Durkheim (see Lukes, 1974), and in Germany with the *Methodenstreit*, conveniently dated from the 1893 publication of Carl Menger’s *Untersuchungen über die Method de Sozialwissenschaften und der de Politischen Ökonomie insbesondere*. Weber, of course, played a key role, too often misunderstood. One then needs to include Thorstein Veblen and a long line “institutionalists,” from John R. Commons to John Kenneth Galbraith to many contemporary “economic sociologists.” Useful anthologies of essays by representative writers include: Etzioni and Lawrence 1991; Granoveter and Swedberg 1992; Swedberg 1993; Smelser and Swedberg 1994; Biggart 2002; Dobbin 2004. See also Dugger 1992. We exclude here any discussion of Marxist criticisms. See also the Progressive



One should note also that none of this model building required much mathematics. Some writers showed a preference for equations, but others did not. <sup>4</sup>

But with or without the mathematics, if one is seeking explanations, the fact that most of the assumptions of the model are acknowledged to be false is a serious problem. Thus, for example, the Bohr model of atom gives us an understanding of chemical outcomes just because we have good reason to believe that real world atoms are properly represented by the model.<sup>5</sup> The classic response to the problem of the reality of the model in economics was made by Milton Friedman in 1953. Taking an unequivocal position in an ongoing debate in the philosophy of science, he argued: "...theory is to be judged by the predictive power for the class of phenomena which it is intended to 'explain'" (1968: 512). As he says:

...the relevant question to ask about the 'assumptions' of a theory is not whether they are descriptively 'realistic,' for they never are, but whether they are sufficiently good approximations for the purpose at hand. And this question can be answered only by seeing whether the theory works, which means whether or not it yields sufficiently accurate predictions (517).

On this test, it is hardly clear that neo-classical theory succeeds. But put this aside—at least for the moment. Predictive power does give a theory usefulness but can a theory whose assumptions are not “descriptively ‘realistic’ explain? Friedman is here assuming an account of explanation, sometimes termed “instrumentalist” such that explanation and prediction are symmetrical, that the capacity to predict gives *also* the capacity to explain—and conversely. The idea is widely taken for granted by economists. Indeed, as we notice momentarily, it is critical to the assumption that one needs a mathematical model if one is doing real science. Still, a moment’s thought suggests that prediction and explanation are not symmetrical and that to explain, the model must be at least an approximation of reality. A good correlation, for example, gives one good predictive capacities, but much more is needed if we are to have an explanation. We need, for example, to know that the correlation is not a fluke, that there is a real causal mechanism at work. Indeed, the mechanism explains the correlation. For example, there is a strong correlation between exposing iron to salt air and rusting. We know why this happens precisely because molecular chemistry gives us an understanding of the (real!) properties of Fe and NaCl. Moreover, as seems plain, we are often in a position to explain when we could not have predicted. We easily explain the rusting once it has occurred, but to predict that it will occur we need to know also that nothing will prevent anticipated oxidation. Neo-classical theory is quite correct to seek

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Economics Forum ([www.web.ca/~pef](http://www.web.ca/~pef)), the Post-Autistic Economic Review, [pae\\_news@btinternet.com](mailto:pae_news@btinternet.com) , and the writings of various “heterodox” economists, to be discussed below.

For some exceptional doubt offered by the discipline's most leading lights, see the AEA Presidential Addresses of Leontief 1971, Tobin 1972, and Solow 1980. Similar themes have been expressed by other notable insiders, for example, Thurow 1983, Balough 1982, Hirshman 1985, and Sen 1977.

<sup>4</sup> Schumpeter notes that “nobody denies that, numerous differences in detail notwithstanding, Jevons, Menger, and Walras taught essentially the same doctrine” and that “the most important differences in technique turned on the use or the refusal to use the calculus and systems of simultaneous equations” (952f.). See below.

<sup>5</sup> For a full fledged account, see my *A Realist Philosophy of Social Science* (Cambridge: Cambridge University Press, 2006).

mechanisms for market outcomes, but if the mechanisms are not true of the real world, then even if there is predictive power, we lack an explanation.<sup>6</sup>

A second “revolution” highly pertinent to the problem of explaining growth was said to occur in the 1930s with the publication of Joan Robinson’s *The Economics of Imperfect Competition* (1933) and E.H. Chamberlin’s *The Theory of Monopolistic Competition* (1933). It was a response to the criticism of the unreality of the model of pure competition. According to Brakman and Heijdra, Chamberlin’s offered “a radical analysis” which was “the first to answer the question that was raised in 1926 by Sraffa: is it possible in a market characterized by monopolistic competition and declining average and marginal costs to reach an equilibrium?” (Brakman and Heijdra, 2004: 8). Notice first that Chamberlin’s analysis (like Robinson’s) was fully within the general equilibrium paradigm. That is, properties of “rational action” necessary to achieve equilibrium were all assumed, and, often unnoticed, Chamberlin also assumed free entry and exit of firms—a defining feature of pure competition. On his view, the trick to seeing the monopolistic elements of the competitive model –and hence the possibility of increasing returns to scale, was to notice that firms could introduce “product differentiation” --uniqueness of location, brand names, qualitative differences, etc. which alongside price competition (as in the pure competitive model) allowed for forms of non-price competition. This varying degree of monopoly, accordingly, allowed for increasing returns to scale.

Chamberlin noticed that this model gave a new and important role to advertising which in the model of pure competition could only be informational. He insisted that “selling costs”-- which could not appear in the pure case, must be distinguished from “production costs.” Critically, the efforts of sellers alter the shape of the demand curve for a product. The implications of this are of enormous importance and, as noticed by Joan Robinson, include total rejection of the idea of “consumer sovereignty.” On the pure competitive model, demand curves are outcomes of autonomous choices by rational consumers and suppliers are not in a position to manipulate demand.<sup>7</sup> But as Chamberlin noted, “...the art of the advertiser is akin to that of the hypnotist. Control of the buyer’s consciousness must be gained, and while it is being gained additional expenditure yields increasing returns” (1956: 133).

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<sup>6</sup> Most economists acknowledge that their assumptions are false, but take for granted that the model is justified in terms of its putative predictive value. But, sadly, neither do we have predictive power! Economists, like weathermen and stock market analysts, are never without an explanation of a failed prediction. On the other hand, and perhaps remarkably, even among economists, there is doubt as regards the capacity of theory to understand the real world. Davis (2004) concluded that “a majority of AEA members” who responded to a survey he conducted, admitted, “at least privately, that academic research mainly benefits academic researchers who use it to advance their own careers and that journal articles have little impact on our understanding of the real world and the practice of public policy” (359). See also the very pertinent comments by Samuelson, Romer and Pack, below. Warsh’s book is full of wonderful insights into the sociology of academic economics suggesting that, following the work of Thomas Kuhn, the search for Truth is powerfully constrained institutionally.

<sup>7</sup> But this provokes the question, raised by Thorstein Veblen, of the rationality of the system: He wrote:  
The producers have been giving continually more attention to the saleability of the product, so that much of what appears on the books as production-cost should properly be charged to the production of saleable appearances. The distinction between the workmanship and salesmanship have been blurred in this way, until it will doubtless hold true now that the shop-cost of many articles produced for the market is mainly chargeable to the production of saleable appearances, ordinarily meretricious (quoted from Baran and Sweezy (1968: 133).

Indeed, if market capitalism is to be reproduced, new needs must constantly be created (Baran and Sweezy 1968; Galbraith 1968). As Schor put the matter, “consumerism is not an ahistorical trait of human nature, but a specific product of capitalism” (Schor 1992: 117).

The work of Robinson and Chamberlin represented a major forward step, but as Brakman and Heijdra argue, “by the 1960’s most (but not all) leading economists had come to the conclusion that the Chamberlin/Robinson revolution had essentially failed” (Brakman and Heijdra: 2). A number of reasons can be adduced which explain this.

First, it was hard to give up on the model of pure competition. In Chamberlin’s terms, the invisible hand was less visible. Indeed, it might not be there at all! Second, Stigler, Friedman and others argued that the “predictions” were not very different than one’s available in the pure competitive model.<sup>8</sup> Third, and very much related, as Schumpeter pointed out: once we allow for monopolistic elements through product differentiation, there is literally “an infinite variety of market patterns between pure or perfect monopoly and pure or perfect competition.” This makes for a very, very messy world which is not obviously amenable to anything like the highly simplified model of pure competition (Schumpeter, 1954: 975). Indeed, Samuelson hit the nail squarely on the head when he wrote:

If the real world displays the variety of behavior that the Chamberlin-Robinson models permit—and I believe that the Chicago writers are simply wrong in denying that these important empirical deviations exist—then reality will falsify *many* of the important qualitative and quantitative *predictions* of the competitive model. Hence by the pragmatic test of prediction adequacy, the perfect-competition model fails to be an adequate approximation...The fact that the Chamberlin-Robinson model is ‘empty’ in the sense of ruling out few empirical configurations and being capable of providing only formalistic descriptions, is not the slightest reason for abandoning it in favor of a ‘full’ model of the competitive type *if reality is similarly* ‘empty’ and ‘non-full’ (Samuelson, 1967, cited by Brakman and Heijdra, p. 11f.).

What, after all, is theory about, if not to give us an understanding of real world processes?

Brakman and Heijdra conclude with two additional observations which help to explain the failure of Chamberlin’s work to revolutionize the discipline. First, the timing was bad. The Great Depression and Keynes “revolution” were of immediate concern. While Keynes’s rejection of Say’s law allowed him to show that one could have a stable equilibrium with less than full employment, Keynes, like Chamberlin (who nowhere appears in Keynes’s work) was firmly within the paradigm of neo-classical theory. Indeed, throughout he assumed perfect competition. While the point cannot be pursued here, Samuelson’s neo-Keynesian model managed to “square the circle” “by means of ‘wage stickiness’ and ‘the money illusion’” (Boettke 1997: 37). But here again the assumptions were not only ad hoc, but implausible, leaving the model vulnerable to the Chicago school’s “hyperformalist attempt to purify the synthesis by purging it of its Keynesian contaminants” (38). The Neo-Liberalism of the recent past was the consequence. Boettke well summarizes matters:

Samuelson’s reconciliation of the micro-economic ideal type with involuntary unemployment was repudiated, along with Keynesian prescriptions, in favor of a view that there could be no involuntary unemployment, hence that government action was unnecessary. The result was a doctrinaire derivation of the laissez-faire conclusions that had been overturned by the formalist revolution; economics was now cleansed of

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<sup>8</sup> The thrall of the instrumentalist model is clear here along with the relative absence of capacities to falsify on the basis of “predictions.” As we shall see, these arguments recur as regards endogenous growth theory.

Keynesian impurities that had been introduced in the interest of realism (Boettke, 1997: 38).<sup>9</sup>

Brakman and Heijdra offered “perhaps a more important” reason for the failure of Chamberlin’s effort to revolutionize mainstream theory. “... [P]erhaps more importantly, Chamberlin and coworkers failed to come up with a canonical model embodying the key elements of the theory. It was not so much Chamberlin’s ideas that were rejected but rather his *modelling approach* that was deemed unworkable” (2). This says a great deal about economics as a science. The “formalist revolution” had by then occurred. Presumably, in the absence of a mathematical model, the ideas could be ignored—even if they were essential to understanding economic reality. We would like to think that reality drives theory, but it surely seems here that we have good example of how fundamental assumptions, including assumptions about technique, are decisive. To see what is at issue as regards the construction of a “canonical model,” we need here another bit of history.

Mathematics has long been a part of economic theorizing, but there is no agreement on dating the birth of mathematical economics partly because its essential features are contestable. Debreu offers that 1838, the publication of Augustin Cornot’s *Recherches sur les Principes Mathématiques de la Théorie des Richesses* is a proper “symbolic date” for its birth. But as Schumpeter noted, the appearance of mathematics in an economic treatise does not make it mathematical economics. It may be that already familiar ideas can be represented by a mathematical term with nothing further at stake. So for example, “a production function” was merely the mathematical expression of the relationship between inputs and outputs in the same manner as it had been understood. Calculus could easily represent the mechanism which shows that firms pay wages equivalent to the marginal product of the worker. But, as Warsh notes, the mathematics conceals many assumptions. Indeed, Marshall was not alone in thinking that the mathematics might, indeed, *mislead* inquiry and easily could be avoided.<sup>10</sup>

Almost everybody agrees that there was significant break after World War II. Debreu (1984), for example, says that the work of von Neuman and Morgenstern in 1944 “announced a profound and extensive transformation of economic theory.” This work was followed with work by Samuelson whose 1947 *Foundations of Economic Analysis* is usually credited with bringing together this new approach to economic model building.<sup>11</sup> In a mathematical economics, then, mathematics does not merely represent economic mechanisms mathematically; it becomes (in contrast to Marshall’s advice) an engine of inquiry. Thus, one needs *also to* employ mathematics deductively, to generalize and integrate systematically the underlying processes.

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<sup>9</sup> Rational expectations theory also played a role. Human capital theory (invented by Gary Becker) was the effort to place labor back within the price-auction framework. See Thurow 1983: Chapter 7. Worth mention, perhaps, Keynes was not, in contrast to Samuelson, a formalist who was committed to mathematical economics. Keynes wanted models, but for him, building them required “a vigilant observation of the actual working of our system.” Indeed, “to convert a model into a quantitative formula is to destroy its usefulness as an instrument of thought” (Keynes 1984). Of course, it was Samuelson’s use of mathematics which allowed him to reconcile the micro economics of neoclassical theory with involuntary employment.

<sup>10</sup> Warsh (2006: 77) quotes Marshall’s 1901 letter to Bowley:

- (1) Use mathematics as a short hand language rather than as an engine of inquiry;
- (2) Keep to them till you have done.
- (3) Translate into English;
- (4) Then illustrate by examples that are important in real life;
- (5) Burn the mathematics;
- (6) If you can’t succeed in (4) burn (3).

<sup>11</sup> Worth mention, perhaps, Wassily Leontief and Joseph Schumpeter were early advocates of mathematics and came to change their minds.

Ideally, the model should be axiomatized so that assumptions can be clarified, theorems can be drawn, and consistency can be proven (Schumpeter: 1954: 954-55). As Warsh writes: "... instead of the unstructured, unnumbered, and insoluble series of equations that Walras had envisaged, Samuelson created a system strongly influenced by the new macroeconomics...No longer was it sufficient to say that everything depended upon everything else. Now it was necessary to break the economic world into subsystems and demonstrate how the big spending categories depended on one another" (119). The approach was quickly appropriated by the leaders of the new generation of economists. We need to emphasize here also that the mathematics in use, a mathematics that assumed linearity and convexity, was easily fitted to the neo-classical model of perfect competition, even if it meant ignoring features of the world which did not fit the mathematics.<sup>12</sup> That is, simultaneous equations of  $n$  variables were perfect to represent the ideas of general equilibrium.

An important feature of mathematical model building was on its side. I noted earlier that Friedman's classic defense of the problem of unrealistic model building assumed that explanation and prediction were symmetrical. This is a consequence of the account of explanation which dominated thinking in the philosophy of science for many decades. Sometimes called "the covering law" model or the D-N (Deductive/Nomological) model, it holds that explanation *is* deduction. That is, if the explanandum was an entailment of premises, then one had an explanation (period). In Hempel's classic formulation:

$$\begin{array}{l} C_1, C_2, \dots, C_k \\ \underline{L_1, L_2, \dots, L_r} \\ E \end{array}$$

The "explanans,"  $C_1, C_2, \dots, C_k$  are statements describing the particular facts invoked, sometimes called "the initial conditions," and  $L_1, L_2, \dots, L_r$  are general laws. The event to be explained (the explanandum),  $E$ , is a logical consequence of the premise set.

To take the simplest case, if one has the "principle," "If you put salt in water, it dissolves," you can then predict that in particular instance, a consequence of putting salt in water will be that it will (probably) dissolve. Similarly, on this view, one can explain why some instance of salt dissolved by appeal to the same "law." Of course, it is part of the explanation of its dissolving that the salt was put into water. Science may well begin by identifying regularities in the world. But a scientific explanation does not stop with the discovery of "law-like" correlations. Rather, it comes with identifying the causal mechanisms at work such that, in this example, when salt is put in water, it tends to dissolve-- and not (say) to explode or turn the water to gin! Indeed, the covering law model obscures the critical role of model building in real science.

Formalization gives economists enormous deductive power. Unfortunately, as just the time that economics was achieving the status of a science which had the appearance of physics, philosophers were providing fatal objections to Hempel's deductive-nomological

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<sup>12</sup> That is, it is not true (as asserted by, for example, Debreu (1984) that "commodity space has the structure of a real vector space"—a critical assumption for formalization. Mirowski (1991) relates the story of the shepherd who agreed to accept two sticks of tobacco for one sheep but became confused when given four sticks for a second sheep. For the economist, this shows that the shepherd does not understand arithmetic. But indeed, it shows that the economist does not know sheep! The example is especially pertinent to Chamberlin's argument regarding product differentiation. Krugman offers: "Economics understandably and inevitably follows the line of least resistance" (quoted by Warsh, p. 59). But Mirowski (1991) is correct in insisting that there was nothing inevitable about this process.

account of explanation.<sup>13</sup> Indeed, despite much talk to the contrary, no real theory in the physical sciences can be fully expressed as a deductive system, with axioms and deductions there from. Moreover, and critically, while for some theories, mathematics will play an important role, as noted, scientific theories explain by providing “an account of the constitution and behavior of those things whose interactions with each other are responsible for the manifested patterns of behavior” (Harre: 1970: 35). These scientific theories identify “things”—molecules and atoms, consumers and firms, how they are structured and how they interact with others. They are, of course, representations, but they are meant to represent reality—as it is in-itself (Manicas, 2006). Wassily Leontief well represents the problem of mathematical economics (and econometrics):

Page after page of professional economic journals are filled with mathematical formulas leading the reader from sets of more or less plausible but entirely arbitrary assumptions to precisely stated but irrelevant theoretical conclusions...Year after year economic theorists continue to produce scores of mathematical models and to explore in great detail their formal properties; and the econometricians fit algebraic functions of all possible shapes to essentially the same sets of data without being able to advance, in any perceptible way, a systematic understanding of the structures and the operations of a real economic system (Leontief 1982: 104).

It might be supposed that even if this is true of those equations which represent the model of purely competitive markets, reality was restored with what Brakman and Heijdra call the “second monopolistic competition revolution,” powerfully promoted in a 1977 paper by Avinash Dixit and Joseph Stiglitz. In contrast to the Chamberlin revolution, this revolution was a success—at least within the world of professional economicists. As Brakman and Heijdra write: “the reason for [their] success is that Dixit and Stiglitz managed to formulate a canonical model of Chamberlinian monopolistic competition which is both easy to use and captures key aspects of Chamberlin’s model.” And even if one may argue over whether it left out “key aspects” of Chamberlin’s model, the Dixit/Stiglitz model, in contrast to Chamberlin’s, was mathematical. In any case, Brakman and Heijdra note that while it is “somewhat unrealistic, it has nevertheless become the workhorse model” (12).

But indeed, the power of the idea of the “invisible hand” is nowhere clearer than in Stiglitz’s acknowledgement of the consequences of one of the most typical and obviously unrealistic assumptions of their model. “The most crucial assumption” is that “all individuals are identical.” To be sure, this assumption “simplifies the analysis.” Unfortunately, there is a price to be paid: making this assumption “might give us a false sense of how well markets work” Indeed, “when the simplifying assumptions are dropped, it becomes apparent that the invisible hand is partly invisible because it is simply not there” (2004: 146). One may suspect that Leontief had very much in mind a host of such unrealistic, but “workhorse models” inspired by Samuelson 1947-- including the influential 1977 paper by Dixit and Stiglitz.

This takes us, at last, to the featured player in Warsh’s “tale.” Endogenous growth models, following the lead of Romer (1990) are currently *de rigour*. But it is easy to show that while “imperfect competition” now has a place in mainstream theory, the new growth models are still well within mainstream theory and, accordingly, still very much lacking a significant touch to reality. A quick review of Romer will show this.

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<sup>13</sup> The critical literature is huge. For a review, see Manicas (2006), Chapter 1.

Romer's model has three major premises. First, technological change is at the heart of economic growth. Second, technical change is "endogenous"—it is explained in terms of "the intentional acts of individuals." More specifically, it is explained in terms of the familiar mechanism of neo-classical price theory, for example, that individuals are "rational" in the sense of neo-classical theory and respond to market incentives, in particular here, the competitive drive to reduce the costs of production. Third, technological change, for example, the design for a new product, or more generally "knowledge," involves non-rival, incompletely excludable goods. A non-rival good can be used by many others. A good is excludable if "the owner can prevent others from using it." The excludability, even if partial or temporary, of a non-rival good is essential as regards covering fixed costs of production and thus of increasing returns to scale.

The production process in the Romer formulation is described as a function  $F(A, X)$  where  $A$  is a non-rival input, for example, a production process that can be used in many settings, and  $X$  is a rival input, for example, physical or human capital, for example, the ability to add. Thus, "the ability to add is rivalrous because the person who possesses the ability cannot be in more than one place at the same time; nor can this person solve many problems at once." Like most economic goods, "human capital can be privately provided and traded in competitive markets" and is thus subject to rivalrous competition (S75). In Romer's model, there are four inputs: capital, labor, human capital and an index of the level of technology. If these are to function in the mathematics, of course, they must be quantifiable. Here one encounters all the usual problems with indexing.

Romer notes that prior to his work, "most models of aggregate growth, even those with spillovers or external effects, rely on price-taking behavior."<sup>14</sup> "But once these three premises are granted, it follows directly that an equilibrium with price taking cannot be supported" (S72). Moreover, all these efforts employed a mathematics which assumed convexity.<sup>15</sup> But because of its peculiar properties, nonrivalry needs to be represented by a mathematics of non-convex sets. Dixit and Stiglitz (1977) had provided the canonical mathematical model of monopolistic competition, and Romer had the mathematics to represent an equilibrium with non-rivalry as its key feature. (S71).

Like his predecessors in axiomatic mathematical theorizing, Romer's model operates at a very high level of abstraction and while he did overcome some of the limits of the older mathematics, he had to make a number of "simplifying assumptions" if the mathematics was to be manageable and produce results. One is that the population and supply of labor is constant, a second is that the "the total stock of human capital is fixed and that the fraction supplied to the market is also fixed" (S79). It is plain enough that neither of these are true. Other simplifying assumptions include "extreme assumptions on factor intensities" (*ibid.*)—not to be developed here, that "the output of designs is linear in each of  $H_A$  and  $A$  when the other is held constant" (S84), that "devoting more human capital to research leads to a higher rate of production of new designs," that "the higher the total stock of designs and knowledge is,

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<sup>14</sup> Price taking is the rule in perfect competition since neither buyers nor sellers can determine the price. In price-making markets, price is determined by sellers, oligopolists or monopolists. Roughly, spillovers are "externalities" which can be bad, e.g., pollution, or good, in particular here, the *unpaid* side effects of economic activity.

<sup>15</sup> The distinction, convex/non-convex, is a geometrical (topological) distinction which asks whether for any pair of points within an object, any point on the straight line segment that joins them is also within the object. In cutting edge mathematical economics, the calculus gave way to set theory/topology. Warsh identifies some of the key figures, Tjalling Koopmans, a physicist turned economist, Gerard Debreu, Kenneth Arrow and others.

the higher the productivity of an engineer working in the research sector will be” and finally, but confusedly, that “the equilibrium here is based on the assumption that anyone engaged in research has free access to the entire stock of knowledge” (S83), that is, knowledge is non-rivalrous although the capacity to use it is. Several of these assumptions are merely simplifying, some are quite plausible, and several of them lead directly to policy: for example, expanding sums devoted to research should promote growth. The last, “free access,” is puzzling because as Romer says, non-rival goods may be at least partly excludable. To protect their investment, firms do all that they can to exclude knowledge from potential competitors. But the assumption seems to be needed to assure an equilibrium solution.<sup>16</sup>

But having been thoroughly socialized into the paradigm of neo-classical theory, Romer also takes for granted a number of other assumptions which are even more critical. Thus, as already noted, actors are rational in the required sense. Labor markets are competitive, and there is still an equilibrium price of commodities since producers can determine their marginal costs and “the resulting monopoly price is a simple markup over marginal cost, where the markup is determined by the elasticity of demand” (S87)—however this is determined.

Warsh suggests that until Romer achieved a formalization, important ideas regarding the role of knowledge in growth economics could be ignored. But this says a great deal about the discipline of economics—noticed by Warsh but not pressed to its conclusion. On the present view of the matter, we have here an excellent example of how method stands in the way of gaining understanding. The “invisible hand” idea was powerful, no doubt, and it easy enough to see how it came to dominate nineteenth century thinking about markets. And the subsequent formalizations were indeed elegant, beautifully legitimated by a philosophy of science which though false, remained dominant (Manicas, 1989). One would need good reason, presumably, to abandon either the idea that one could explain economic outcomes in terms of the interactions of atomized, rational and self-interested persons or the highly sophisticated mathematical model building approaches which rested on these assumptions.

The equations in Romer’s paper give a rigor to the argument and allow for strict deductions from premises. But as is clear enough, their relation to reality depends upon the reality of assumptions which are required by the formalism. But perhaps, as regards the revolution in economic theory, this is not the worst of it. The augmented Solow model has not been driven from the field. Its defenders not unreasonably insist that the competitive model, suitably modified, would still be preferable to the Romer model. Indeed, given its set of special assumptions, why bring in a shaky monopoly model when so much of the traditional model has served its purposes? Echoing Friedman, as Mankiw noted, “the issue at hand is not whether the neo-classical model is exactly true... The issue is whether the model can even come close to making sense of international experience” (Quoted by Warsh, p. 274).

Romer was himself fully aware of these problems. In his perhaps even more important 1994 essay, “The Origins of Endogenous Growth,” Romer tells two “stories,” “equivalent to creation myths, simply stories that economists tell themselves and each other to give meaning and structure to their current research efforts” ( 3). The first “story” regards “the convergence controversy,” “whether per capita income in different countries is

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<sup>16</sup> According to Warsh, Joseph Stiglitz was irritated by the Romer model. “We knew how to construct models that ‘worked’ but we felt uneasy making these special assumptions” (Quoted by Warsh, p. 301). There may be some irony in this since Dixit and Stiglitz, of course, shared in accepting the “non-special” but manifestly untrue assumptions of the competitive model.



converging” (4). His conclusion is very important. “[I]f you are committed to the neo-classical mode, the kind of data in Figures 1 and 2 cannot be used to make you recant.” Of what kind is this data? They are regressions of cross-cultural data.<sup>17</sup> The problem is precisely that “many different inferences [from the competing models] are consistent with the same regression facts” (10). Worse, with suitable assumptions about evidence and the tasks of theory, “we can thereby enshrine the economic orthodoxy and make it invulnerable to challenge” (20). As suggested in the foregoing, it is perhaps *already* invulnerable to challenge.

For Romer the convergence controversy was a wasteful divergence since it took attention away from the real causes of growth—a divergence he admits contributing to in his 1987 essay, “Crazy Explanations for the Productivity Slowdown.” He says: “Looking back, I suspect that I made this shift toward capital and away from knowledge partly in an attempt to conform to the norms of what constituted convincing empirical work in macroeconomics.” “If you want to run regressions, investment in physical capital is a variable that you can use, so use it I did” (20). But indeed, if one wants to evaluate the competing theories of growth, Lucas’s observation (1988) “that people with human capital migrate from places where it is scarce to [a] place where it is abundant, is as powerful a piece of evidence as all the cross-country regressions combined” (19). To be sure, this sounds like a healthy infusion of sociology and history.

Indeed, on Warsh’s account, Romer seems to have himself despaired of the limits of mathematical economics, despite his early enthusiasm, and has turned his attention as an entrepreneur to “how to educate people in a world of global competition.” His 1994 paper, “New Goods, Old Theory, and the Welfare Costs of Trade Restrictions” suggests a powerful reason. He wrote: “[I]n our post-WWII enthusiasm for distilling ‘the miracle of the market’ down to its mathematical essence, economists have generally been willing to push issues aside. Decentralized markets could be shown to get everything right but only by assuming that half of our economic problem...had already been solved” (Quoted by Warsh, p. 326).

The problem here is the very idea of “equilibrium.” With evident acknowledgement of critics of general equilibrium theory—Romer offered that only a sparse amount of goods exist and thus that genuinely new goods are always added.<sup>18</sup> There may well be no equilibrium since entrepreneurs are always seeking to upset the conditions that are posited to generate it. This was long ago recognized by business school professionals who argue that micro-economic models are useless for business decision-making. For example, “market models admit time considerations only in a limited and contrived manner...But investment represents the concern of major executives, rather than clerks, for the very reason that markets are dynamic and are buffeted by many forces that vary over time...In other words, executives who

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<sup>17</sup> The problem becomes a defense of the competitive model in the hands of Howard Pack (1994). He asks, “But have recent theoretical insights succeeded in providing a better guide to explaining actual growth experience than the neo-classical model?” and answers: “This is doubtful.” (55). For him, not only it difficult to use aggregate data to distinguish between standard neo-classical theory and endogenous growth theory, but “most of the empirical work has utilized observations across countries and imposed extremely strong assumptions about international production functions” (*ibid.*).

<sup>18</sup> As Hayek insisted: “[E]conomic theory sometimes appears at the outset to bar its way to a true appreciation of the character of the process of competition because it starts from the assumption of ‘given’ supply of scarce goods. But which goods are scarce, of which things are goods, and how scarce or valuable they are—these are precisely the things which competition has to discover” (“Competition as a Discovery Procedure,” cited by Paul Lewis, 2006). Critical here is the idea that knowledge is distributed and not anybody can have it all. Markets offer a solution to this.

are estimating of the pattern of revenues and costs over the life of an investment--and the length of its life--get relatively little help from market models of price theory" (Oxenfeld (ed.) 1963: 63). Indeed, as Hayek and the Austrians have insisted for some time, the problem of knowledge far outreaches the rather limited role that it plays in endogenous growth theory (Lewis 2006).

It is therefore no mistake, as pointed out by William Baumol, that "ideas of entrepreneurship, institutions, property rights, and freedom have almost no place in the textbooks of core classes and industrial organization classes" (*Economic Journal Watch*, January 2006).<sup>19</sup> Baumol provided two powerful reasons: First, "entrepreneurial activities do not incorporate the homogeneous elements that lend themselves to formal mathematical description" and second, as suggested by Romer, "equilibrium models exclude the entrepreneur by their very nature...[S]ustained equilibrium," as insisted by Schumpeter and the Hayekians, "is something that the entrepreneur does not tolerate" --exactly because entrepreneurs are constantly seeking genuinely new goods.<sup>20</sup>

Indeed, this takes us back to the vision laid out by Smith and the classicists. I noted that there is good sense to trying to explain economic outcomes in terms of the decisions of the relevant actors. But actors cannot be restricted to "firms" and "households." And more important, they need to be situated. Contrary to the assumptions of neo-classical theory, individuals are not identical: They have very different values, aims and goals, and more important, very different capacities and powers—critically a function of their place in social relations. CEOs of corporations are in a situation which is very different from the situation of a family run Chinese restaurant; unionized workers are not in the same situation as immigrant farm workers—one can easily go on here. Accordingly, not only are markets concretely different—exhibiting varying degrees of monopoly, but as part of this, market outcomes are also shaped by decisions of governments, unions and certifying boards, among others.<sup>21</sup> Unfortunately, reality *is* messy. Indeed, as Schumpeter and the Hayekians see, it is too messy for the inevitably static models of general equilibrium theory—whether or not it seeks to move away from the assumptions of pure competition (Schumpeter, 1954: 1160-61; Herrera, 2006: 249).

So, what of Warsh's question: "What has changed as a result?" and his answer "not much—at least not yet." First, it is still not clear whether the new models of imperfect competition will displace the pure competitive model or whether the new growth models can indeed make sense of growth—as raised by Krugman, among others. One may doubt both.

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<sup>19</sup> This was established in a study by Dan Johannson in *EJW* (2004). The socialization of mathematical economists begins in the introductory course. As regards public thinking on economic matters, Samuelson wisely pointed out: "I don't care who writes a nation's laws—or crafts its advanced treatises—if I can write its economic textbooks" (Quoted by Warsh, p. 384).

<sup>20</sup> But Baumol is nevertheless unwilling to give up general equilibrium theory. On his account, it is dealing with subjects for which the entrepreneur is irrelevant! "Static analysis has offered many valuable insights and its body of theory is an admirable accomplishment" (p. 135). Similarly, economists cannot leave to historians the "greatness mystery" that we face: why have "the relatively free economies in the past two centuries been able to outstrip...the performance in terms of growth and innovation, of all other forms of economic organization?" (*ibid.*). But as the Austrians insisted, *disequilibrium* prices, not equilibrium prices are the key since they alert entrepreneurs to new profit opportunities. See Kirzner 1984.

One should emphasize here that the problem is not whether or not markets do function to allocate, distribute, and promote innovation, but whether general equilibrium theory provides an adequate explanation of outcomes. See my 2006, Chapter 6 and Appendix D.

<sup>21</sup> In addition to my 2006, see also Boettke (1997), Lawson (1997), Lewis (2004, 2006).

One might hope, optimistically, that at least the new models do thwart much of the ideological core of neo-liberalism. Perhaps, its ideological hold on the economics profession may be on the wane. Still, even if the pure competition model is replaced, one must assume that growth (and other critical issues) can be explained within the framework of general equilibrium theory. Not only may this be doubted, but, worse, it may well be that because perfect competition has been compromised, the new growth paradigm will conquer genuinely competing heterodox alternatives. The problem with Warsh's account is just that he does not see the extent to which endogenous growth theory is well within the neo-classical paradigm, that there are deep criticisms of that paradigm, and even more important, that there are genuine –revolutionary—alternatives. If, then, these alternative accounts—still very much in the making—can provide the best hope for an understanding of growth—and many other features of capitalist market societies, and they get buried, the new growth theory will have made another “revolution” which sustains a considerable portion of Adam Smith's vision of the invisible hand.<sup>22</sup>

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<sup>22</sup> See Herrera's excellent overview (2006). As he points out, “the endogenous growth models are not *neutral*: their endogenization means *marketization* (252).”

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