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PLANNED ECONOMIC CONTRACTION
The emerging case for degrowth

If we do not change direction, we are likely to end up where we are going.
– Chinese Proverb

1. Introduction

In the most developed capitalist societies today, and increasingly throughout the world, public policy seems to be founded upon a vision of the social world in which sustained economic growth will eventually lead to a life of material abundance for all (Purdey, 2010). Attractive on the surface, perhaps, this vision of abundance treats Earth as a limitless resource to be exploited for human purposes and it promotes a materialistic attitude to life by assuming that human wellbeing consists in satisfying ever more consumer desires through market transactions. Whatever utility it may have had in the past, today there are compelling grounds for contesting this vision of abundance as well as the macroeconomics of growth that it both shapes and is shaped by (Turner, 2012; Barry, 2012; Jackson, 2009). Not only are the materialistic values underlying this vision evidently having a caustic effect on personal and social wellbeing (Pickett and Wilkinson, 2010; Kasser, 2002; Lane, 2000), but the process of globalising Western-style consumption habits is degrading the health and integrity of Earth's ecosystems and diminishing their capacity to support life in the future (Global Footprint Network, 2010; Millennium Ecosystem Assessment, 2005). A new vision is urgently needed, and with it an economics 'beyond growth'.

Even to consider looking 'beyond growth' would seem rather premature, of course, if the analysis were to be directed toward the poorest nations on the planet, where the need for further economic development, *of some form*, is immediate and obvious (see discussion of 'appropriate development' in Trainer, 2010: Ch. 5). But when the analysis is focused, as it will be presently, on the richest nations, it is much less clear why economic growth, measured by increases in Gross Domestic Product (GDP), should remain a central policy objective of governments. Indeed, there are four main arguments for why the richest nations should give up the pursuit of economic growth and try to manage without growth (Victor and Rosenbluth, 2007): (1) Continued economic growth worldwide is no longer a sustainable option due to environmental and resource constraints, so the richest nations should leave room for growth in the poorest nations where the benefits of growth are evident (Meadows *et al.*, 2004); (2) in the richest nations growth has become 'uneconomic', in the sense that it detracts from overall wellbeing more than it contributes, all things considered (Daly, 1999); (3) growth in the richest nations is neither necessary nor sufficient for meeting policy objectives such as full employment, elimination of poverty, and protection of the environment (Victor, 2008); and (4) growth in the richest nations is an ineffective and unsustainable means of reducing global poverty (Woodward and Simms, 2006). Taken together, these arguments provide the foundations for a radically new phase of macroeconomic policy in the richest nations, one in which economic growth should lose its privileged position as the touchstone of policy and institutional success (Alexander, 2011a; Stiglitz *et al.*, 2010). Whether this new 'post-growth' phase of economic transformation will need to be driven primarily from the 'top down' or 'from below' is a question fiercely debated in the literature (see, e.g., Sarkar, 1999; Jackson, 2009; Smith, 2010; Trainer, 2010) and will be briefly considered later in the analysis and in more detail elsewhere in this book.

The substantive analysis of this chapter begins by drawing on social and ecological research and economic theory in an attempt to underpin what Manfred Max-Neef (1995) has called the 'threshold hypothesis'. This hypothesis holds that 'for every society there seems to be a period in which economic growth (as conventionally measured) brings about an improvement in the quality of life, but only to a point – the threshold point – beyond which, if there is more economic growth, quality of life may begin to deteriorate' (Max-Neef, 1995: 117). The basic idea is that when macroeconomic systems expand beyond a certain size, the additional social and ecological costs of growth begin to outweigh the benefits, making any further growth uneconomic. The best way to determine whether growth is economic or uneconomic is to utilise the conceptual tools employed by many ecological economists, who have developed a number of indexes to measure and compare the benefits and costs of economic growth (e.g., the Index of Sustainable Economic Welfare [ISEW] and the Genuine Progress Indicator [GPI]). To anticipate the central finding here, in virtually every instance of where an index of this type has been calculated, the movement of the index appears to reinforce the threshold hypothesis (Lawn, 2005; Kubiszewski *et al.*, 2013). Put more directly, there is an emerging body of evidence which indicates that many of the most developed regions of the world – including North America, Western Europe, Japan, and parts of Australasia – have entered or are entering a phase of uneconomic growth. This evidential basis has given preliminary credence to the radical notion of 'degrowth' (Kallis, 2011; Latouche, 2009; Fournier, 2008; Baykan, 2007), which has been broadly defined as 'an equitable downscaling of production and consumption that increases human wellbeing and enhances ecological conditions' (Schneider *et al.*, 2010: 512).

Focusing on the highly developed regions of the world, this chapter draws on a wide range of literature to outline theoretically and support empirically the emerging case for degrowth. It argues that when an economy has grown so large that it has reached or exceeded the threshold point beyond which any further growth is 'uneconomic' (i.e., socially or ecologically counter-productive), economies should be reconstructed in order to achieve more specific welfare-enhancing objectives – such as eliminating poverty, lessening inequalities, and protecting the environment – and the efficient growth of GDP *or lack thereof* should be treated as a by-product of secondary importance. After outlining the emerging case for degrowth, this chapter considers the feasibility of a macro-economics beyond growth and begins sketching an outline of what such a macroeconomics might look like as a politico-economic programme. It is hoped that this analysis might help objectors to growth (and others) envision alternatives to the existing paradigm and better understand the extent of change required for justice and sustainability. In an age of widespread political paralysis, of course, it could be that change 'from below' is the most likely space for effective opposition and renewal (see Alexander and Rutherford, 2014), and, in fact, perhaps the revolution needed can *only* be driven from below (see Trainer, 2010). On the other hand, perhaps at this late stage in the game, only a committed 'top down' response is going to be able to achieve the deep changes necessary in the time available. Whatever the case, considering what governments *could* do to promote a post-growth or degrowth economics should serve as a useful clarification of some of the central issues.

2. The Social Critique of Growth

As outlined in the last chapter, the growth model of progress assumes as a matter of course that an increase in GDP per capita will contribute positively and quite directly to a nation's wellbeing. While neoclassical theory seems to accept that assumption without question, a growing body of interdisciplinary scholars, building upon the pioneering work of Richard Easterlin (1974), has been examining its empirical basis using survey analyses (Diener *et al.*, 2010). Summarised below, these scholars have found the correlation between income and subjective wellbeing to be much more nuanced than neoclassicists generally assume (for a more comprehensive review, see Alexander, 2012).

It will probably surprise no one to discover that on average people in the richest nations report higher levels of subjective wellbeing than people in the poorest nations (Diener *et al.*, 2009). But there is much evidence that now indicates that beyond a certain material standard of living, increases in personal and/or national income have a fast diminishing marginal utility (Diener *et al.*, 2010; Layard *et al.*, 2008; Lane, 2000). Put otherwise, there comes a point where rises in income become less important as a means of increasing wellbeing, and other features of life, such as more meaningful employment, more leisure time, and more social engagement, become increasingly important (Helliwell, Layard, and Sachs, 2012; Diener and Seligman, 2004).

Indeed, when comparing only the richest nations – which are the focus of this chapter – the correlation between GDP per capita and wellbeing is evidently negligible. Clive Hamilton, for example, has studied data on the richest 17 nations and found that 'there is no relationship at all between higher incomes and higher appreciation of life' (Hamilton, 2003: 26). Similarly, Richard Layard (2005: 32) has extensively reviewed the evidence and concluded that 'if we compare the Western industrial countries, the richer ones are no happier than the poorer'. In a more recent study, Layard and colleagues (2010) provide further support for this position and carefully respond to their critics (Stevenson and Wolfers, 2008; Deaton, 2008). This new study, among others (e.g., Di Tella and MacCalloch, 2010; Pickett and Wilkinson, 2010) essentially corroborates Ronald Inglehart's thesis (1996: 509) that 'although economic gains apparently make a major contribution to subjective wellbeing as one moves from societies at the subsistence level to those with moderate levels of economic development, further economic growth seems to have little or no impact on subjective wellbeing'. If this is so, the richest nations could now be confronting honestly what John Maynard Keynes (1963: 362) called our 'permanent problem' – that is, the problem of what to *do* with the freedom that material comfort provides. But instead of embracing that task, an apparently insatiable imperative for growth continues to structure not only the global economy, but the collective imagination. This is despite the mounting evidence which indicates that further growth is unlikely to contribute much to social wellbeing, at least in the wealthy parts of the world (Easterlin, 2013; Easterlin and Angelescu 2010; Diener *et al.*, 2010; Blanchflower and Oswald, 2004; Lane, 2000).

Explanations vary (often in mutually supportive ways) for why increases in individual or national income beyond some material threshold have a diminishing marginal utility. Five of the most prominent arguments are: (1) that once a person's basic material needs are satisfied, *relative* income has much more effect on subjective wellbeing than *absolute* wellbeing (Layard *et al.*, 2010), which means that growth eventually becomes a zero sum game; (2) that 'hedonic adaptation' occurs, meaning that as people get richer they generally become accustomed to the pleasure or satisfaction afforded by their increased income, nullifying the projected benefits of growth (Di Tella and MacCalloch, 2010); (3) that the material norms on which judgements of wellbeing are based tend to increase in the same proportion as the actual income of the society, again nullifying the projected benefits of growth (Easterlin, 1995); (4) beyond a certain threshold, distributive equity matters more than continuous growth (Pickett and Wilkinson, 2010); and (5) that people with materialistic value orientations tend to have lower personal wellbeing and psychological health than those who believe that materialistic pursuits are relatively unimportant (Kasser, 2002).

While the intricacies of these complex matters cannot be explored here, collectively this body of research casts considerable doubt on the assumption that getting richer will consistently lead to increased individual or social wellbeing. Indeed, the weight of evidence suggests that there are 'social limits to growth' (Hirsch, 1976) which many of the richest nations already seem to have surpassed. Although this matter is far from settled, a strong case can certainly be made that the richest nations – given appropriate institutional restructuring (see proposals in Sect. 6) – could have a lower GDP per capita without compromising, and perhaps even positively enhancing, social wellbeing (see Kubiszewski *et al.*, 2013). This counter-intuitive thesis is likely to seem much less counter-intuitive when considered in conjunction with the following ecological critique of growth, since in that broader context the high consumption lifestyles celebrated in rich countries today are plainly the driving force underlying the manifold ecological crises the world is currently facing. In other words, it is becoming increasingly clear that it is in everyone's interest – including the inhabitants of the richest nations – that contemporary Western-style cultures of consumption are quickly downscaled (Alexander, 2009; Alexander 2011b; Trainer, 2010), and so too the size of the most highly developed economies.

3. The Ecological Critique of Growth

Many credible scientific studies have shown that the human economy is degrading the planet's ecosystems in ways that are unsustainable (e.g., Global Footprint Network, 2010; IPCC, 2007; Millennium Ecosystem Assessment, 2005; Wackernagel, 2002). While this is hardly news (Meadows *et al.*, 2004), the full implications of ecological 'overshoot' are rarely acknowledged or understood, at least with respect to what it means for conventional growth economics. It is clear enough that human beings need to consume *differently* and produce commodities more *efficiently* (Arrow *et al.*, 2004). But few people – and no governments, in the developed world, at least – are prepared to accept that attaining an ecologically sustainable global economy requires a fundamental reassessment of the growth model. On the contrary, the mainstream position on sustainability seems to be that economies around the world simply need to adopt 'sustainable development', which in theory means continuing to pursue economic growth while employing science and technology to produce and consume more cleanly and efficiently (e.g., UNDP, 2007/8: 15).

This mainstream vision of how to achieve a sustainable world is coherent in theory, at best, but demonstrably it does not reflect empirical reality (see Alexander, 2014). Although many economies around the world are indeed getting better at producing commodities more cleanly and efficiently (a process known as 'relative decoupling'), overall ecological impact is nevertheless *still increasing*, because every year increasing numbers of commodities are being produced, exchanged, and consumed as a result of growing economies (Jackson, 2009, Ch. 5). We might have more fuel-efficient cars, for example, but the rebound effect is that we are also driving more and buying more cars. This is but one example of the 'Jevons paradox' that permeates market societies and beyond (Polimeni *et al.*, 2009) – a paradox, so-called, because a per unit reduction in the throughput of commodities does not always lead to reduced ecological impact, since those efficiency improvements are often outweighed by the increasing amounts of commodities that are consumed (Holm and Englund, 2009). The implication of this is that technology and efficiency improvements are not going to solve the ecological crisis, as their most optimistic advocates and popular consciousness seem to assume they can (Lovins, 1998) – at least, not unless the highly developed nations also transition away from growth economics. Efficiency without sufficiency is lost.

The fact that the global economy is already in significant ecological overshoot (Global Footprint Network, 2012) is even more challenging when we bear in mind that in the poorest parts of the world today great multitudes are living lives oppressed by extreme poverty (World Bank, 2009). The momentous global challenge, therefore, in terms of humanitarian justice and ecological sustainability, can be stated as follows: The human community must find a way to *raise* the material standards of living of the world's poorest people – which is almost certainly going to increase humanity's demand and impact on nature – while at the same time *reducing* humanity's overall ecological footprint (Meadows *et al.*, 2004).

What further exacerbates these ecological and humanitarian crises, however, is the fact that, according to the United Nations, global human population is expected to exceed nine billion by mid-century (UNDSEA, 2012). This will intensify greatly the already intense competition over access to Earth's limited natural resources and it will put even more pressure on Earth's fragile ecosystems. The problem of a greatly expanding human population, therefore, provides further compelling support for the proposition that any transition to a just and sustainable world will need to involve the most developed nations transitioning away from the growth model.

Very few people, however, including many environmentalists, seem to acknowledge or understand quite how directly the global situation undermines the legitimacy of continued growth in the richest nations. Ted Trainer (2010: 22), being a rare exception, expresses the magnitude of the problems of ecological overshoot, economic growth, and population growth in painfully clear terms: '[I]f we in the rich countries average 3% growth, and 9 billion rose to the living standards we would then have by 2070, total world output would be 60 times as great as it is today.' While this future seems to be the very aim of globalised 'development', it would be preposterous in the extreme to suggest that Earth's ecosystems could withstand the impacts of a 60-fold expansion of a global economy *already* in ecological overshoot, especially since there is no evidence that absolute decoupling of the global economy is occurring, or likely to occur, to the degree necessary. Degrowth in the rich nations seems much less 'radical' when considered in these terms. Indeed, degrowth in the richest nations would seem to be an absolutely necessary element in any solution to the global predicament – although one must also accept that the degrowth solution is effectively unthinkable in today's politico-economic climate.

4. The Economic Critique of Growth

In light of the preceding critiques, it would seem that the term 'economic growth' needs to be reconsidered. According to microeconomic theory, activity is considered 'economic' if the additional benefits of engaging in it are greater than the additional costs. For example, an extra unit of production by an individual firm is considered economic if the additional revenue generated is greater than the additional costs incurred. Similarly, an additional hour of labour is considered economic if the consumption-related utility from the money earned is greater than the leisure-related utility forgone (Lawn, 2008). Within this microeconomic framework it is accepted that there will come a point – an 'optimal' point – when the marginal costs of additional production or consumption equal the marginal benefits. This is sometimes called the 'when to stop rule' (Daly, 1999), a rule which implies that if growth occurs beyond the optimal point it will be 'uneconomic', in the sense that the costs begin to outweigh the benefits. Micro-economists are the first to label uneconomic growth 'irrational' (Becker, 1962).

However, as Philip Lawn (2008: 1) observes, 'at the macroeconomic level, growth in real GDP is labelled "economic" growth irrespective of whether it generates more additional benefits than costs'. It may well be that what most people mean by economic growth is growth of the economy, but Lawn (2008: 1) correctly points out that 'growth of something which happens to be called "the economy" is not the same as "economic growth"'. Properly understood, economic growth means growth that generates more benefits than costs, all things considered. It follows that growth that generates more costs than benefits must be judged 'uneconomic' growth. But conventional macroeconomics does not recognise a 'when to stop rule' and so has no place for the notion of an 'optimal' scale of the economy as a whole. It just assumes that a bigger economy is always better; that growth in GDP is always 'economic'. The preceding critiques of growth cast serious doubt on that assumption.

If markets functioned perfectly, perhaps a rise in GDP would always be 'economic' growth. But that is to make a notoriously implausible assumption. Economists have long acknowledged that there are 'market failures' (Pigou, 1920), however only in quite recent times have the extent and significance of those failures been comprehensively and systematically exposed (Daly and Farley, 2004: 157-220). Conventional growth economics based on GDP accounting fails to internalise many significant externalities that can be associated with economic activity, such as loss of social capital or environmental degradation (Stiglitz *et al.*, 2010; Cobb *et al.*, 1995). By failing to take such externalities into account, growth of the economy can seem 'economic' even when the economy has already exceeded its optimal scale, rendering any further growth 'uneconomic'.

Although still in need of refinement, the 'extended accounts' of the ISEW and GPI are increasingly robust tools for exposing macroeconomic externalities and internalising them (Lawn, 2005). In this way those extended accounts, and other similar ones, seek to measure as accurately as possible the true costs and benefits of growth and thereby help determine when growth is 'economic' and when it is not. Those extended accounts often use orthodox economic notions, such as cost/benefit analysis and externalities, to criticise neoclassical orthodoxy. Doing so opens up theoretical space for the notion of uneconomic growth at the macroeconomic level. Again, Lawn (2008: 1) puts the situation well:

> It is… critical that a distinction be drawn between 'economic' and 'uneconomic' growth; that indicators be established to determine what form of growth a nation is experiencing; that only 'economic' growth be encouraged; and that 'uneconomic' growth be addressed by making the transition to a steady-state economy (degrowth) at which time the sole emphasis of all economic activity should be on qualitative improvement not quantitative expansion.

Indicators such the ISEW and GPI already exist to inform us when a nation is experiencing uneconomic growth, and consistently the message delivered is that the developed nations are entering or have already entered such a phase (Kubiszewski *et al.*, 2013; Lawn and Clarke, 2010; Daly, 1999). The implication is that just as an individual firm should downscale when the benefits of doing so would be greater than the costs, so should the over-developed economies downscale. This could be called 'economic degrowth'.

For present purposes there is one final and important point in critique. Assuming the developed nations never *choose* to question the growth model – which one must admit is the most likely scenario – the issue of 'peak oil' and related energy supply problems (Hirsch *et al.*, 2010) suggests that the era of growth economics could be coming to an end nevertheless (Heinberg, 2011). Many parts of the world seem to be recovering (at least superficially) from the 'credit crunch', but the 'oil crunch' may well come to tell a different story. Whether the transition away from energy-intensive economies occurs voluntarily or is imposed by force of biophysical limits remains to be seen. It scarcely needs remarking that a well-planned, voluntary transition would be the desired path.

5. The Feasibility of a Macroeconomics Beyond Growth

Even if the multi-dimensional critique of growth outlined above is accepted, or comes to be accepted, there might still be (and probably are) doubts as to whether planned economic contraction, or degrowth, is a feasible macroeconomic policy. After all, the logic of capitalism is arguably dependent upon growth and accumulation, and as the recent financial crisis shows, an economic system dependent on growth that suffers *unplanned* economic contraction (i.e., recession) is not to be desired. Among other problems, recession causes rates of unemployment to rise, which leads to distressing economic insecurity and notoriously gives rise to a host of other social problems (Clark and Oswald, 1994). And aside from all that, growth is typically assumed to be the *solution* to unemployment, as well as the solution to other problems, like poverty and environmental degradation. How do these issues sit within a macroeconomics beyond growth? Is a macroeconomics beyond growth even possible?

Surprisingly, very little sustained attention has been given to these issues, although this tide seems to be turning. One of the most important contributions in recent years has been the in-depth analysis offered by the Canadian economist Peter Victor (2008). Although Victor focuses primarily on the Canadian economy, it can be fairly assumed (and he would insist) that his conclusions have relevance to other advanced capitalist societies since they are all governed by essentially the same macroeconomic growth paradigm. After reviewing the foundations of growth scepticism, Victor considers the familiar argument that growth is needed to achieve important policy objectives, such as protecting the environment and eliminating unemployment and poverty. In a thorough review of the evidence since 1980, he shows that recent decades of unprecedented economic growth have not eliminated unemployment or poverty in Canada; that distributions of wealth have become more unequal; that growth has generally exacerbated, not solved, environmental problems, and that greenhouse gases are still growing. On the basis that growth has been a disappointing tool for achieving these important policy objectives, Victor reasonably turns his attention to the question of whether those objectives could be better achieved in an advanced economy without relying on growth.

Victor uses an interactive systems model to explore the possibility of a macroeconomic framework that is not based on growth. This model allows him to consider changes in key macroeconomic variables, such as output, consumption, public spending, investment, employment, trade, and so on, in order to estimate future GDP in various scenarios, while also keeping an account of unemployment, greenhouse gas emissions, and poverty levels. By simulating a variety of scenarios, Victor illustrates that ‘no growth’ could be disastrous if implemented carelessly, bringing hardship to many; just as growing ‘business as usual’ would arguably be disastrous. But he illustrates that slower growth, leading to stability around 2030, can also be consistent with attractive economic, social, and environmental outcomes, including full employment, virtual elimination of poverty, more leisure, considerable reduction in greenhouse gas emissions and fiscal balance. Furthermore, by comparing various low-/no-growth scenarios, Victor also argues that various attractive options are available. For example, some scenarios with higher investment seem more compatible with a future in which renewable energy and efficient technology become widely adopted. Other scenarios, where GDP and GDP per capita are lower, may not adopt those measures so quickly, but the lower incomes might compensate in terms of reduced ecological impact.

On what basis does Victor draw these conclusions? One of the most important features of a macroeconomics beyond growth relate to changes in investment and the structure of the labour market. Restructuring tax policies and redirecting public spending (see discussion below) could be effective ways of changing investment strategies to realise the attractive hypothetical scenarios Victor envisages (including a shift in investment from private to public goods). The essential reasoning here is quite straightforward, even if its implementation would not be: new avenues open up for progressive politico-economic reform once growth loses its privileged position as the touchstone of policy and institutional success.

Nevertheless, this does not explain how the economy could function and be stable without growing and perhaps even shrinking to an extent, and it would be fair to say that Victor does not present a complete case. He has, however, helped get the conversation moving and his arguments provide a place to start. Victor argues that (among other things) a restructure of the labour market becomes essential. In a non-growing but qualitatively developing economy, technological advances would presumably still enhance the productivity of workers over time; but this could lead to increasing rates of unemployment, since less labour would be needed to produce the same (non-growing) economic output. This phenomenon, along with increases in population, are the main reasons why conventional macroeconomists insist that growth is essential; that is, it is needed to avoid unemployment spiralling out of control. In a macroeconomic framework not based on growth, however, Victor argues that a stable system could still be achieved, but through the alternate route of reducing the workweek and sharing work more equally amongst the population. Some of the policy issues that overall work reduction involves will be touched on in the next section. For now the critical point to note is that work reduction is one of the defining characteristics of a desirable macroeconomics beyond growth. This approach implies that average material standard of living would remain at a constant or mildly fluctuating level in a non-growing economy, since increases in productivity would result in more leisure rather than more income. This obviously contrasts sharply with the growth economics practised in advanced capitalist societies today, where increases in productivity are almost always used to increase overall material output rather than stabilising material living standards and reducing overall labour input (Robinson, 2009).

It is unfortunate that Victor focuses only on 'managing without growth' and does not specifically address the need for a period of degrowth, especially since the logic of his own analysis seems to require it, a point he gets tantalisingly close to acknowledging (Victor, 2008: 185; but see also, Victor, 2011). Nevertheless, in important respects degrowth is implicit to his argument, in the sense at least that he advocates a dedicated reduction in wasteful production and consumption as well as an absolute reduction in the ecological impacts of economic activity, not just relative decoupling. Taking Victor's analysis a few steps further, however, it would seem that some extra reductions in working hours, permitted by extra reductions in per capita income/consumption, could help facilitate a period of degrowth. But given the extent of degrowth needed, what banking and finance systems would be required? (For a critical discussion, see Trainer, 2011.) What happens to debt? Can a degrowth transition occur within a primarily market-based economy? What are the lifestyle implications of degrowth? Taken seriously, these and other issues suggest that degrowth is even more radical than Victor and other objectors to growth recognise (Trainer, 2012).

Perhaps the most compelling grounds for thinking that a post-growth or degrowth framework (of some form) is feasible is the mounting evidence indicating that it is fast becoming absolutely necessary (Turner, 2012). Continued growth of economies and population on a finite planet is a straightforward recipe for ecological (and therefore humanitarian) catastrophe, which suggests that whatever risks there are to experimenting with a macroeconomics beyond growth, there are infinitely greater risks to persisting blindly with conventional growth economics. To put it proverbially, if we do not change direction, we are likely to end up where we are going.

6. Degrowth as a Politico-Economic Programme: A Preliminary Statement

The maintenance and protection of ecological integrity, on the one hand, and the redistribution of wealth and work to eliminate poverty and lessen inequalities, are some of the central policy objectives which seem to be implied by the idea of a degrowth transition to a steady state economy. This final section sketches an outline of eight policy proposals that could begin meeting those objectives and, in doing so, initiate a degrowth process of planned economic contraction. Although I assume these proposals would be delivered by a centralised state with a democratic mandate, one of their primary aims would be to open up space for individuals and communities to begin creating a new, highly localised economy at the grassroots level.

The following list makes no claim to be comprehensive and limitation of space only leaves room to introduce the core ideas. A great deal more work would be needed to convince people of the merits and feasibility of these proposals, although some of that work is being undertaken in the burgeoning degrowth movement and related movements. But it is hoped that what follows at least serves as a useful introduction to a politics of degrowth and provides a basis for future research and discussion.

- **Explicit Adoption of Post-Growth Measures of Progress:** It is now widely recognised that GDP is not an adequate measure of societal progress (Stiglitz *et al.*, 2010). It is merely a sum of national economic activity which makes no distinction between market transactions that contribute positively to sustainable wellbeing and those that diminish it. Nevertheless, growth in GDP remains the overriding policy objective of even the richest nations. A politics of degrowth should begin by explicitly adopting some post-growth measure of progress, such as the Genuine Progress Indicator (GPI). The GPI and other such measures must not become objects of fetishisation, like GDP has become, but public support for such post-growth national accounting systems would open up the political space needed for political parties to introduce policy and institutional changes that would genuinely improve social wellbeing and enhance ecological conditions – such as the following proposals – even if these would lead to a phase of planned economic contraction. If taken seriously, these alternative indicators would imply a radical agenda for change.

- **Renewable Energy:** Anticipating the imminent stagnation and eventual decline of fossil fuel supplies, and recognising the grave dangers presented by anthropogenic climate change, a politics of degrowth would need to transition to renewable and more efficient energy systems. Climate change is the greatest 'market failure' in history. Internalising that externality would mean rapid decarbonisation (and therefore localisation) of the economy. Nuclear should not be relied on as an energy source, because the world would need approximately 14,500 nuclear plants to meet current energy demand (Pearce, 2008) – currently there are 435 nuclear plants. In a world where geopolitical conflict is likely to increase as resource scarcity becomes more severe (see Klare, 2012), upscaling nuclear seems extremely unwise, irrespective of other arguments for and against it. In an economy based primarily on renewables, it would be necessary to simply use significantly less energy (Anderson, 2013), since it is very unlikely that renewables could ever sustain energy-intensive consumer societies, nor would that be desirable even if it were possible (see, e.g., Trainer, 2013a; 2013b). Public transport, cycling, and walking would largely have to replace private automobiles.

- **Resource Caps and Rationing:** 'Free markets', so-called, seem wholly incapable of functioning to 'optimise' the economy/environment relationship; instead, the growth imperative essentially forces firms to maximise their own profits irrespective of ecological limits (see, e.g., Smith, 2010). In order to move toward 'one planet living' what may be needed is the imposition of resource caps and rationing. Resource caps would set an ecologically sustainable limit to key resource consumption, above which an economy cannot consume. They should be introduced progressively, to allow adjustment. Markets can then play a role allocating those capped resources, leaving room for 'efficient' exchanges that increase wellbeing but which do not imply an increase in material throughput. Resource caps would also do much to solve the problem of 'rebound effects', because efficiency gains in a 'capped' economy could not be directed toward increasing overall throughput. In order to ensure social justice is served at the same time, especially in crisis situations, basic rationing for essential goods may be required, including energy rationing (see, e.g., Gleeson, 2010). Western nations coped well enough with rationing during other times of 'emergency' (such as world wars), and responding to the overlapping emergencies we face may require us to cope again. There is unlikely to be a smooth transition beyond the growth paradigm.

- **Basic Income:** To eliminate poverty, capitalist societies typically rely on growing the economic pie, not slicing it differently. Once the pursuit of growth is given up, however, poverty must be confronted more directly. Some form of Basic Income may be required. Although there is considerable variety in forms of Basic Income, the core idea is relatively straightforward: Every permanent resident would be guaranteed a minimal though dignified standard of economic security. A Negative Income Tax could be introduced as a transitional step, which would provide tax credits to every adult who earns below a certain income. In these ways material destitution within a nation would be virtually eliminated (Alexander, 2011a). These policies would also open up more space for self-sufficiency by allowing individuals to get active in the informal, local economy. In fact, this would be one of the primary aims of such policies. A Job Guarantee is an alternative policy to consider.

- **Progressive Taxation and the Maximum Wage:** The Basic Income could be funded in part by restructuring the tax system. The social research reviewed earlier showed that beyond a certain material threshold – which the richest nations have evidently already exceeded – further increases in personal or national income have a diminishing marginal utility. This means that very high incomes are an extremely inefficient use of resources, in terms of wellbeing, as well as being morally questionable as a matter of distributive justice. Highly progressive income or consumption taxes could be introduced to respond effectively to this situation (Frank, 2008). For example, a progressive income tax could culminate in a 100% tax on incomes over a certain democratically determined level, thereby effectively creating a maximum wage (Pizzigati, 2004). A degrowth society need not enforce strict equality of resources, but if poverty is ever to be eliminated, the socially corrosive levels of inequality prevalent today (Pickett and Wilkinson, 2010) must be greatly reduced. Furthermore, for ecological reasons politics must do much more to reign in lifestyles of profligate consumption.

- **Working Hour Reductions:** As noted earlier, restructuring the labour market is essential for a degrowth economy to function properly. The first step down this path is to eliminate the structural biases that function to promote overwork, such as laws that treat the 40-hour work week as 'standard' and which exclude part-time employees from many non-pecuniary benefits enjoyed by full-time employees (Robinson, 2009). A second step would be to introduce something like Holland's *Hours Adjustment Act 2000*, which permits employees to reduce working hours to part-time simply by asking their employers. Discussing this legislation, John de Graaf (2009, p. 274) notes that, 'Unless there is a clear hardship for the firm – something shown in less than 5% of cases [in Holland] – the employer must grant the reduction…. This law, in the most concrete terms, allows workers to trade money for time, without losing their jobs or healthcare.' A third step would be to gradually decrease the 'standard' working week, beginning with something like France's 35-hour working week, proceeding to 28-hour working week, and in time perhaps moving to a 21-hour working week (NEF, 2010). Collectively, steps such as these would privilege leisure over consumption and systematically distribute labour in a slowly contracting economy. Given that this would also imply reduced income, a significant portion of this time not working in the formal economy would need to be redirected toward home production (e.g., food production, mending, fixing, building, etc.), through which a new, informal economy 'B' slowly arises within the old, contracting economy 'A'.

- **Worker Cooperatives:** A politics of degrowth would need to transition away from the profit-maximising, corporate models prevalent under growth capitalism and move to an economy comprised predominantly of worker cooperatives and small, locally-owned enterprises. Governments could facilitate the emergence of cooperatives (including not-for-profit enterprises) through such means as providing very attractive tax incentives, as well as preferring cooperatives when contracting with the private sector (i.e., whenever possible government spending would be directed to cooperatives). Development banks could also be established through which governments could provide credit to help establish new cooperatives that would provide socially necessary services (e.g., local and organic food production).

- **Inheritance and Bequest:** The revolutionary structural reforms needed to transition to a degrowth society – such as those proposed in this short list – are going to require funding. As noted above, highly progressive income and/or consumption taxes can provide some of the funding, however more would probably be needed, especially in order to fund the Basic Income and the transition to renewable energy systems. This socially and ecologically necessary funding could be secured by abolishing the laws of inheritance and bequest, such that upon death a citizen's property would revert to the state, rather than be passed down from generation to generation. This would also contribute significantly to realising the democratic ideals of equality of opportunity and a broad-based distribution of wealth. This restructuring of property rights also makes the point that a degrowth economy may need to come under significant social control rather than be left primarily to market forces, if it is to contract without collapsing (see Smith, 2010).

It is suggested that these eight proposals, if implemented, would go a significant way to initiating a degrowth process of planned economic contraction. Clearly, this is an eco-socialist agenda, while also leaving some place for regulated markets that genuinely serve the common good. I do not underestimate the challenges that would be faced if ever such an agenda were to be embraced, not least how a nation-state could move in this direction given how globalised capitalism has become.

But again, the proposals above do not claim to answer all questions; indeed, the aim is not really to answer *any* questions, only provoke discussion. A great many other politico-economic (and socio-cultural) changes would be necessary also, shaped and implemented in context-specific ways. Some further structural issues that would almost certainly need to be addressed include: banking and finance systems; Third World and First World debt, possibly requiring a debt 'jubilee'; food production and distribution; a binding global climate treaty based on scientific requirements;

transport; conservation of nature; advertising regulation; campaign financing; military expenditure; international law and trade; foreign aid; low-consumption education campaigns, and so forth. Some of the best places to continue exploring these issues are in the proceedings of the various degrowth or steady state conferences that have taken place in recent years (e.g., CASSE, 2011; Proceedings of Second International Conference on Degrowth, 2011), and in the publications of the Simplicity Institute.

7. Conclusion

When the extent of ecological overshoot is considered in conjunction with both projected population growth and the legitimate need for the poorest nations to develop their economic capacities, degrowth in the richest nations seems a much less radical proposal than it might first appear to be. Indeed, the logic of argument, though easily ignored, is very hard to escape, and the prospect of an energy-scarce world just makes the case clearer. This is not to say that the details of what degrowth would involve are clear; and it certainly is not to say that the prospects of degrowth being voluntarily embraced are good. It is only to suggest that it is extremely hard to conceive of a transition to a just and sustainable world without the most developed nations going through some degrowth phase of planned economic contraction. Only a technological miracle, in the strictest sense, could make degrowth unnecessary. And yet it seems it is that for which the world waits.

Given the magnitude and multifaceted nature of the global predicament, any response to it that merely tinkers with growth capitalism will be grossly insufficient. An adequate politico-economic response must reflect the gravity of the problems, and this chapter has argued that degrowth is the most coherent framework within which to formulate a response. Nevertheless, in closing it is worth acknowledging that however necessary it is for there to be a committed politico-economic response to the global predicament, such a response is highly unlikely to ever eventuate in the absence of a cultural revolution in attitudes toward Western-style consumer lifestyles. That is to say, the voluntary emergence of degrowth in a consumerist culture is essentially a contradiction in terms, such that if a politics of degrowth is ever to emerge it will almost certainly have to be driven from the grassroots up by a culture that embraces some notion of 'sufficiency' in consumption (Alexander, 2010, 2011c, 2013). As Serge Latouche (2014: 1) states, degrowth involves redefining happiness as 'frugal abundance in a society based on solidarity'. Something resembling the Voluntary Simplicity

Movement or Transition Towns, for example, would need to be mainstreamed, radicalised, and politicised before any political campaign for degrowth had any realistic chance of success (Alexander and Ussher, 2012; Trainer, 2010; Hopkins, 2008). This may sound depressingly unlikely, but that just makes it all the more important that advocates of degrowth do not focus merely on highlighting the importance of *structural change*, while neglecting the necessary *cultural preconditions* for such structural change. A cultural paradigm shift in favour of 'frugal abundance' may need to precede any co-relative political revolution.

Degrowth implies voluntary simplicity.

References

Alexander, S. (ed.). 2009. *Voluntary simplicity: The poetic alternative to consumer culture*. Stead & Daughters, Whanganui.

Alexander, S. 2010. 'Deconstructing the shed: Where I live and what I live for'. *Concord Saunterer: The Journal of Thoreau Studies* 18: 125-143.

Alexander, S. 2011a. 'Property beyond growth: Toward a politics of voluntary simplicity'. Doctoral thesis, Melbourne Law School. Available at: 'http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1941069 (accessed 10 September 2013).

Alexander, S. 2011b. The voluntary simplicity movement: Reimagining the good life beyond consumer culture'. *International Journal of Environmental, Cultural, Economic, and Social Sustainability* 7(3): 133-150.

Alexander, S. 2011c. 'Looking backward from the year 2099: Ecozoic reflections on the future'. *Earth Jurisprudence and Environmental Justice Journal* 1(1): 25-59.

Alexander, S. 2012a. 'The optimal material threshold: Toward an economics of sufficiency'. *Real-World Economics Review* 61: 2-21.

Alexander, S. 2011b. 'Earth jurisprudence and the ecological case for degrowth', in P. Burdon (ed.). *Exploring wild law: The philosophy of earth jurisprudence*. Kent Town, SA: Wakefield Press.

Alexander, S. 2014. 'A critique of techno-optimism: Efficiency without sufficiency is lost'. *MSSI Working Paper* (WP 1/14): 1-21.

Alexander, S. and Rutherford, J. 2014. 'The deep green alternative: Debating strategies of transition'. *Simplicity Institute Report* 14a: 1-24.

Alexander, S. and Ussher, S. 2012. 'The voluntary simplicity movement: A multi-national survey analysis in theoretical context'. *Journal of Consumer Culture* 12(1): 66-88.
Anderson, K. 2013. 'Avoiding dangerous climate change demands de-growth strategies from wealthier nations'. Available at: http://kevinanderson.info/blog/avoiding-dangerous-climate-change-demands-de-growth-strategies-from-wealthier-nations/ [accessed 25 November 2013].
Arrow, Kenneth *et al*. 2004. 'Are we consuming too much?' *Journal of Economic Perspectives* 18(3): 147.
Barry, J. 2012. *The politics of actually existing unsustainability: Human flourishing in a climate changed, carbon constrained world*. Oxford: Oxford University Press.
Baykan, B. 2007. 'From limits to growth to de-growth within French green politics'. *Environmental Politics* 513.
Becker, G. 1962. 'Irrational behavior and economic theory'. *Journal of Political Economy* 70(1): 1-13.
Beckerman, W. 2002. *A poverty of reason: Sustainable development and economic growth*. Oakland: Independent Institute.
Blanchflower, D. and Oswald, A. 2004. 'Well-being over time in Britain and the USA'. *The Journal of Public Economics* 88:1359.
Canterbury, E.R. 2003 (3rd edn). *The making of economics: The foundation*. Singapore: World Scientific Publishing.
Center for the Advancement of Steady State Economy (CASSE), 2011. 'Enough is Enough'. *Proceedings of the Steady State Economy Conference*. Available at: http://steadystate.org/enough-is-enough/ [accessed 29 June 2011].
Cobb, C., Halstead, T., and Rowe, J. 1995. 'If GDP is up, why is America down?'. *The Atlantic Monthly* October, 1.
Clarke, A. and Oswald, A. 1994. 'Unhappiness and unemployment'. *Economic Journal* 104(424): 648-659.
Collins, R. 2000. *More: The politics of economic growth in post-war America*. Oxford: Oxford University Press.
Daly, H. 1999. 'Uneconomic growth in theory and fact', in *The First Annual Feasta Lecture* (16 April 1999). Available at: http://www.feasta.org/documents/feastareview/daly.htm [accessed 10 April 2010].
Daly, H. and Farley, J. 2004. *Ecological economics: Principles and applications*. Washington: Island Press.
Deaton, 2008. 'Income, health, and well-being around the world: Evidence from the Gallup World Poll'. *Journal of Economic Perspectives* 22(2): 53.
De Graaf, J. 2009. 'Political prescriptions', in S. Alexander (ed.).

Voluntary Simplicity: The Poetic Alternative to Consumer Culture. Whanganui: Stead and Daughters: 271-282.

Diener, E. and Seligman, M. 2004. 'Beyond money: Toward an economy of well-being'. *Psychological Science in the Public Interest* 5:1-31.

Diener, E., Diener, M., and Diener, C. 2009. 'Factors predicting the subjective well-being of nations', in *Culture and Well-Being: The Collected Works of Ed Diener*. London: Springer.

Diener, E., Helliwell, J., and Kahneman, D. 2010. *International differences in well-being*. Oxford; New York: Oxford University Press.

Di Tella, R. and MacCulloch, R. 2010. 'Happiness adaptation to income beyond "Basic Needs"', in E. Diener, J. Helliwell and D. Kahneman (eds). 2010. *International differences in well-being,* Oxford; New York: Oxford University Press: 217-246.

Easterlin, R. 1974. 'Does economic growth improve the human lot?', in P. David and M. Reder (eds). *Nations and households in economic growth: Essays in honor of Moses Abramovitz*. New York: Academic Press.

Easterlin, R. 1995. 'Will raising the incomes of all increase the happiness of all?'. *Journal of Economic Behaviour & Organization,* 27: 35-47.

Easterlin, R. 2013. 'Happiness and economic growth: The evidence'. Discussion Paper, No. 7187, January 2013: 1-30.

Easterlin, R. and Angelescu, L. 2010. 'Happiness and growth the world over: Time series evidence on the happiness – Income paradox', in H. Hinte and K. Zimmerman (eds). *Happiness, Growth and the Life Cycle*. Oxford: Oxford University Press.

Fournier, V. 2008. 'Escaping the economy: The politics of degrowth'. *International Journal of Sociology and International Research* 28: 528-545.

Frank, R. 2008. 'Should public policy respond to positional externalities'. *Journal of Public Economics* 92, 1777.

Friedman, M. 2002. *Capitalism and freedom*. Chicago: University of Chicago Press.

Global Footprint Network. 2013. Reports available at: http://www.footprintnetwork.org/en/index.php/GFN/ (accessed 3 September 2013).

Hamilton, C. 2003. *Growth fetish*. Crows Nest, NSW: Allen & Unwin.

Heinberg, R. 2011. *The end of growth: Adapting to our new economic reality*. Gabriola Island: New Society Publishers.

Helliwell, J., Layard, R., and Sachs, J. (eds). 2012. *World happiness report 2012*. New York: Sustainable Development Solutions Network.

Helliwell, J., Layard, R., and Sachs, J. (eds). 2013. *World happiness report 2013*. New York: Sustainable Development Solutions Network.
Hirsch, F. 1976. *Social limits to growth*. Cambridge, Mass: Harvard University Press.
Hirsch, R. *et al*. 2010. *The impending world energy mess*. Burlington: Apoge Prime.
Holm, S.-O. and Englund, G. 2009. 'Increased ecoefficiency and gross rebound effect: Evidence from USA and six European countries 1960-2002'. *Ecological Economics* 68: 879-887.
Hopkins, R. 2008. *The transition handbook: From oil dependency to local resilience*. Totnes, Devon: Green Books.
Inglehart, R. 1996. 'The diminishing marginal utility of economic growth'. *Critical Review,* 10, 509.
Intergovernmental Panel on Climate Change (IPCC), 2013. *Climate Change 2013: The Physical Science Basis (Fifth Assessment Report)*. Available at: 'http://www.ipcc.ch/report/ar5/wg1/#.Uk6k-CjqMRw (accessed 4 October 2013).
Jackson, T. 2002. Quality of life, sustainability, and economic growth', in T. Fitzpatrick and M. Cahill (eds). *Environment and welfare: Towards a Green social policy*. Basingstoke: Palgrave Macmillan: 97-116.
Jackson, T. 2009. *Prosperity without growth: Economics for a finite planet*. London: Earthscan.
Kallis, G. 2011. 'In defence of degrowth'. *Ecological Economics* 70, 873.
Kasser, T. 2002. *The high price of materialism*. Cambridge, MA: MIT Press.
Keynes, J.M. 1963. *Essays in persuasion*. New York: Norton.
Klare, M. 2012. *The race for what's left: The global scramble for the world's last resources*. New York: Picador.
Kubiszewski, I., Costanza, R., Franco, C., Lawn, P., Talberth, J., Jackson, T., and Aylmer, C. 2013. 'Beyond GDP: Measuring and achieving global genuine progress'. *Ecological Economics* 93: 57-68.
Lane, R. 2000. *The loss of happiness in market democracies*. New Haven: Yale University Press.
Latouche, S. 2009. *Farewell to growth*. Cambridge, UK: Polity Press.
Latouche, S. 2014. 'Essays on frugal abundance (1 of 4) – Degrowth: misunderstandings and controversies'. *Simplicity Institute Report* 14c: 1-22.
Layard, R. 2005. *Happiness: Lessons from a new science*. New York: Penguin Press.
Layard, R., Mayraz, G., and Nickell, S. 2008. 'The marginal utility of

income'. *Journal of Public Economics* 92: 1846-1857.
Layard, R. *et al*. 2010. 'Does relative income matter? Are the critics right?', in E. Diener, J. Helliwell, and D. Kahneman (eds). *International differences in well-being*. Oxford, New York: Oxford University Press.
Lawn, P. 2005. 'An assessment of the valuation methods used to calculate the Index of Sustainable Economic Welfare (ISEW), Genuine Progress Indicator (GPI), and Sustainable Net Benefit Index (SNBI)'. *Environment, Development, and Sustainability* 2: 185-208.
Lawn, P. 2008. *Degrowth as a solution to uneconomic growth*. Available at: http://events.it-sudparis.eu/degrowthconference/themes/1First%20panels/Backgrounds/Lawn%20P%20Degrowth%20Paris%20april%202008%20abstract.pdf [accessed 10 April 2010].
Lawn, P. and Clarke, M. 2010. 'The end of economic growth? A contracting threshold hypothesis'. *Ecological Economics* 69: 2213.
Lovins, A. 1998. *Factor four: Doubling wealth – halving resource use*. London: Earthscan.
Mankiw, N. 2008. *The principles of economics (5th edn)*. Mason, OH: South-Western.
Marshall, A. 1997 [1890]. *Principles of economics*. New York: Prometheus.
Max-Neef, M. 1995. 'Economic growth and quality of life: A threshold hypothesis'. *Ecological Economics* 15(2): 115.
Meadows, D., Randers, J., and Meadows, D. 2004. *Limits to growth: The 30-year update*. White River Junction, Vt., Chelsea Green Publishing.
Millennium Ecosystem Assessment, 2005. Available at: http://www.millenniumassessment.org/en/index.aspx [accessed 30 April 2011].
New Economics Foundation, 2010. *21 hours: Why a 21-hour work week can help us all flourish in the 21st century*. Available at: www.neweconomics.org [accessed 10 May 2011].
Pearce, J. 2008. 'Thermodynamic limitations to nuclear energy deployment as a greenhouse gas mitigation technology'. *International Journal of Nuclear Governance, Economy and Ecology* 2(1): 113-130.
Pickett, K. and Wilkinson, R. 2010. *The Spirit Level: Why greater equality makes societies stronger*. London: Penguin.
Pigou, A.C. 1920. *The economics of welfare*. London: Macmillan.
Pizzigati, S. 2004. *Greed and good: Understanding and overcoming the inequality that limits our lives*. New York: Apex Press.

Polimeni, J. *et al*. 2009. *The myth of resource efficiency: The Jevons paradox*. London: Earthscan.
Posner, R. 1986 (3rd edn). *Economic analysis of law*. Boston: Little Brown.
Purdey, S. 2010. *Economic growth, the environment, and international relations: The growth paradigm*. New York: Routledge.
Proceedings of Second international conference on degrowth, 2011. Available at: http://www.degrowth.org/Proceedings-new.122.0.html [accessed 29 June 2011].
Robinson, T. 2009. *Work, leisure, and the environment: The vicious circle of overwork and overconsumption*. Cheltenham: Edward Elgar Publishing.
Sarkar, S. 1999. *Eco-socialism or eco-capitalism: A critical analysis of humanity's fundamental choices*. London: Zed books.
Schneider, F., Kallis, G., and Martinez-Alier, J. 2010. 'Crisis or opportunity? Economic degrowth for social equity and ecological sustainability'. *J Clean Prod*. 18(6): 511-518.
Smith, R. 2010. 'Beyond growth or beyond capitalism'. *Real-World Economics Review* 53: 28-42.
Stevenson, B. and Wolfers, J. 2008. 'Economic growth and subjective well-being: Reassessing the Easterlin paradox'. *Brookings Papers on Economic Activity*: 1.
Stiglitz, J., Sen, A., and Fitoussi, J.P. 2010. *Mis-measuring our lives: Why GDP doesn't add up*. New York: The New Press.
Trainer, T. 2010a. *The transition to a sustainable and just world*. Envirobook, Sydney.
Trainer, T. 2011. 'The radical implications of zero growth economy'. *Real World Economics Review* 57: 71-82.
Trainer, T. 2012. 'De-growth: Do you realise what it means'. *Futures* 44: 590-599.
Trainer, T. 2013a. 'Can Europe run on renewable energy? A negative case'. *Energy Policy* 63: 845-850.
Trainer, T. 2013b. 'Can the world run on renewable energy'. *Humanomics* 29(2): 88-104.
Turner, G. 2012. 'Are we on the cusp of collapse? Updated comparison of *The Limits to Growth* with historical data'. *Gaia* 21(2): 116-124.
United Nations Development Program (UNDP), 2007/8. *Human development report*. Available at: http://hdr.undp.org/en/reports/global/hdr2007-2008/ [accessed 30 April 2011].
United Nations Department of Social and Economic Affairs (UNDSEA). 2012. *World Population Prospects: The 2012 Revision*. Available at: http://esa.un.org/wpp/ (accessed 10 September 2013).

Victor, P. 2008. *Managing without growth: Slower by design, not disaster*. Cheltenham: Edward Elgar Publishing.

Victor, P. 2011. 'Growth, degrowth, and climate change: A scenario analysis'. *Ecological Economics* 84: 206-212.

Victor, P. and Rosenbluth, G. 2007. 'Managing without growth'. *Ecological Economics* 61(2-3): 492.

Wackernagel, M. 2002. 'Tracking the ecological overshoot of the human economy'. *Proceedings of the National Academy of Sciences of the United States of America,* 99: 9266-9271.

Woodward, D. and Simms, A. 2006. *Growth isn't working: The uneven distribution of benefits and costs from economic growth*. London: New Economics Foundation.

World Bank. 2009. *World development indicators*. Available at http://data.worldbank.org/indicator [accessed at 29 June 2011].