

Climate change and the premises for a New Society

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Abstract

The starting point for this article is the excellent article by Professor Marglin on the dangers of climate change. He outlines a broad remedial prescription, a new economics based on ecological concerns and a broadly based cultural revolution to change people's thinking. We agree with Marglin that the prevailing neoclassical analysis is fundamentally flawed because inter alia it adheres to individuals' independent (rather than inter-dependent) utility functions. It is argued that ultimately the problem of the ecosystem, and indeed violent threats of mass destruction that we constantly face cannot be solved without the insights that community and spiritual thinking bring us.

JEL codes: N5; O2, Q2, Q3

Keywords

Climate change, community, eco-systems, neoclassical economics, spiritual thinking

Introduction

Professor Marglin (2013) has written an important and persuasive article, 'Premises for a New Economy', warning us of the dangers that we face with respect to climate change. His views have been endorsed by several leading sustainability professionals; however, today his principal message is a determined appeal to the subject of Economics itself, arguing that sustainability has to be embodied in an equal concern for the problems of global development, equity and ecology. Marglin critically examines the consumptive and productive equity of the Global North and the Global South in the wake of imminent climate change destroying the Earth's ecosystem, and the colossally damaging implications for our global economy and sustainable modern living on this planet. Under these

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circumstances, he outlines a broad and general remedial prescription: a New Economics, based on ecological concern, that would reorient the basic principles of demand and supply and take collective action to lower productive capacity in an equitable manner. The article concludes with a plea for rediscovering relationships of respect and reciprocity for one another and for the planet, as the only non-destructive path left to us.

The purpose of this article is not to disagree with any part of the broad analysis above, but rather to suggest that Marglin does not go far enough in discussing how such changes might be brought about. We take a two-pronged approach in discussing Marglin's central message:

1. On the one hand, when considering a top-down approach from the policy level, it is indeed necessary that we develop a New Economy built upon fundamentally new assumptions and methodologies. These must be centred upon ecological concern and informed by the evidence of modern environmental science.
2. On the other hand, change in ideas is not only the prerogative of economists. In order for any transformative developments in the field of Economics to be comprehended and become effective in mitigating the impact of climate change, change must come at the human level. To implement the necessary macro-level change in outlook, we require a pervasive cultural and spiritual revolution in our perception of the planet.

International policy-level involvement in climate change began with the 1988 establishment of the Intergovernmental Panel on Climate Change (IPCC) jointly by the United Nations Environmental Programme (UNEP) and the World Meteorological Organisation (WMO). The IPCC, driven by prevailing scientific perspectives on the importance of climate change and its environmental and socio-economic impact, has long been at the forefront of the battle to persuade humanity to take the sustainable path and hence shift the ecological sword of Damocles. It is now over 25 years since the establishment of the IPCC, and climate change is no longer something to be anticipated decades from now. Scientific evidence tells us that climate change is here and now, although economists still find the subject fraught with uncertainty. Marglin (2013) is correct in arguing for a conservative approach to interpreting the vast evidence and in asserting the urgency of the situation:

We are living in a danger zone. Since the dawn of industrialisation, economic growth has been associated with ever-greater use of non-renewable materials and energy, as well as the degradation of renewable resources beyond their regenerative capacities. This has eroded the ecosystems upon which the economy depends and will ultimately lead to destructive transformation or even collapse. (p. 149)

We are currently on target for an average increase in global temperatures of between 4° and 6° by 2100 – an enormous jump comparable to average temperature increases since the Ice Age, which will be further worsened in some regions by lack of uniformity across the globe. With climate change, science has warned us that our world is experiencing an upheaval such as we have never faced before. This will inevitably require drastic changes in how we live and behave as a society. On a hopeful note, green technologies

are gaining momentum and indicate that if we make appropriate decisions in resource allocation and investment, we need not suffer vast welfare losses. However, without widespread remedial action at this stage, there will be a steep fall in the standard of living for those who survive these changes.

Thus, in the following article, we discuss the premises for a New Society – accepting Marglin’s New Economy (long-run transformation in the pedagogy of Economics) as well as a New Culture (a broader cultural revolution in adopting human, social and spiritual ideals).

The new economy I: The nature of consumption and production

Within the subject itself, there is a great deal of debate over theories of consumption and production, which might inform a New Economics. Taking a departure from classical and neoclassical fundamentals of value and reorienting the principles of market economics requires, *inter alia*, that the very nature of consumer demand, productive capacity and the use of technology be fully explored. Marglin argues for a reduction in productive capacity in the Global North, upon the basis that 20th-century capitalism has delivered the solution to the basic economic problem: On an aggregate level, we do not require production to increase in volume to meet basic consumer needs for a decent standard of living for all. As Marglin puts it, we no longer need increased aggregate production of food to feed the hungry, nor clothing to dress the shivering. Indeed, it may be considered that the solution of the Malthusian problem represents the triumph of the neoclassical emphasis on unbridled increases in productive capacity. This fixation on productive capacity, Marglin indicates, however, has over-delivered; the consequent hangover must be remedied by reducing productive capacity. Indeed, despite being politically difficult, reducing productive capacity would certainly reduce consumer demand, and thus contribute to ecological welfare. However, we argue that with respect to the needs of a planet facing the problems of climate change and growing inequality, the issue of productive capacity and consumption is rather more nuanced, and therefore, an approach of mere adjustment is not enough. Rather, rampant consumerism (and the production that feeds it), which does not lead to improvements in human or ecological well-being, should be actively reduced; productive capacity needs to be redirected towards green technology and research.

The idea that production and consumption might be each treated homogeneously is an axiom of conventional macroeconomic theory that is criticised in the work of Keynes, Minsky and Galbraith, respectively. Each emphasises the idea that consumer demand is a non-homogeneous concept and complex and subjective – based on a combination of basic needs for decent living standards and unlimited desires or psychological consumption (Keynes, 1936). Galbraith (1969) cogently argues in *The Affluent Society* that the role of the economist is therefore not to merely match consumer demand with productive output, but rather to understand the origin of consumption wants. This argument can offer some insight into how consumer demand and productive capacity might be weighted in Marglin’s New Economy, when comparing the urgency of consumer needs to the ecological needs of the planet.

We would explicitly reject neoclassical assumptions of non-satiation and the pursuit of infinite productive capacities, in a world of dwindling resources, climate change and deterioration of the global commons.¹ Certain types of non-essential production need to be actively reduced and redirected towards providing and equitably distributing basic consumer needs, because they are non-essential in terms of marginal utility and exist to continue turning the mangle of current emphasis on increasing volumes of production. This type of production for production's sake includes deliberately short shelf lives for products, such as the light bulb cartel of the 1920s and today's Apple products. These instances demonstrate where manufacturing production has the deplorable incentive to create waste for the purpose of profit-maximisation. Moreover, this specific type of production that permits, encourages and feeds non-essential consumer demand should be discouraged because it is fundamentally driven by championing exclusivity and thus worsens the problem of inequity both among communities and across the globe. The adage of consuming 'because we can' is examined in Keynes (1936) and later Minsky (1975). The global middle class (which the Brookings Institution Kharas and Gertz, 2010, estimates will grow in number from 1.8 billion in 2010 to 3.2 billion in 2020 – with 1.7 billion in Asia alone) represent an increasing culture of aspiration, comparative living and 'keeping up with the Joneses' as a specific type of consumer demand. These involve the demands 'relative only in that their satisfaction lifts us, makes us feel superior, to our fellows' (Keynes quoted in Minsky, 1975). It is this regard for personal superiority that permits consumerism via irresponsible advertising campaigns² and artificial market segmentation according to consumer social classes, as pioneered by General Motors during the 1950s. Since the dawn of the media age and the resultant influx of celebrity culture, however, it is not only the Joneses that today's increasingly middle-class consumer base feel the need to keep up with.

As such, we can see that certain types of production that feed wasteful and inequitable consumerism should be reduced. However, reducing productive capacity as a whole in the Global North must on no account hinder research and development of sustainable technology. Like basic consumption needs of food, shelter and clothing, productive capacity in the right direction can bring essential technological progress to counter climate change and improve human welfare. On this point, we differ substantially from Marglin's perspective; we believe in green and sustainable technology as the long-run solution to welfare loss. For instance, Solana (2014) refers to the successes of creative initiatives that have been pursued in China, where seven pilot emissions-trading schemes now cover quarter of a billion people. Dyson's progress in low-energy vacuum cleaning technology has withstood recent European Union (EU) legislation over suction power. Likewise human productive and technological capacity has permitted solar-powered hybrid airships to reach testing stages for imminent large-scale commercial use. Similarly the movement from non-renewable to renewable energy sources requires a great deal of technological effort and investment. The Global Apollo Programme, pioneered by Sir David King, aims to create a fund of USD10 billion a year for 10 years of research into large-scale storage of solar energy, renewable energy and smart grid technology with the object that baseload renewable energy will be cheaper to install than coal-fired power in all regions of the world by 2025. In this sense, Marglin's argument for reducing productive capacity in the Global North rather underestimates where investments into green

solutions might soon take us. We conversely assert the crucial role of technology in the future, which must encourage at every level the traits of creativity, innovation, responsibility and political will.

The new economy II: Valuing the cost of climate change

Any potential aggregate costs or welfare losses that climate change entails are crucial in making policy recommendations. From the perspective of economists, future uncertain costs and benefits must be quantified in order to be politically persuasive. The question of how the New Economy might value the costs of climate change is thus rather more murky than discussions of consumer and producer interactions; the neoclassical economic models for informing the valuation of costs and benefits have historically left much to be desired – and indeed researched. Marglin's analytical framework on valuation is decidedly non-numerical, yet in its fundamental assumptions on consumer demand and productive output, it manages to imply a rejection of conventional welfare economics that assumes consumer preferences remain sacrosanct. The idea of independent utility functions is displaced by Marglin's suggestion that we require a change in our value systems which promotes reciprocity; the latter would indicate support for interdependent utility functions and challenge the counterintuitive neoclassical idea that every individual's selfish behaviour will maximise welfare (Arrow and Debreu, 1954; Arrow and Hahn, 1971).

Marglin is generally optimistic in discussing the cost of remedying the impact of climate change; however, his position on the creation of a New Economy based on ecological economics appears to be somewhat conflicted, as he cites controversial values derived from *The Stern Review* (Stern, 2006) in his complementary 2013 paper, 'What Should a Sustainable Economy Sustain?' which were widely criticised by many, including Stern's numerous predecessors in environmental economics, among them Nordhaus.³ As such, with reference to Marglin's paper, we might discuss the shortcomings of the discount rate approach to valuation and raise the question of how it might be tackled in a New Economy. The question of posterity is inadequately dealt with under such a simple means of future valuation. For instance, Pigou (1920) and Ramsay (1928) first highlighted the welfare implications for posterity with the use of non-zero discount rates such that intergenerational claims automatically become skewed to favour future generations over the current. While this is not inconsistent with Marglin's (and indeed our) general message of championing sustainable living, the precise rate of valuation loss per annum cannot be calculated. It is certainly worth considering whether there is a more accurate alternative to assigning estimated or arbitrary numbers for the discount rates, given the high margin of error.⁴

In our discussion in this section and the last, of what aspects of sustainability might be debated in forming the basis of a New Economy, the desire is evident for the subject of Economics to become more scientific –, for example, with unchanging behavioural patterns, neoclassical ideals of valuation (efficiency, optimality, long-run equilibrium) and numerical strength for predictive capabilities. However, it is equally evident that the language of Environmental Science differs greatly from that of Economics in both motivation and outcome, due to the human aspect associated with the latter. Interestingly, in

attempting to translate economic language into scientific language, we can ask ourselves important questions about the nature of Economics as a subject. In the natural sciences, when theory fits data, it is considered a model until data prove otherwise. In neoclassical Economics, the market model, for instance, has specific and artificial assumptions of perfection. When this inevitably fails to fit data, we counter-intuitively continue to use the very same model – while dubbing this ‘market failure’. The idea that climate change can be considered a market failure is hazardous because this observation gives a false illusion of scientific certainty but tells us absolutely nothing about the dangers of building spurious models based on the assumption of perfect human behaviour and information. These vast ‘market failures’ rather signify that these simple mathematical market models are totally inappropriate to the challenges facing humanity this century. These are questions that a New Economics has to answer.

The new culture: The role of community, equity and a romantic revolution in ideas

‘The world has enough for everyone’s need, but not for everyone’s greed’, noted Gandhi; we argue that we need a New Culture in order to spread broad discussion of the New Economy and for it to be accepted and welcomed both among the world of academic economics and amongst the wider world. The crucial link between global environmental welfare and social justice has been well forged amongst various schools of thought over the last half-century. Yet, the lack of *collective commitment* to creating an equitable global society has undermined long-run ecological security. A universal top-down approach might today cost between 1% and 5% of global gross domestic product (GDP), depending on levels of conservatism in the calculation of discount rates (Ackerman, 2007; Stern, 2006). However, the Kyoto Protocol and other recent United Nations Framework Convention on Climate Change (UNFCCC) summits have demonstrated the limitations of the sole pursuit of top-down initiatives that do not impact ordinary people (Solana, 2014). The scale of the behavioural change that humanity must make for ecological sustainability is too great to be only financially or politically motivated. Legislation and incentivisation are necessary but insufficient tools, as they merely prompt short-run change. The New Economy, as Marglin defines it, emphasises the power of the collective: non-commodified opportunities, community ideals and human ideas and connections. We would take this broad idea a step further, and suggest that for lasting environmental sustainability our New Culture would require a broader sense of justice and a deeper spiritual – perhaps theological – change in our common values and our metaphysical relationship with the Earth.

It is not the first time in history that we have sought a liberal cultural revolution with respect to the natural world. The Romantic Movement, which was at its height between 1800 and 1850, was a counter-enlightenment movement that reacted towards the industrial revolution and the belief of humanity’s triumphant divorce from the natural world with the power of science and technology. This idea was perhaps most strongly manifested in the arts, music and literature, though it had powerful political implications. With respect to our discussion on sustainability and our argument for a New Culture today, it is important to re-examine the Romantics and to understand why they saw the

world as they did – without being Luddites. Today, the argument for a revolution in our thinking has even greater credibility; it originates from environmental science and is based on strong, painstaking and detailed scientific observation and analysis. The movement towards sustainable living has reunited the concerns of humanity with those of our global ecosystem, and continues to pave the way for a revolution in our culture and perception of universal human values that will inform the New Economy and its associated assumptions.

The treatment of individuals and their preferences in the New Economy must be thoroughly revised to achieve the level of co-operation and community that we need to transform the way we think – emphasising ‘serving the people’ as in China. Though controversial when initially published during the 1970s, the Gaia hypothesis (built on the evolutionary understanding that human beings are creatures who developed in tandem with the global ecosystem, and are thus capable of a circular economic ecosystem without waste) pioneered by chemist James Lovelock and Epton (1975) and later developed by biologist Lynn Margulis (1998), has been steadily gathering influence and acceptance in ecological debate and is being applied as an analytical framework in various geological fields. Manifesting romantic ideals, the hypothesis centres upon the idea of co-evolution, symbiosis and the dynamic equilibrium of the geophysical Earth *and* life within it, as a deeply complex system in which all our actions have consequences.

Indeed, the planet Earth is perfectly suited to fit our needs, and we must remember that in adopting the values of a New Culture. We have, for example, precisely the correct ratio of oxygen to carbon dioxide in the atmosphere to work with our respiratory systems and those of plants that we feed on, and we have the perfect amount of gravity on the planet to maintain the atmosphere we require. The specificity of human co-evolution is such that seeking an alternative planet to colonise is a ‘foolish’ (Rees, 2007: 89) solution. Wilson (1993) emphasises humanity’s duty to *maintain* the ecosystem, noting ‘Our body and our mind evolved to live on this particular planetary environment and no other’; while astrophysicist Rees (2007) reminds us that, ‘... nowhere in our solar system offers an environment as clement, even, as the Antarctic or the top of the Everest’. This powerful realisation that ‘the Earth fits us’ has, in equal measure, been the argument for theological beliefs for the existence of a higher being which created us perfectly, and for scientific arguments for Darwinian evolution. Either way, the spiritual or metaphysical power of ‘thinking bigger’ will be the driving force of the transformation in thinking that we need today in order to sustain human life on Earth.

Marglin’s New Economics should engage with this metaphysical aspect of co-dependence on Earth, as discussed in Lovelock and Margulis’ hypothesis. It has important macro-level implications for resource allocation and (more importantly) regeneration in a circular (rather than linear) economy in which all waste is accounted for and utilised. For instance, the nitrogen cycle has evolved alongside life on earth to efficiently circulate nitrogen compounds through the air, aquatic systems and soil. However, we have ruined the cycle: plants need nitrates and phosphates to grow, when we eat these plants we produce human waste, which contains nitrates and phosphates and is chemically treated and dumped in the oceans where aquatic life is destroyed; meanwhile, we use atmospheric nitrogen to make nitrates for chemical fertilisers, which is a high-energy process and generates waste (Fields, 2004). This cyclical notion renders each of

us similar to a cell within a large planetary organism: on one level, we have needs and subjective preferences, and on a higher level, we have responsibilities and common objectives within a wider system. This may be a thoroughly abstract idea, but it is being applied in policy. In Slough the local government has already pioneered the extraction of phosphates from human waste; conversely Singapore (which suffers fresh water shortages) recycles every drop of liquid waste. In a New Culture, we need to develop a broader spiritual comprehension of ecological cause and consequence and apply it to the New Economy. For example, in addition to the analysis of individual preferences, the interdependent utility function that Marglin implies can play an important role such that policy action better reflects the nature of symbiosis and aligned preference in the current knowledge thinking on climate change (Stern, 2014).

Conclusion

Under this alternative paradigm of thinking, technology will indeed have to play a crucial role in adjusting any perceived welfare losses resulting from the transformation from orthodox and neoclassical analyses of climate change (which put the individual at the forefront) to a New Economy. The use of technology, alongside pursuing ideals of community and culture, has been practised with some success already. However, technology is a double-edged sword, and destructive technological capabilities must be regulated on an international level. Indeed, Marglin's critical arguments concerning the environment and humanity might be linked with other dangers to global security and to human civilisation on Earth, including the use of weapons of mass destruction. These various threats to sustainable life are each interconnected and are likely to exacerbate the effects of one another. This renders the urgency of tackling climate change even greater if we consider the fact that with shocks to endowments (Chambers and Conway, 1992; Krantz, 2001) humanity will inevitably experience resource-based conflict. Just as plants and animals compete (sometimes violently) for nutrition, oxygen or space, in environmental politics the study of resource war explores the possibility that environmental threats to resources catalyse conflict and destruction. Sir David King, the UK Foreign Secretary's Special Representative for Climate Change and former Chief Scientific Advisor to the two previous Labour Governments, has described the Iraq war as the first resource war of the 21st century and warns that energy, food, minerals, water and land security could trigger further conflict.⁵ This, once again, is where a New Culture promoting unity and community for equitable resource allocation must take precedent over petty divisions such as national borders.⁶

Ultimately, the problems of the ecosystem – and indeed the violent threats of mass destruction that we constantly face – cannot be solved without the insights that community and spiritual thinking bring us. The relationship between humanity and the planet may indeed be easier to define than that of one human to another. Nevertheless, Professor Marglin is correct in implying that the invisible hand cannot solve the problems that humanity faces; we need a New Economy. However, resolution of the bigger issues requires the very visible hands of government, the community and the individual. And so we need a New Culture too. Perhaps then, laying the ecological blame on market failure is just that – a failure of existing economic models to engage with our

21st-century challenges, especially including global climate change. The New Society should consider as axiomatic the adoption of a particular universal set of values concerning sustainability.

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Notes

1. Research indicates that beyond USD10,000 per year, people do not experience a proportional increase in happiness – suggesting that there is a point of satiation of basic needs in comparison with unlimited desires.
2. Galbraith (1969) makes a key point on the futility of artificially contrived desire, particularly with respect to equity and ecology

If the individual's wants are to be urgent, they must be original with himself. They cannot be urgent if they must be contrived for him. And above all they must not be contrived by the process of production by which they are satisfied. (p. 147)

3. Frank Ackerman (2007) notes the following principal criticisms included the choice of inappropriately low discount rates, inappropriate treatment of risk and uncertainty and incorrect calculation of cost and benefits. Moreover, the paper merely compares the relative benefits of low-carbon economies over high-carbon use; the axiom of limitless productive capacity cannot explain away the fact that no mention is made of constraining these economic models by the costs of climate change, if no action were to be taken.
4. Indeed, Stern himself has recently criticised neoclassical (thus including his own) use of economic models in environmental analysis to calculate costs and fiscal damage (Stern, 2014).
5. Taking this idea further, the Nobel Peace Prize-winning International Physicians for the Prevention of Nuclear War have highlighted the possibility of nuclear famine. This refers to the impact of nuclear exchange on global climate in turn, and the effect on agricultural production for food security. Nuclear famine, it is estimated, could kill up to 2 billion people even if exchange is on a regional level (Helfland, 2013).
6. This point is further discussed in Amdekar and Singh (2014).

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