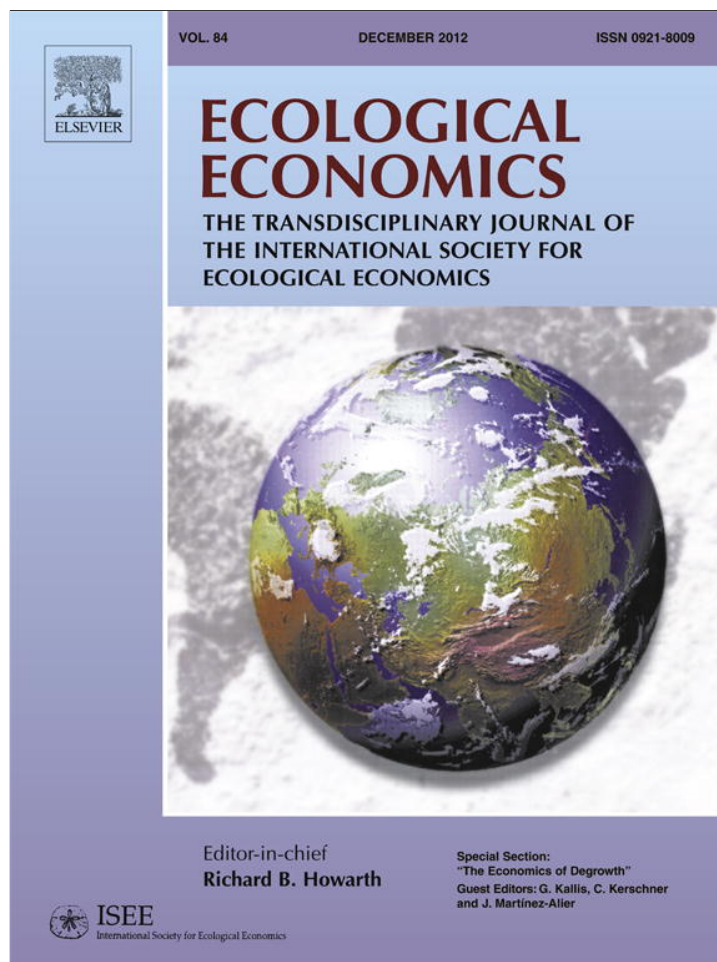


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Introduction

The economics of degrowth

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ABSTRACT

Economic degrowth is ecologically desirable, and possibly inevitable; but under what conditions can it become socially sustainable? How can we have full employment and economic stability without growth? What will happen to public spending and to public debt? How would production be organised in a degrowing economy? And under what plausible socio-political conditions could such grand changes happen? Standard economic theories and models ignore these questions. For them economic growth is an axiomatic necessity. This article reviews recent contributions in the economics of degrowth and identifies research avenues for ecological economists.

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1. Introduction

Like it or not, the West may have entered a period of prolonged recession. Whether this is a temporary or a new permanent state is hard to know. Ecological limits, exhaustion of investment outlets in mature economies, the burden of debt and geo-economic shifts point to a structural crisis (Kallis et al., 2009; Wallerstein, 2010). For the environment this is not bad news (Martinez-Alier, 2009): less growth means less material consumption, less CO₂ emissions and less habitat destruction; a last late chance to stay within the safe limits of global ecosystems (Rockström et al., 2009). But socially this can be a catastrophe. Growth economies do not know how to degrow. They collapse.

Growth above a level that satisfies basic needs does not improve psychological wellbeing (Easterlin et al., 2010). It also has more costs than benefits, especially environmental (Daly, 1996). Lack of growth on the other hand leads to a spiral of debt, unemployment and deterioration of social welfare. The core question for 21st century economics is no longer how nations get rich, but how they “manage without growth” (Victor, 2008), i.e. how can degrowth become stable and prosperous (Jackson, 2009). Mainstream and most heterodox economics ignore this question, since for them growth is an axiomatic necessity (Georgescu-Roegen, 1977). The recent crisis is seen as a regular, periodic crisis of capitalism and the recipes debated—“austerity” versus “Keynesian expansion”—are the same as in the 1930s. Austerity policies are failing badly in Southern Europe. They are

counterproductive. But pouring public money to fuel consumption may not work for mature economies with limited ecological space for growth. Moreover what happened to Japan since the 1990s i.e. its growing public debt and its failed nuclear investments, should have been another reason for thinking long ago about “managing without growth”. Fresh economic thinking is needed.

Ecological economics is well positioned to lead the discussion over a prosperous degrowth. Seminal contributions concerning limits to growth and alternative pathways to well-being have come from ecological economists (Daly, 1973, 1996; Georgescu-Roegen, 1971; Norgaard, 1994; Odum and Odum, 2001; Victor, 2008). The crisis has revived the growth debate and ecological macroeconomics (Daly, 2010; Jackson, 2009; Kallis, 2011; Kallis et al., 2009; Kerschner, 2010; Martinez-Alier, 2009; van den Bergh, 2011; van den Bergh and Kallis, forthcoming; Victor, 2010). This Special Issue collects some of the best ecological-economic contributions from the 2nd International Conference on Economic Degrowth (Barcelona, May 26–29 2010).¹ Contributions fall under three inter-related literatures: Steady-State Economics (SSE) (Daly, 1996); the new economics (NE) of prosperity (Jackson, 2009, NEF, 2009; Schor, 2011); and Degrowth (DG) (Latouche, 2009; Martinez-Alier et al., 2010). We group the contributions into those strengthening the case for the desirability and feasibility of a degrowth transition (Section 2); those assessing policy instruments for the

¹ For more contributions, see the proceedings of the Conference: <http://www.degrowth.org/Proceedings-new.122.0.html>. Two more separate special issues from the Conference are in press, the first at the Journal of Cleaner Production, and the second (on the issue of degrowth and democracy) at the journal Futures.

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transition (Section 3); and those discussing its socio-political dynamics (Section 4). We conclude in Section 5 with the main research areas for an economics of degrowth.

2. The Case for Degrowth

2.1. The Causes of the Crisis

Why and how did Western economies implode after 2008? Those writing from an SSE, NE or DG perspective converge on three main points. First, that this is not just an economic (or financial) crisis. It is a multi-dimensional crisis of democracy, social mores and the environment (Speth, 2012–this issue).

Second, that the root cause behind these different crises is a fixation with economic growth (Speth, 2012–this issue). The deregulation of the financial industry and the supply of easy money that led to the private and public borrowing crises were not ‘mistakes’, but deliberate policy choices intended to maintain growth (Jackson, 2009). In the name of economic efficiency, States gave away important national decisions (e.g. money supply) to markets and independent bodies (e.g. Central Banks), removing them from the realm of democratic choice. A culture of greed proliferated both in the private and public sectors as the unrestrained pursuit of short-term self-interest was legitimised because of its supposed economic benefits. Growth requires also the continuous enumeration and valorisation of unmonetised ‘goods’ and services—environmental, caring, relational—and their integration into the market. This crowded out alternative value systems that regulated these ‘goods’ and degraded their essence by subjecting them to the profit logic (Brown et al., 2009; Hirsch, 1976).

Third, resuming economic growth would make it easier to pay for the accumulated debts but it is not a response to the crisis. It will accelerate climate change, biodiversity loss and resource extraction and waste disposal in ‘commodity frontiers’, not coincidentally the last environmentally preserved areas of the globe, where indigenous groups often reside (Martinez-Alier et al., 2010).

But how do ecological factors contribute to an economic crisis? According to the theory of Frederick Soddy (1926), the economy has three levels: the financial, the so-called “productive”, and the ecological. Debts increase exponentially. They can be paid by economic growth, by inflation or by squeezing the debtors for a while. But economic growth of the productive economy depends on energy and materials, and on the availability of sinks for waste such as carbon dioxide. We see the building industry or car manufacturing as part of the “productive” economy but they depend on exhaustible resources. “The entropy law and the economic process” by Georgescu-Roegen (1971) insisted in the fact that energy cannot be recycled, and that materials are recycled only to some extent. Fresh supplies are needed, and this is problematic when we rely on exhaustible fossil fuels and on materials which are ever more difficult to obtain at the commodity frontiers. The fictitious economy of finance issues money and debt to keep up the required nominal growth rates that cannot be sustained by the ecological economy. As debt accumulates, a crisis ensues, manifested in demands to pay debts through inflation (expansion) or by squeezing the debtors (austerity).

Douthwaite (2012–this issue) offers a complementary ecological theory of the crisis. The problem of the world financial system is that money is issued through bank debt. The supply of money increases if more new loans are taken out than old ones paid back. Until recently this allowed the production of more energy from fossil fuels, which then gave value to this increasing money supply. However from the end of 2004 commercial banks increased their lending (especially for property and shares), while oil supplies remained the same. Central banks failed to notice this tendency and the crucial link between energy and money was broken. Rising money supply with flat commodity and energy supplies, led to an increase in the price of the latter. More and more income left consumer countries and went to oil or commodity producing countries, coming back as lent capital. These loans allowed consumer

countries to continue buying oil and commodities, but only by further increasing their debt and current account deficits. The debt burden grew especially in rich countries with stable or declining manufacturing sectors, where a lot of that “new money” was used in fuelling a housing bubble. Eventually the weakest borrowers (sub-prime mortgages in the US), could no longer afford to pay the increasingly high energy and commodity prices plus the interests on their loans. The housing bubble burst and bad debt accumulated as the economy entered recession.

Is there evidence for these theories? Has there been a decoupling of oil and money supply, and has this caused the crisis? There are indications of non-increasing oil supplies in the 2000s, but it is contested whether this was due to geological limitations (the approaching peak-oil) (Chanel, 2012; Lewis, 2010; Murphy and Balogh, 2009; Theramus, 2009) and a decreasing EROI (Hall and Klitgaard, 2011) or due to a deliberate (and misguided) underinvestment of Arab countries in a new capacity to pump oil (Smith, 2009). The oil price hike of 2008 and the rising prices throughout the 2000s could be an indication of tightening oil supplies. But they could as well be the result of growth in aggregate global demand, rise in demand for oil *per se* (perhaps related to concerns about future restrictions), speculation or capital flows to the oil futures market (Hamilton, 2009; Kilian, 2007; Smith, 2009). Caballero et al. (2008) offer a different theory: after the Asian crisis excess savings in Asia and the Arab world found their way to the more developed U.S. financial markets, lowering interest rates and fuelling the housing bubble. With the bust of the latter, capital flowed to commodities markets, which (temporarily) collapsed however with the 2009 global recession. The timing of changes in the U.S. current account deficit and oil prices, and the fact that not only oil, but *all* commodity prices spiked together in 2008 supports a ‘capital flows’ story. Unlike Douthwaite’s theory, here the source of easy money is not excess loans or deliberate monetary easing, but excess accumulation in the rest of the world. Independent of the causes of the rise in oil prices (supply, demand or capital flows), Hamilton (2009) shows that without their increase, the U.S. would not have entered into a recession in 2007–8. Rising oil prices increased the cost of commuting and foreclosure rates in suburban areas and reduced consumer spending and car purchases, precipitating a recession (Hamilton, 2009; Kaufmann et al., 2010).

2.2. Is Prosperous Degrowth Feasible?

Economic degrowth can be unstable. It can lead to unemployment, therefore to a lack of effective demand, resulting in even more unemployment, more state expenditures for unemployment benefits and a fiscal crisis of the state (Jackson, 2009). However, nobody in the DG literature is preaching degrowth forever. As Kerschner (2010) has shown the debate between DG and proponents of a SSE (going back to Georgescu-Roegen’s excessive strictures against Herman Daly) is false: degrowth is the path of transition to a lower steady-state. But should the steady-state be lower than today or can we do with zero growth at current levels? Jackson (2009) calls for prosperity ‘without’ growth, but his own “arithmetic of growth” shows that save for a technological miracle, degrowth is unavoidable. With current rates of growth, reaching the 450 ppm climate stabilisation target by 2050 would require carbon efficiency improvements (C/\$) that are 10 times faster each year than is currently the case. ‘Growth as usual’ is unrealistic, Jackson (2009) argues, since this would require an unprecedented pace of technological progress. Yet, ‘without growth’ the required level of efficiency improvements would still need to be 8 times faster than now. This is also incredibly high. It follows that a combination of degrowth and efficiency improvements is therefore necessary.

Objections abound. One is that degrowth and efficiency are not independent. Degrowth can slow down the carbon efficiency of the economy by reducing investment in renewables. Degrowth may also create unemployment, reduce state expenditures and reduce social welfare (van den Bergh, 2011). D’Alessandro et al. (2010) have addressed the first concern with a neo-classical dynamic model. They found that the sustainability window of the economy becomes wider by low GDP

growth rates, if enough investment is redistributed to alternative energy sources, and if consumption growth is curbed (D'Alessandro et al., 2010). In this Special Issue, the same research group addresses the welfare question with an endogenous growth model with externalities in consumption, leisure and production (Bilancini and D'Alessandro, 2012-this issue). Consumption externalities are negative through positional competition and leisure externalities are positive through formation of social capital. Under a set of reasonable parameter values transition to a balanced path is associated with production downscaling, reduction in private consumption and ongoing increase in leisure and wellbeing. The reason is that as the share of leisure time increases, so does the accumulation of the stock of social ties and the flow of relational goods. Together with increased leisure these more than compensate for the loss in wellbeing from reduced consumption. Taking into account resource limits and climate sustainability would make the possibility of dissociating output growth and wellbeing even more pronounced. Degrowth therefore needs not harm welfare.

Complementing Bilancini and D'Alessandro, Victor (2012-this issue) puts numbers to possible degrowth scenarios and assesses the effects on state expenditures and employment. The basis is a dynamic macro-economic model that simulates future growth and CO₂ emission scenarios for Canada. The model shows that "selective growth", i.e. a structural shift of the economy to lower-intensity commodities, will not work. The production of such commodities entails intermediate expenditures on high intensity commodities. Victor examines also a degrowth trajectory. The assumption is that the average Canadian enjoys in 2035 the same GDP that she did in 1976, much lower compared to current trends but 5 times higher than that required if world incomes were to be equalised at a level in which global CO₂ emissions would remain within planetary thresholds. Whereas in a zero-growth scenario Canada's CO₂ emissions are in 2035 22% less than in 2005, in the degrowth scenario they are 78% less. Yet in the degrowth scenario government expenditure in 2035 is 25% of its would-be level under a business as usual scenario. And under the zero-growth scenario the average work year would have to decrease 15% by 2035, if full employment were to be maintained, while in the degrowth scenario it would have to be reduced by 75%. Our reading of this evidence: combating climate change equitably will include an unprecedented degrowth, with a dramatic restructuring of the State and a reconfiguration of work.

What could such an economy look like? NE writers propose a reduction of (paid) work hours and a development of high social value/low productivity economic activities (Jackson, 2009; Schor, 2011). Jackson (2009) calls the latter a "Cinderella" economy: socially valuable sectors that go unnoticed and appear unproductive by standard GDP metrics. It includes activities of low productivity (e.g. caring) and ecological investments of low profitability, but high labour intensity and high levels of work satisfaction and social value added. Payment is low but the quality of work can be high.²

E does not use the word "degrowth" in the description of its vision for the economy, but instead "zero", "without" or "beyond" growth. Perhaps this is because of a fear that "degrowth" will scare the public and the politicians. But sometimes one gets the impression that some new economists really believe that a transition to a Cinderella, low carbon economy will not involve the material sacrifice implied by degrowth. Juliet Schor (2011), for example, maintains that "the route to lower impact does not require putting on a hair shirt. Nor does it entail making consumption less important... Living sustainably ... doesn't mean we can't have fabulous clothes, low-impact electronic gadgetry, great local food, and a more leisurely mode of travel".³ The vision here is

that the dramatic reduction in resource consumption necessary to avoid climate—and other dangerous environmental—change can be achieved while (or, by) expanding to the whole of the world the comfortable life-style enjoyed today by a small, ecologically-minded Western elite. Perhaps this is a more saleable vision than degrowth to Western middle/high-classes and (a few) elite politicians. But can anyone be convinced that this is feasible? Victor (2012-this issue) states the obvious: the production of low-intensity commodities—Schor's fabulous clothes, smart gadgets and alternative travels—consume high intensity intermediates (for an energetic explanation of the heaviness of supposedly light market services see Odum and Odum, 2001). The IPAT arithmetic of Jackson (2009) and the model of Victor (2012-this issue) also show that an unprecedented level of degrowth is necessary if we are serious about averting climate change. Will it be possible to have 75% less employment (Victor's calculations for Canada) and still wear fabulous clothes?

DG advocates have a different vision of prosperity, one based on dramatically less material abundance and consumption. They are less afraid of hair shirts, so to speak. Their vision is informed by models of voluntary simplicity (Alexander, 2011), such as co-housing projects (Lietaert, 2010) or ecological communes (Cattaneo and Gavalda, 2010). The proposition is that since the people who live there consume minimally and are happy with their lives, the rest of the world could do the same too. There are two problems with this view: one of false extrapolation and one of political naiveté. Simple living in peripheral communities today relies on the surplus—and the products and infrastructures—provided by the rest of the industrial economy. As Andre Gorz (1994) put it, the whole industrial system is embedded in the radio (see computer today) of a commune. Scaling up existing voluntary simplicity experiences to the societal level may entail much more hardship than what members of individual projects experience today. Some voluntary downshifters do not mind such hardship. But these are typically people who had a choice between simplicity and meaningless affluence. It does not follow that others, such as those who never had the choice, or those that enjoy their power, will not mind either.

2.3. Psychological Well-being and Degrowth

From the literature on happiness economics we know that: i) in the long-run happiness does not increase with national income, ii) in international comparisons, and for countries that have satisfied basic needs, the level of happiness does not vary much with national income (Easterlin et al., 2010). Why? First, because happiness is adaptive and positional; as everyone gets richer, no one gets happier (Hirsch, 1976). Second, because after satisfying basic needs happiness is derived from qualities of life that do not necessarily correlate with wealth. The policy implications are stark: a more equal distribution of income and investment in public services that make a difference in the quality of life, can have greater welfare effects than generalised growth. In the short-term however, a crisis and a sudden loss of income do reduce happiness levels (Easterlin et al., 2010). Much depends on how high material aspirations initially are, how quickly aspirations adapt to new circumstances and how (perceived) equality in the loss makes it easier to accept (Matthey, 2010).

If money does not buy happiness, then why do people still try to get richer? At the individual level income does correlate with happiness: richer people report higher levels of happiness. This can be due to positional consumption or because welfare goods in market societies cost a lot. Is this always and everywhere so? Masferrer-Dodas et al. (2012-this issue) look at an unusual cross-section of people: a Tsimane tribe in the Bolivian Amazon. They are a small-scale foraging-horticultural community only partly introduced to outside money and goods. Data collected among 600 adults shows no statistical correlation between market consumption and wellbeing. This suggests that a relationship between money and happiness may be a particular feature of the market societies studied by previous surveys. That is, there is no universal causal

² Those who have read Morris and Wilmer (1994 [1890]) perhaps would like to call this sector of pleasant and non-stressful occupations the "News from Nowhere sector". Nørgård (in press) calls it the "amateur" sector.

³ Hair shirts are a recurring object in the imaginary of New Economics. Tim Jackson often declares in his presentations that we won't have to wear hair shirts to create a flourishing world without growth.

link between human wellbeing and the consumption of goods and services. This begs the question: what makes people like the Tsimane different? Perhaps, it is that they have different values (less emphasis on material consumption or positional status). Perhaps they are less used to and draw less satisfaction from modern market goods. Or perhaps, it is other goods and relations that give them happiness, and these are accessible without money. An interesting hypothesis: the more (less) commodified a society is, the more (less) happiness varies with income.

2.4. Measuring Progress

If prosperous degrowth became a national objective how would we know whether we were doing well? We might want to ask also why some countries, such as Japan or Cuba, maintained wellbeing while not (or de) growing, while others, such as Greece, did not. A degrowth metric would be useful for such purposes. GDP is a bad indicator of social welfare (van den Bergh, 2009). Degrowth entails, but is not reducible to GDP decline (Kallis, 2011). Van den Bergh (2011) criticised the incoherent and inconsistent use of different variables that have to degrow according to degrowth advocates (e.g. GDP, material use, CO₂, hours worked). Kallis (2011) however responded, that like liberty, equality and other 'un-attainable goals' (Kerschner, 2010) degrowth expresses a general desire and direction. It is a matter of research to define degrowth metrics as fit for different purposes.

This is the task taken up by Dan O'Neill (2012-this issue), who constructs a national-level indicator system to capture normative elements of the SSE and DG literatures. O'Neill proposes a system of "degrowth accounts" with separate biophysical and social indicators. The biophysical indicators are derived from the definition of a steady-state economy, whereas the social indicators are based on the stated goals of the degrowth movement and include variables on equity, fulfilment of basic needs, free time, sense of community, participatory democracy, unemployment, life expectancy and subjective well-being. The indicators can be used to classify nations as economies under desirable growth, undesirable growth, desirable degrowth, undesirable degrowth and in a steady economy. These could be used as the dependant variables in econometric analyses with national datasets probing the factors that cause an economy to be in a desirable degrowth path or a steady state.

3. Institutional and Policy Options

A degrowth society will need different institutions. The SSE, NE and DG literatures converge, with minor differences, to a similar set of policies and institutions: resource and CO₂ caps; extraction limits; new social security guarantees and work-sharing (reduced work hours); basic income and income caps; consumption and resource taxes with affordability safeguards; support of innovative models of "local living"; commercial and commerce free zones; new forms of money; high reserve requirements for banks; ethical banking; green investments; cooperative property and cooperative firms (Jackson, 2009; Korten, 2008; Latouche, 2009; Speth, 2012-this issue). Specifications of these policy options are investigated by contributors to this Special Issue.

3.1. 'Cap and Share'

Given that the crisis is the result of the decoupling of the money supply from a peaked oil supply (and decreased EROIs), Douthwaite (2012-this issue) proposes placing a declining annual global cap on the tonnage of CO₂ emitted by fossil fuels and allocating a large part of each year's tonnage to everyone in the world on an equal per capita basis. Permits would have to be scarcer than the supply of fuel to capture the scarcity rent, which is the cause of destabilising capital flows. The permits would be sold by individuals (using the income as buffer against the increasing energy costs) to a central purchasing

institution who would then sell the rights to fossil fuel producers that need them to cover their emissions output for the given year. This could take the form of a Global Climate Trust, instituted by the UN/G20, acting in essence as a cartel of oil consumers. The incentive for fuel producers to join such a scheme, Douthwaite argues, is that although their output would be reduced each year, the price paid would increase to maintain their income. Long-term stability would be gained, by easing the commodity price induced boom and bust cycles of the world economy, at the expense of short-term profits. One wonders though, if a 'cap and share' system is such a win-win solution why is it not adopted yet? The political economy of such a reform and the obstacles by the interests that stand to lose must be much more complex than Douthwaite allows in his analysis.

3.2. Non-debt Money and Regional Currencies

Douthwaite proposes also creating non-debt money. Various communities have had non-debt forms of money in the past. An independent currency authority should be responsible for the issuing of new money since governments can succumb to political pressures and issue more money. Even better, such systems should operate at the regional scale, under a reference currency (such as the Euro in Europe). This would allow regional devaluations, restrain spatially the circulation of wealth, maintain sufficient liquidity and reduce the vulnerability of regions to monetary problems elsewhere. Regional currencies should not be backed by promises, as this would imply a debt. Some issuers may promise to deliver real things, such as energy or electricity that people can buy through bonds with their regional currency. Such regional energy bonds could promise to pay the bearer the price of a specific number of kWh on the day they mature, money coming for the payments made by people to buy energy from the plant that the bond will finance. These bonds will not circulate as money. But once the energy plant starts supplying power its managing committee could as well turn it into a sort of bank, issuing energy "notes" that the locals could use for buying and selling goods, secured in the knowledge that the note has real value as it could always be used to pay energy bills.

Douthwaite discusses also complementary user-created currencies such as the existing Local Exchange and Trading Systems (LETS) or time-banks. Complementary currencies can keep a greater portion of the economic product circulating locally, and strengthen localised economies, a key aspect of degrowth. They can be put also in good effect in times of liquidity crises. There is a lot of ongoing empirical research on the advantages and disadvantages of complementary community currencies (Fantacci, 2005; North, 2007; Seyfang, 2001), and even a specialised journal on the topic.

3.3. Zero Interest Rates

Dirk Loehr (2012-this issue) complements Douthwaite's proposal for debt-free money, by re-discovering Silvio Gesell's proposal for zero-interest "free money" (Gesell, 1958 [1916]). This calls for neutralising the liquidity premium by putting artificial costs on money. While in the short-term zero interest rates may push economic growth, in the long run they will go hand in hand with a low profit rate of real assets. The rising supply of capital will make not only the interest rate of money, but also the profit rate (of real capital) converge to zero. Marginal savings will be discouraged by negative interest rates, which will halt investment or even cause disinvestment e.g. by downscaling business operations. In such a zero-growth steady state, the whole economy will be consumed: there will not be any net investment or saving, only replacement of the capital stock consumed. Some individuals will still save, but the aggregate savings rate will be zero. This would in effect bring what Keynes (1972a [1930]) called "the euthanasia of the rentier" and the end of accumulation. The problem, that Keynes noted, is that other capital assets (land, gold) could take the role of money and

hamper the tendency for the own-rate of capital assets to be pushed down to zero. This is why Gesell saw the circulation of free-money as part of a comprehensive reform of the economic order, including the abolishment of private property on land, replaced with possession rights, and allowed for the control of natural monopolies by the State.

3.4. *New Forms of Property*

Property is a nodal point of the growth dynamic, argues Pascal van Griethuysen (2012-this issue). An important distinction is between "property" and "possession". The guarantee of property rights by institutions, i.e. the use of property as collateral, is a key factor in the formation of a virtual economy of money creation decoupled from the real ecological economy. Van Griethuysen explains how through a process of cumulative feedbacks, the capitalisation of property generates the imperative of growth. To break this cycle, he proposes a range of institutional interventions, including legislation to delineate the scope and temporality of property and to restrain the potential for concrete use and capitalisation. Private property should be constrained within a set of collectively agreed social minima and environmental maxima (thresholds). Given however that property acts as a *power amplifier* and powerful proprietors will influence subsequent institutional evolution, there is scope for institutional modalities that depart more radically from the (private) property regime. Van Griethuysen considers state property and common possession regimes. The latter include informal customary institutions for communal management of resources, or newer forms of cooperative partnerships by state and non-state actors, such as those experimented with public utilities in Latin America. He argues that state or communal property can create higher security and make the achievement of eco-social goals more likely. Johannisova et al. (in press) look at the benefits of not-for profit and cooperative firm structures from a degrowth perspective, whereas Boillat et al. (2012) evaluate positively the agro-ecological benefits of small-scale farmer cooperatives in Cuba. Alexander (2011) also evaluates the possible role of worker cooperatives in a degrowth perspective.

3.5. *Worksharing*

Reducing work hours and sharing available work make sense intuitively: other factors equal, less growth means fewer jobs (Jackson, 2009; NEF, 2009). Only if available jobs are shared, unemployment will not rise. Things are more complicated however. First, in a world of diminishing EROIs (or increasingly costlier energy supplies) or of diminishing output and investment (degrowth), productivity may no longer increase. Increases in labour productivity depend to a large extent on increases in available fossil fuel energy (and other non-renewable resources). Increasing labour productivity is a historic abnormality of the fossil fuel age and will change after peak oil, unless other equivalent sources become available in even larger quantities (which seems unlikely). In the medium to long-run therefore, unemployment may be less of a problem for degrowth. In an energy-scarce future we may have to work more, not less (Sorman and Giampietro, in press).

Second, the fixed costs of new jobs mean that work-sharing increases the unit costs of labour. Other factors equal, this will reduce the total amount of work available (Hunt, 1999). Whereas in the short-term work-sharing can absorb the unemployment created by a crisis, over time benefits decline and are less than those a 'lump sum' view of employment predicts Taylor (2010).

Third, leisure is often resource and consumption-intensive. Historically, declining work hours in the West have come with more, not less, resource consumption and more, not less, economic growth. Having said that, it is uncertain whether in a post peak oil world of decreased energy affluence such a phenomenon will repeat itself.

Finally, meaningful employment may include also non-enumerated activities (subsistence production, caring, communal work and participation in common affairs). Reduced employment in the paid

sector (e.g. see Victor, 2012-this issue) may not be as bad as it sounds, if alternative non-paid work forms emerge to give people meaningful lives (Kallis, in press). Nierling (2012-this issue) argues that many people engage in 'mixed work', combining flexibly paid work with uncommodified activities of their choice, such as do-it-yourself, voluntary and family work. To understand their motivations and perceptions, she studies participants at a Centre for Creativity in a large German town. The centre offers people an infrastructure and a setting to create (without payment) products for their own use, handicrafts and other do-it-yourself items. Her empirical findings show that unpaid work can play a significant role in one's personal well-being. Recognition—legal, performance-related, and personal—is central for the perception of unpaid work by those practicing it.

Beyond this optimistic view of unpaid work, Nierling warns that not all members of society have an equal opportunity to pursue this alternative or to enjoy personal recognition. Related is the interest in the DG literature to a guaranteed Basic Citizens' Income (Alexander, 2011; Schneider et al., 2010), a proposal largely absent from NE. This is a monthly stipend granted upon birth to all citizens of a nation, and financed through taxation (Raventós, 2007). A basic income provides a minimum safety net to all citizens, reduces the compulsion for—and the importance of—paid employment (and hence the social distress from unemployment) and provides opportunities for low-intensity, non-enumerated (uncommodified) activities, including political participation. Unlike a minimum wage, the Basic Income is a fundamental new way of distributing national product and surplus. Total production may fall as the cost of labour increases, but this is not bad from a degrowth perspective if leisure increases wellbeing and offsets losses from less paid work and consumption (remember Bilancini and D'Alessandro, 2012-this issue). Declining national product however may threaten the financing of the Basic Income.

3.6. *Innovative Models of Local Living*

The economic culture promoted in DG writings is close to what Carlsson and Manning (2010) call "nowtopias". These are communities of conscious withdrawal from capitalist culture with a concerted rejection of its value form. Such 'post-capitalist' spaces of interest include food consumer–producer cooperatives, urban (food) gardens, pirate programmers, non-money markets of exchange or time-banks, and various forms of sharing (co-housing, squats, couch-surfing, shared cars, shared community spaces, tool-sharing). Such practices are often characterised by a conscious defiance of the capitalist institutions of private property and wage labour and the logic of exchange-for-profit. But some of them have also been practised by needy people for a long time (food gardens, barter, taking your own bedding and sleeping on the floor while travelling for work). In fact, capitalism has relied on the unpaid domestic sector for the reproduction of the labour force. However, from a degrowth perspective these practices are interesting because they invert the logic of commodification, they might build on conviviality and they tend to be less resource-intensive than their market equivalents. Are these alternative modes of production the seeds of a future degrowth economy? And how important are they already?

Conill et al. (2012) provide one of the most comprehensive sociological studies of non-capitalist practices to date. A commissioned telephone survey in the city of Barcelona shows that more than 20% of the population have engaged recently with 10 or more, out of a list of 26, non-capitalist practices. 18.8% of people have grown some food for themselves, 16.9% have exchanged services without money (21.3% helped others fix their house) and 34% have shared digital or electro-domestic equipment with non-family members (17.6% have shared their cars). Beyond such 'traditional' non-capitalist practices, there is evidence of a core degrowth economic culture in formation: 9% of respondents are members of a consumer cooperative, 7% have participated in community gardening, 2.3% have used community currencies and 2% participate in an ethical or cooperative bank.

4. The Politics of Degrowth

4.1. Capitalism and Degrowth

Policies such as zero interest rates, global climate trusts, a shorter work-week, a basic income, or a maximum wage look extremely hard to implement. Often the reason is that they clash with the profits and interests of those who hold more political and economic power. Is a voluntary path to degrowth possible within capitalist economies? Is there something fundamental that makes capitalist economies either grow or collapse? Jackson (2009) responds that whether a society without growth will be called capitalism or something else is unimportant. Maybe so, but he fails to explain how a capitalist economy would work without a positive profit rate, a positive interest rate or discounting.

Economists, including ecological economists, define capitalism as the social system where private property and market transactions dominate (Lawn, 2011). Capital is a thing that can produce: a factory or a river (natural capital). For Marxian political economists instead, capital is a process: money in search of more money through the production of commodities (Blauwhof, 2012-this issue). Capitalism then is the system dominated by capital, i.e. a system structured around continuous accumulation. Apart from its theoretical complications, the Marxian view is closer to an everyday understanding of capitalism as the continuous search for profit. Accumulation predicates continuous growth, or if not, collapse and devaluation to restart a new phase of accumulation (Harvey, 2010). Capitalist economies can therefore either grow or collapse: they can never degrow voluntarily (Blauwhof, 2012-this issue; Foster et al., 2010; Klitgaard and Krall, 2012-this issue; Smith, 2010).

Lawn (2011), a steady-state economist, disagrees: have the government set social and environmental limits first, he argues, and then let capitalism do what it does best, i.e. allocate resources to competing needs through the price mechanism. Limits include a throughput cap and a Job Guarantee (see also Alcott, in press). Lawn (2011) argues that individual firms do face a strict condition of “profit or die”, but not the economy *in aggregate*. Yet individual firms can continue to profit and grow, even if the overall economy shrinks. Even in normal times there are more firms failing than growing; degrowth will not make a difference for capitalism. Also profit does not require expansion; firms can make profits in multiple ways other than by increasing production. In economies with capped resources the most innovative firms will adapt, maintaining profits through qualitative changes, shifting to less resource-intensive production. Caps will reduce resource use to a steady-state, “greener” sectors and firms will grow and accumulate, and “blacker” or “brownier” sectors will disappear. A green, dematerialising capitalism is possible, Lawn contends.⁴

There are three issues with this view. First, there is a question of semantics. Will this be “steady-state capitalism” (Lawn, 2011) or as Czech and Daly (2004) describe it, a European-style social democracy with extended government control of public goods? In the current U.S. political parlance, a political system where international bodies and States enforce resource caps, set minimum wages, guarantee full employment,

and control most public goods, would be called “socialism”. It entails a very strong State.

Second, there is the issue of experienced history as opposed to theoretical possibility. There is little evidence of absolute dematerialisation (Jackson, 2009; Kallis, 2011; Wallerstein, 2010), though one could argue that we won't know if it's possible to dematerialise until serious caps and taxes are implemented (van den Bergh, 2011). More importantly, however, the history of capitalism is one of dramatic ups and downs. Periods of unprecedented growth are followed by catastrophic crises of value destruction (including by war) clearing the ground for fresh accumulation (Harvey, 2010). Prices are not adjusted so much by the market, as they are by crises and devaluations, at the peril of the most vulnerable segments of the population (Klitgaard and Krall, 2012-this issue). Creative destruction is the distinctive feature of capitalism (Schumpeter, 2009 [1942]). Capitalism does degrow, but not by choice and not stably. A smooth price adjustment to an externally imposed limitation, such as a cap, is therefore unlikely (Klitgaard and Krall, 2012-this issue).

Third, State bureaucracies and policies are not exogenous, but endogenous to the dynamics of capitalist systems. Following the French ‘regulation’ school of thought, Klitgaard and Krall (2012-this issue) talks of periodic, stable “social structures of accumulation”, i.e. institutional State-market assemblages that work to maintain the conditions for accumulation. This included labour unions in the “Fordist” model of accumulation. Technological and economic changes and the crisis of the 1970s rendered obsolete this Statist mode of regulation that some called a “corporatist” model. It survived to some extent in Central Europe but a new variety of capitalism, the “neo-liberal” era that ensued brought deregulation, privatisation and an expansion of private property and market institutions (Harvey, 2010; Klitgaard and Krall, 2012-this issue) Such historical political-economic dynamics pose obstacles to the return to the interventionist State called upon by SSE, NE or DG advocates. How States conform to the requirements for accumulation is a complicated issue. One can note though the dependence of political parties on private funding, or the centrality of economic growth in making inequality tolerable and maintaining the legitimacy of the State (Hirsch, 1976). Powerful private interests do coalesce and organise politically to make sure that no limitations, such as caps or basic incomes, stand in the way of their profits.

What about labour and women rights, the 40 hours' workweek, social security or free healthcare? Weren't these unthinkable reforms at the time that compromised the profits of powerful vested interests? Blauwhof (2012-this issue) argues that reforms are possible, but speculates that nothing sort of a ‘revolution’ (which he doesn't specify) will bring them about. There is historical evidence supporting the claim that it takes radical agendas to take power in order to bring about reformist policies (e.g. Gorostiza et al., 2012). In many cases such radical agendas have come through electoral and social pressure. But who, why and how would organise collectively to demand changes in the direction of prosperous degrowth?

4.2. Social Movements

This question is largely ignored by the SSE or NE literatures, which implicitly deposit proposals to ‘enlightened policymakers’. They lack a theory of how their proposed reforms could become socio-politically hegemonic. Jackson (2009) for example, analyses excellently the socio-institutional path-dependencies that perpetuate unsustainable growth policies. Yet he is silent on the social and political actors or the processes that will bring a society without growth. Similarly, Lawn (2011) or Douthwaite (2012-this issue) do not explain who, how and why would demand and set global or national carbon caps. It is not clear who is the ‘political subject’ that will be mobilised and struggle socially and politically for the advocated reforms.

Speth (2012-this issue) does better and emphasises the centrality of political, rather than policy, change. He is also aware of its difficulty given the weakening of the State under neo-liberal globalisation and

⁴ A somewhat related question concerns the possibility of a “natural capitalism”, i.e. the growth of a new economic sector based on ecosystem services and “Natural Capital”, which would allow capitalist economic growth to proceed further. To a large extent, this is nothing new. Private forests, private mining and hydroelectric dams have long existed. There might now be new large scale opportunities for appropriation of nature and for private investment for ecological restoration, carbon absorption, markets for genetics resources, as proposed for instance in the TEEB project and discussed under the rubric of Green Growth in Rio+20. Some SSE authors are rather positive towards payment for ecosystem services (PES). Degrowth authors on the other hand generally see PES as an alarming advance of the “generalized market system”, as described by Karl Polanyi in “The Great Transformation ([1944] 2001). They tend to criticize this new “commodity fetishism” and the substitution of values that govern our relations with nature by the logics of profit and the market. The NE seems relatively moot on this issue.

its capturing by strong corporate interests. Speth claims that working within the system cannot bring change, given the current sad state of American politics; what is needed is transformative change of the system itself. Speth laments an environmental movement which has become too “wonkish” and out of touch with real people. He calls for a new social movement, a movement of movements allying all progressives under a narrative of social justice beyond growth. Such a movement could create new forms of political representation to reinvent American politics and lead to radical reforms.

In Speth (2012-this issue), the political subject of degrowth is not traceable along conventional lines of class. It consists of an alliance among those disenfranchised by growth, such as the unemployed and the underemployed ‘precariat’, the ecologists and the landless peasants (Harvey, 2010), including those struggling for environmental justice in the Global South (Martinez-Alier, 2012). Could the *indignados*/ Occupy movements be such a cross-alliance movement in the North (Taibo-Arias, 2011)? Some of the concerns of the DG/NE literatures made it to the Occupy assemblies, but they were not always central, nor can one claim that the movement is liberated from the imaginary of growth. One may have to look also beyond the West, such as in Latin America, where indigenous movements mobilise with success around “buen vivir” or “suma qawsay” (the good life), ideas which share affinities with degrowth (Thompson, 2011). In Ecuador a national ‘buen vivir’ plan has been instituted and notwithstanding its limitations and contradictions, it embodies many degrowth-related ideas.

Others conceive a different trajectory of social change. ‘Nowtopias’, they argue, become the basis for a new shared experience of class (Carlsson and Manning, 2010). The individuals and collectives engaged in alternative economic practices get politicised as they inevitably organise politically to defend their mode of living as it expands and comes in conflict with the existing system (Alexander, 2011). The hypothesis here is that a new political subject is being formed through practice and engagement with a new mode of production (Conill et al., 2012). The question however remains whether this social process is up to the scale and urgency of the challenge. The Yasuni ITT proposal in Ecuador (leaving oil in the soil because of climate change but also because of protection of biodiversity and respect for local indigenous rights) goes into this direction (Rival, 2010).

5. Future Research and Conclusion

This literature review touched on different issues and opened many research fronts. Let us provide here a selection of a few.

1. *An ecological theory of the crisis.* Why and how did ecological factors cause or precipitate in the 2008 meltdown? What were the causal channels of their influence? What data is there to support such claims? Soddy’s theory of debt, or the oil-debt theory sketched by Douthwaite, are good starting points. They have to be further specified though into a set of more concrete hypotheses (formal or verbal) that can be tested with data and compared to competing explanations of the crisis.
2. *Commodity frontiers.* Who, where and how suffers the impacts from the extraction and disposal of the materials that fuel growth? How do unmonetised values and practices get commodified and who loses as a result? Who resists such commodity and commodification frontiers, when is such resistance successful and how does it shape the patterns of growth elsewhere?
3. *The growth fetish.* If economic growth does not increase wellbeing, and is uneconomical and anti-ecological, what is it that sustains it as a primary national objective? While seemingly naive, this question welcomes interrogation of the structural forces—institutions and ideologies/discourses—that make growth an imperative of capitalist economies. In addition to property (van Griethuysen, 2012-this issue), one may want to look at the role of interest rates, debt and other economic institutions, linking them together under theories of capitalism. Also at the level of ideas: how did the idea/discourse of growth become socially dominant and how does it reproduce its hegemony? Why and how do economists and economics perpetuate the “growth fetish” (Hamilton, 2003)?
4. *Policy assessments.* Worksharing, basic income, alternative currencies, etc. Which are the advantages and disadvantages of these policies and how do their outcomes depend on contextual conditions? Under which specifications and contexts will they facilitate prosperous degrowth, and under which may they promote more accumulation and growth? What do we learn from disciplines that have already modelled or studied empirically the implementation of such policies?
5. *Economic and metabolic scenarios.* What would plausible degrowth futures at the national, regional or local level look like? How much would people work, paid and unpaid, how much materials, food calories or energy would they consume, how efficient would they be in their production, how many will they be? This is an exercise of putting numbers to degrowth proposals (e.g. Sorman and Giampietro, in press; Victor, 2012-this issue).
6. *Country comparisons and econometrics.* Whereas several nations have experienced recession or prolonged lack of growth, some have fared socially and environmentally better than others. Why do some countries collapse while others remain stable, or even prosper without growth? This research question begs the use of suitable metrics of prosperous degrowth, along the lines initiated by O’Neill (2012-this issue).
7. *History and anthropology.* Which past societies organised to avoid accumulation and growth, or to downscale? Why, when and how? What can we learn from “original affluent societies” (as Marshall Sahlins, 1972 called them), working a few hours of work? What are the institutional, cultural and environmental characteristics of such non-capitalist societies?
8. *Crisis, degrowth and happiness.* Different people experience the loss of income incurred by the crisis in different ways. Who and how adapts to a loss of income, and under what contextual conditions? Why do some people fare better psychologically than others under the same stresses? How do aspirations or unattainable goals (Kerschner, 2010; Wrosch, 2003), ideologies, life-styles or other socio-economic characteristics affect adaptability to consumption losses? Do equality, degree of justice or social capital facilitate adaptability to deteriorating economic conditions?
9. *Nowtopias.* Why do some people—voluntarily or involuntarily—downshift and experiment with non-capitalist practices? What are their characteristics? How do they organise in collectives or networks? When do these initiatives succeed and propagate and when do they fail? Can such localised experiences be scaled up? Do participants politicise through engagement and form a shared experience of class? How do they interact with government and authorities? How do they interact with non-participants that do not necessarily share the same values? How do they handle their potential re-assimilation by the system and the commodification of the new values they create?
10. *Population.* The present issue contains no article on population growth or degrowth. We know however that it is likely that world population might peak by 2045 or 2050, at less than 9 billion. Fertility is falling quickly where it is still above 2, and remains below 2 in many countries. On the other hand, humans live longer lives. One may be alarmed by the population growth still ahead of us, or rather we should start thinking on new questions. What are the advantages of regional depopulation for the environment and wellbeing? How do regions adapt to depopulation and ageing populations? How may economic degrowth affect fertility, life expectancy, immigration and population in general? How do the population policies of developed and developing nations change, and why? (Alcott, 2012)

11. *Ecofeminism*. There is a clear synergy that remains to be explored between ecofeminist economics (with its emphasis on the value of non-market work, and on real human needs) and the economics of degrowth (for some efforts see D'Alisa and Cattaneo, in press).
12. *Other social movements*. Who and how struggles for reforms that would bring prosperous degrowth? How do existing social movements articulate the growth/degrowth problematic, and how influential is it in their deliberations? How do degrowth ideas get institutionalised in government plans and policies, thanks to whom, and through what socio-political dynamics? How effective are such incipient politicisations and what dangers do they hold? Is there a confluence between the small degrowth (or NE) movements in some rich societies and the large environmental justice movements in the global South? (Martinez-Alier, 2012).

Answering these questions will help us better understand why the growth economy is failing, what is it that sustains it despite its failure, how this deadlock can be changed, by whom, under what conditions and to what direction. Ecological economists have much to offer in this exciting incipient research agenda and to the search for prosperous degrowth.

Acknowledgement

We wish to remember here Richard Douthwaite (1942–2011), an economist, ecologist and campaigner. Richard studied engineering and economics at Leeds University and Essex University. He was co-founder of FEASTA (a Foundation for the Economics of Sustainability). He was a visiting lecturer at many Irish and British universities, and at Schumacher College. In 1992 he published the magnificent *The Growth Illusion: How Economic Growth Enriched the Few, Impoverished the Many and Endangered the Planet*. Another major book, *Short Circuit* (1996) gave many examples of currency, banking, energy and food production systems which communities can use. In the Degrowth Conference in Barcelona in 2010, he gave an impressive talk, part of which is included in his commentary presented in this issue.

References

- Alcott, B., 2012. Population matters in ecological economics. *Ecological Economics* 80, 109–120.
- Alcott, B., in press. Should degrowth embrace the job guarantee? *Journal of Cleaner Production*.
- Alexander, S., 2011. *Property beyond Growth. Toward a Politics of Voluntary Simplicity*. University of Melbourne, Melbourne.
- Bilancini, E., D'Alessandro, S., 2012. Long-run welfare under externalities in consumption, leisure, and production: a case for happy degrowth vs. unhappy growth. *Ecological Economics* 84, 194–205 (this issue).
- Blauwhof, F.B., 2012. Overcoming accumulation: is a capitalist steady-state economy possible? *Ecological Economics* 84, 254–261 (this issue).
- Boillat, S., Gerber, J.-F., Funes-Monzote, F.R., 2012. What economic democracy for degrowth? Some comments on the contribution of socialist models and Cuban agroecology. *Futures* 44, 600–607.
- Brown, M.T., Cohen, M.J., Sweeney, S., 2009. Predicting national sustainability: the convergence of energetic, economic and environmental realities. *Ecological Modelling* 220, 3424–3438.
- Caballero, R.J., Farhi, E., Gourinchas, P.-O., 2008. Financial crash, commodity prices and global imbalances. *Brookings Papers on Economic Activity*, pp. 1–68. Available from: <http://www.nber.org/papers/w14521.pdf>.
- Carlsson, C., Manning, F., 2010. Nowtopia: strategic exodus? *Antipode* 42, 924–953.
- Cattaneo, C., Gavaldà, M., 2010. The experience of rural squats in Collserola, Barcelona: what kind of degrowth? *Journal of Cleaner Production* 18, 581–589.
- Chanel, L., 2012. Greasing the wheel: oil's role in the global crisis. In: Tverberg, G.E., Saunders, K. (Eds.), *The Oil Drum*. www.theoil Drum.com.
- Conill, J., Cardenas, A., Castells, M., Servon, L., S., H., 2012. Otra vida es posible: prácticas alternativas durante la crisis. Ediciones UOC Press, Barcelona.
- Czech, B., Daly, H., 2004. The steady state economy: what it is, entails, and connotes. *Wildlife Society Bulletin* 32, 598–605.
- D'Alessandro, S., Luzzati, T., Morroni, M., 2010. Energy transition towards economic and environmental sustainability: feasible paths and policy implications. *Journal of Cleaner Production* 18, 291–298.
- D'Alisa, G., Cattaneo, C., in press. Household work and energy consumption: a degrowth perspective. Catalonia's case study. *Journal of Cleaner Production*. <http://dx.doi.org/10.1016/j.jclepro.2011.11.058>.
- Daly, H.E., 1973. *Towards a steady-state economy*. Freeman, San Francisco.
- Daly, H.E., 1996. *Beyond growth. The economics of sustainable development. The Economy as an Isolated System*. Beacon Press, Boston.
- Daly, H., 2010. From a failed-growth economy to a steady-state economy. *Solutions* 1, 37–43.
- Douthwaite, R., 2012. Degrowth and the supply of money in an energy-scarce world. *Ecological Economics* 84, 187–193 (this issue).
- Easterlin, R.A., McVey, L.A., Switek, M., Sawangfa, O., Zweig, J.S., 2010. The happiness-income paradox revisited. *Proceedings of the National Academy of Sciences* 107, 22463–22468.
- Fantacci, L., 2005. Complementary currencies: a prospect on money from a retrospect on premodern practices. *Financial History Review* 12, 43–61.
- Foster, J.B., Clark, B., York, R., 2010. Capitalism and the curse of energy efficiency. The return of the Jevons paradox, *Monthly Review*. 62.
- Georgescu-Roegen, N., 1971. *The Entropy Law and the Economic Process*. Harvard University Press, Cambridge, Mass.
- Georgescu-Roegen, N., 1977. The steady state and ecological salvation: a thermodynamic analysis. *BioScience* 27, 266–270.
- Gesell, S., 1958 [1916]. *The Natural Economic Order*. Peter Owen Ltd., London. Available from http://www.silvio-gesell.de/html/the_natural_economic_order.htm.
- Gorostiza, S., March, H., Sauri, D., 2012. Servicing customers in revolutionary times: the experience of the collectivized Barcelona Water Company during the Spanish Civil War. *Antipode*, no-no.
- Gorz, A., 1994. *Capitalism, Socialism. Ecology*, Verso, London.
- Hall, C.A.S., Klitgaard, K., 2011. *Energy and the Wealth of Nations*. Springer, Heidelberg.
- Hamilton, C., 2003. *The Growth Fetish*. Pluto Press, London.
- Hamilton, J.D., 2009. The causes and consequences of the oil shock of 2007–2008. NBER Working Paper No. 15002. Available from: <http://www.nber.org/papers/w15002>.
- Harvey, D., 2010. *The enigma of capital and the crises of capitalism*. Oxford University Press, Oxford.
- Hirsch, F., 1976. *Social limits to growth*. Harvard University Press.
- Hunt, J., 1999. Has work-sharing worked in Germany? *The Quarterly Journal of Economics* 114, 117–148.
- Jackson, T., 2009. *Prosperity without Growth: Economics for a Finite Planet*. London, Earthscan.
- Johanisova, N., Crabtree, T., Fraňková, E., in press. Social enterprises and non-market capitals: a path to degrowth? *Journal of Cleaner Production*. <http://dx.doi.org/10.1016/j.jclepro.2012.01.004>.
- Kallis, G., 2011. In defence of degrowth. *Ecological Economics* 70, 873–880.
- Kallis, G., in press. Societal metabolism, working hours and degrowth A comment on Sorman and Giampietro. *Journal of Cleaner Production*. <http://dx.doi.org/10.1016/j.jclepro.2012.06.015>.
- Kallis, G., Martinez-Alier, J., Norgaard, R., 2009. Paper assets, real debts. An ecological-economic exploration of the global economic crisis. *Critical perspectives on international business* 5, 14–25.
- Kaufmann, R.K., Gonzalez, N., Nickerson, T.A., Nesbit, T.S., 2010. Do household energy expenditures affect mortgage delinquency rates? *Energy Economics* 33, 188–194.
- Kerschner, C., 2010. Economic de-growth vs. steady-state economy. *Journal of Cleaner Production* 18, 544–551.
- Keynes, J.M., 1972 [1930]. *Economic possibilities for our grandchildren, the collected Writings of John Maynard Keynes*. Vol. IX: *Essays in Persuasion*. Macmillan, London/Basingstoke.
- Kilian, L., 2007. The economic effects of energy price shocks. Available at SSRN: <http://ssrn.com/abstract=1140086>.
- Klitgaard, K.A., Krall, L., 2012. Ecological economics, degrowth, and institutional change. *Ecological Economics* 84, 247–253 (this issue).
- Korten, D.C., 2008. *Agenda for a New Economy*. Berrett-Koehler, San Francisco.
- Latouche, S., 2009. *Farewell to Growth*. Polity Press, Cambridge, UK.
- Lawn, P., 2011. Is steady-state capitalism viable? *Ecological Economics Reviews, Annals of the New York Academy of Sciences* 1219, 1–25.
- Lewis, B., 2010. Collin Campbell: peak oil man shifts focus to peak price, demand. www.reuters.com.
- Lietart, M., 2010. Cohousing's relevance to degrowth theories. *Journal of Cleaner Production* 18, 576–580.
- Loehr, D., 2012. The euthanasia of the rentier—a way toward a steady-state economy? *Ecological Economics* 84, 232–239 (this issue).
- Martinez-Alier, J., 2009. Socially sustainable economic de-growth. *Development and Change* 40, 1099–1119.
- Martinez-Alier, J., 2012. Environmental justice and economic degrowth: an alliance between two movements. *Capitalism Nature Socialism* 23, 51–73.
- Martinez-Alier, J., Pascual, U., Vivien, F.-D., Zaccai, E., 2010. Sustainable de-growth: mapping the context, criticisms and future prospects of an emergent paradigm. *Ecological Economics* 69, 1741–1747.
- Masferrer-Dodas, E., Rico-Garcia, L., et al., 2012. Consumption of market goods and wellbeing in small-scale societies: an empirical test among the 'Tsimane' in the Bolivian Amazon. *Ecological Economics* 84, 213–220 (this issue).
- Matthey, A., 2010. Less is more: the influence of aspirations and priming on well-being. *Journal of Cleaner Production* 18, 567–570.
- Morris, W., Wilmer, C., (1994 [1890]). *News from Nowhere and Other Writings*. London, Penguin Classics.
- Murphy, D.J., Balogh, S., 2009. Further evidence of the influence of energy on the U.S. economy. In: Tverberg, G.E., Saunders, K. (Eds.), *The Oil Drum*. www.theoil Drum.com, Denver.

- NEF, 2009. Growth Isn't Possible. New Economics Foundation, London.
- Nierling, L., 2012. This is a bit of the good life": recognition of unpaid work from the perspective of degrowth. *Ecological Economics* 84, 240–246 (this issue).
- Norgaard, R.B., 1994. *Development Betrayed: The End of Progress and A Coevolutionary Revisioning of the Future*. Routledge, London.
- Nørgård, J.S., in press. Happy degrowth through more amateur economy. *Journal of Cleaner Production*. <http://dx.doi.org/10.1016/j.jclepro.2011.12.006>.
- North, P., 2007. *Money and liberation: the micropolitics of alternative currency movements* University of Minnesota Press, Minneapolis.
- Odum, H.T., Odum, E.C., 2001. *A Prosperous Way Down: Principles and Policies*. University Press of Colorado, Colorado.
- O'Neill, D.W., 2012. Measuring progress in the degrowth transition to a steady state economy. *Ecological Economics* 84, 221–231 (this issue).
- Polanyi, K., (2001 [1944]). *The Great Transformation: The Political and Economic Origins of Our Time*. Boston, Beacon Press.
- Raventós, D., 2007. *Basic Income: The Material Conditions of Freedom*. Pluto, London.
- Rival, L., 2010. Ecuador's Yasuní Initiative: The old and new values of petroleum. *Ecological Economics* 70, 358–365.
- Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F.S., Lambin, E.F., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, H.J., Nykvist, B., de Wit, C.A., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P.K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R.W., Fabry, V., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P., Foley, J.A., 2009. A safe operating space for humanity. *Nature* 461, 472–475.
- Sahlins, M.D., 1972. The original affluent society. *Stone Age economics*. Aldine, Chicago. pp. 1–37.
- Schneider, F., Kallis, G., Martinez-Alier, J., 2010. Crisis or opportunity? Economic degrowth for social equity and ecological sustainability. Introduction to this special issue. *Journal of Cleaner Production* 18, 511–518.
- Schor, J.B., 2011. *True Wealth: How and Why Millions of Americans are Creating a Time-rich, Ecologically Light, Small-scale, High-satisfaction Economy*. Penguin, New York.
- Schumpeter, J.A., (2009 [1942]). *Can capitalism survive?* Harper Perennial, New York.
- Seyfang, G., 2001. Community currencies: small change for a green economy. *Environment and Planning - Part A* 33, 976–996.
- Smith, J.L., 2009. World oil: market or mayhem? *The Journal of Economic Perspectives* 23, 145–164.
- Smith, R., 2010. Beyond growth or beyond capitalism? *Real World Economics Review* 53, 28–36.
- Soddy, F., 1926. *Wealth, virtual wealth and debt*. Allen and Unwin, London.
- Sorman, A.H., Giampietro, M., in press. The energetic metabolism of societies and the degrowth paradigm: analyzing biophysical constraints and realities. *Journal of Cleaner Production*. <http://dx.doi.org/10.1016/j.jclepro.2011.11.059>.
- Speth, J.G., 2012. American passage: towards a new economy and a new politics. *Ecological Economics* 84, 181–186 (this issue).
- Taibo-Arias, C., 2011. *Nada será como antes: sobre el movimiento 15-M*. Los Libros de la Catarata, Madrid.
- Taylor, J.E., 2010. Work-sharing during the great depression: did the 'president's reemployment agreement' promote reemployment? *Economica* 78, 133–158.
- Theramus, 2009. Was volatility in the price of oil a cause of the 2008 financial crisis? In: Tverberg, G.E. (Ed.), *The Oil Drum*. <http://www.theoil Drum.com/node/6025>.
- Thompson, B., 2011. Pachakuti: indigenous perspectives, buen vivir, sumaq kawsay and degrowth. *Development* 54.
- van den Bergh, J.C.J.M., 2009. The GDP paradox. *Journal of Economic Psychology* 30, 117–135.
- van den Bergh, J., 2011. Environment versus growth. A criticism of "degrowth" and a plea for "agrowth". *Ecological Economics* 70, 881–890.
- van den Bergh, J., Kallis, G., forthcoming. Growth, agrowth or degrowth to stay within planetary boundaries? *Journal of Economic Issues*.
- van Griethuysen, P., 2012. Bona diagnosis, bona curatio: how property economics clarifies the degrowth debate. *Ecological Economics* 84, 262–269 (this issue).
- Victor, P.A., 2008. *Managing Without Growth: Slower By Design, Not Disaster*. Edward Elgar, Cheltenham, UK; Northampton, MA.
- Victor, P., 2010. Questioning economic growth. *Nature* 468, 370–371.
- Victor, P.A., 2012. Growth, degrowth and climate change: a scenario analysis. *Ecological Economics* 84, 206–212 (this issue).
- Wallerstein, I., 2010. Structural crises. *New Left Review* 62, 133–142.
- Wrosch, C., 2003. Adaptive self-regulation of unattainable goals: goal disengagement, goal reengagement, and subjective well-being. *Personality and Social Psychology Bulletin* 29, 1494–1508.