

Peak Oil and the Twilight of Growth

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INTRODUCTION

This article is an invitation for lawyers to consider two interrelated subjects that have received almost no attention within the legal academy but which undoubtedly have, or will have, significant legal implications. The subjects to which I refer are 'peak oil,' on the one hand, and 'post-growth economics,' on the other. Through an introductory examination of these subjects, this article will explore the hypothesis that the peaking of global oil supply might signify the twilight of economic growth as we have known it.¹ The aim of what follows, however, is not to examine in any detail the *particular* legal implications of this hypothesis; rather, the more modest goal is simply to draw more attention to a perspective that *has* legal implications, in the hope of provoking a discussion in which the details can be fleshed out.

By way of background, I have argued elsewhere that the extent of ecological overshoot and resource depletion, coupled with projected population growth and the need for the poorest nations to grow their economies in some form, means that the richest nations, if they are serious about ecological sustainability, should immediately initiate a 'degrowth' process of planned economic contraction – a process which will be considered further below.² I would like to begin today, however, by briefly unpacking the foundations of growth scepticism in some more detail, because it seems to me that the extent of the world's current ecological crisis is often grossly underestimated, even by some environmentalists, and this puts in jeopardy our efforts to resist and respond effectively to the matrix of problems that we face. In particular, if we don't recognize growth economics as the root cause of many of those problems, we are at risk of formulating strategies of opposition *within* the very ideological framework that was designed, or at least functions, to keep environmentalists at bay. We must step outside the growth model, I will argue, if we are to be effective oppositional lawyers.³

After trying to diagnose our current situation as clearly and concisely as possible, I'll proceed to introduce the idea of 'peak oil' and then outline the hypothesis that, due to the imminent stagnation in the supply of cheap energy, we may have entered, or are entering, the twilight of economic growth. I'll conclude by discussing very briefly some of the implications of this hypothesis, although, as noted, the present undertaking is focused more on raising questions than providing answers.

THE GROWTH MODEL OF PROGRESS

Celebrated economist, Sir John Hicks, began one of his essays with the pronouncement, 'We are living in an age of growth.'⁴ It is a proposition that applies more so today than ever before, at least as a statement of economic desire, if not as a description of recent or anticipated economic reality. As the world economy slowly emerges, at least superficially, from the Global Financial

Crisis, a crisis in which many economies around the world suffered recession, the imperative of all governments around the world to maximize growth in Gross Domestic Product (GDP) has never been stronger. In early 2010, then Prime Minister of Britain, Gordon Brown, arguably spoke for all nations when he declared: 'Going for growth is the government's number one priority.'⁵

According to this dominant macroeconomic paradigm, growth in GDP provides governments, by way of taxation, with more resources to pay for the nation's most important social services. It provides the necessary funds needed for national security and a police force, democratic elections, sophisticated health-care and sanitation systems, public education, unemployment benefits, etc., as well as funding for such things as environmental protection programs, foreign aid, and the arts. These are all good things, but they cost money, and funds are always limited. Therefore, by maximizing growth of the economy a government can secure more funding for those services and thereby contribute most, so the argument goes, to social, economic, and ecological wellbeing.

Furthermore, the argument might continue, as an economy grows, so too do personal incomes, meaning that individuals, not just governments, have more money and thus more freedom to purchase those things which they desire or need most. Growth is unquestionably good, one might conclude, from which it would seem to follow that more growth must always be better. Needless to say, this macroeconomic model has deeply influenced the shape and evolution of our societies, including our legal systems, and has given them a pro-growth structure.⁶

THE EMERGING CASE FOR DEGROWTH

The growth model of progress, just outlined, strikes many people, most people, perhaps, as basically correct. Cracks have formed in this economic paradigm, however, which can no longer be dismissed as minor anomalies in an otherwise healthy system. This is illustrated most clearly when we reflect upon the degradation of the natural world which is currently tolerated, if that is the right word, in the name of economic growth. The best available evidence plainly illustrates that the global economy has physically grown to such a size that it now exceeds the regenerative and absorptive capacities of Earth's ecosystems. That is, we are in ecological overshoot, by some way, and have been for some time.

The Living Planet Report 2010, for example, which is based on the scientific research of the Global Footprint Network, reports that humanity's ecological footprint is now exceeding by 50 percent the planet's sustainable carrying capacity.⁷ In other words, human beings are now consuming 'natural capital' and diminishing the capacity of the planet to support life in the future. *Even from a narrowly economic perspective*, this makes as much sense as the business that each and every year sells off some of its key assets and treats this income as profit – a practice of dodgy accounting that might seem fine on paper until the shareholders are told there aren't any more assets. Put more vividly, today's global economy resembles a snake that is eating its own tail. At what point, one might ask, will the snake recognize that it is feeding upon its own life-support system? To put it proverbially, if we do not change direction, we are likely to end up where we are going.

The fact that the global economy is already in significant ecological overshoot is even more challenging to mainstream views of economic growth when we bear in mind that, in the poorest parts of the world today, great multitudes are living lives oppressed by extreme poverty. The global challenge, therefore, in terms of humanitarian justice and ecological sustainability, can be stated as follows: The global community must find a way to *raise* the material standards of living the world's poorest people – who surely have a right to develop their economic capacities in some form – while at the same time *reducing* humanity's overall ecological footprint. The difficulty of this challenge is intensified, of course, by the fact that the global population is expected to exceed 9 billion by 2050, and reach 10 billion around 2080, according to the most recent UN estimate.⁸

The implications of this admittedly dire situation have proven easy for rich nations to ignore but they are impossible to escape. If the poorest nations are to have ecological 'room' to grow their economies sustainably and satisfy at least their basic needs, then it follows that the richest nations should not be aiming to grow their economies without limit. It should be clear enough that limitless growth within the richest nations is only going to exacerbate the greatest social and ecological problems of our age, not resolve them. Needless to say, however, there are no signs that the richest nations are actually prepared to even entertain the thought of giving up growth, let alone act upon some post-growth economic philosophy.

This is the point at which neoclassical economists and their handmaidens in the political mainstream speak up, declaring that environmentalists, in our naivety, have failed to grasp the transformative importance of science and technology and/or the efficiency of markets. Rich economies don't need to stop growing, these people will object. All that needs to happen is for economies around the world to adopt 'sustainable development,' which in theory means using science and technology to produce and consume more cleanly and efficiently and then leaving markets alone to do their work. Growth is the solution, from this perspective, not the problem.

A nice story, perhaps, or perhaps not even a nice story; but here's the problem. Although economies are demonstrably getting better at producing commodities more cleanly and efficiently (a process called 'relative decoupling'), overall ecological impact is nevertheless *still increasing*, because every year increasing numbers of commodities are being produced and consumed.⁹ 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,'¹⁰ a phenomenon that permeates market societies and beyond and is negating the overall efficiency improvements in production.

It is *theoretically* possible, of course, for an economy to grow and its overall ecological impacts reduce (a process called 'absolute decoupling'). Nobody denies that this is indeed theoretically possible. But despite many techno-efficiency improvements occurring, all the evidence shows that an overall reduction in the ecological impact of economies – which is obviously what is needed in an age of ecological overshoot – is *not* occurring. Therefore, it is not just misguided but dangerous and irresponsible for neoclassicists and their sympathizers to propagate the fantasy that rich nations will grow themselves out of the ecological crisis.

What is needed, first and foremost, is a dedicated reduction in the overall ecological impact of the human economy, and this depends primarily on the richest nations on the planet *voluntarily producing and consuming less stuff*. That is, ecological sustainability depends for its realization on some framework of post-growth economics. The most coherent framework for this transition is provided by the literature on degrowth, a term that has been defined as an 'equitable downscaling of production and consumption that increases human wellbeing and enhances ecological conditions.'¹¹ Degrowth, therefore, does not mean recession. Avoiding unemployment in a degrowth economy would require, among many other things, a restructure of the labor market for the purpose of systematically exchanging income for more time, and for sharing the available work among the population. In this way it can be argued that quality of life would increase in a degrowth society, despite a phase of decline in material standards of living. Degrowth, as I have argued elsewhere, implies lifestyles of voluntary simplicity.¹²

To sum up this section: if we accept that the global economy is already in ecological overshoot, and if we accept that the poorest nations on the planet have a right to develop their economic capacities, and, finally, if we accept that we are facing a global population in excess of nine billion within a few decades, then by force of reason and evidence it would seem that the richest nations should initiate a degrowth process of planned economic contraction. Once again, however, there are no signs that degrowth will ever be voluntarily adopted as a politico-economic program – at least, not in the foreseeable future. As I will now argue, however, there are some reasons to think that the world might be facing economic contraction all the same, sooner than we might think, and whether we want it or not.

PEAK OIL AND THE TWILIGHT OF GROWTH

The notion of 'peak oil' has received very little attention within the legal academy, so let me begin by this part of the discussion by presenting an overview of the basic idea.

Oil is not just another commodity. It is the lifeblood of industrial civilization. For one hundred and fifty years it has provided us with a cheap, portable, and highly charged source of energy. Almost every aspect of the economy today depends on oil, directly or indirectly, owing mainly to the importance of oil-dependent things like transport, mechanization, plastics, pesticides, pharmaceuticals, and so forth. Industrialized food production, in particular, is oil dependent, especially in a globalized economy.

Currently the world consumes approximately 89 million barrels of oil per day. That figure once more: *89 million barrels per day*. I am not sure about you, but that figure boggles my mind. We could call it our addiction to oil. The figure becomes all the more astonishing when we bear in mind the incredible energy density of oil. The typical North American, for example, would need approximately 100 personal 'energy slaves' working 24 hours a day to provide the energy needed to sustain their lifestyles. In ways that are not always obvious, our Western-style living standards are exceedingly energy intensive.

This leads me to the first point I would like to make in this context: The unprecedented growth in economic activity that has occurred in the last 150

years has only been possible because of our cheap and abundant supply of energy, of cheap oil in particular. Without this cheap energy, economic growth as we have known it simply would not have been possible. To achieve what we have achieved, the 'energy slaves' I just spoke of were absolutely necessary.

What would happen to the US economy, we might ask, or the Australian economy, or the global economy for that matter, if the global supply of oil stopped increasing and began to decline? Is there a chance of oil supply stagnating or decreasing, and, if so, when? And what would the consequences of this be? These are the central questions of the peak oil debate, and it is worth considering the issues in a little more depth.¹³

Oil is a finite, non-renewable resource. For geological reasons, the extraction of oil from the ground roughly follows a bell shape curve, with extraction increasing at first, then reaching a plateau, and then declining. That is, oil isn't extracted from a well at the same rate until the last drop of oil is consumed. Rather, over time, extracting the oil first gets easier, and then gets harder, and ultimately the extraction process slows down until it stops. Oil generally stops flowing from oil wells not because the well becomes empty, but because continued extraction becomes uneconomic, in the sense that the financial or energy costs of continued extraction become greater than the financial or energy returns.

This basic pattern has been shown to occur in every oil well ever drilled, and the same pattern also applies to nations. For example, oil production in the U.S. began in 1859, peaked around 1970, and has been on a downward trend ever since. That is, the US never produced as much oil per year as it did in 1970. And this is not a phenomenon limited to the US, of course. A 2005 study by the Royal Swedish Academy (which bestows the Nobel Prizes in chemistry and physics) reported that 55 of the world's 65 largest oil-producing countries have already reached maximum oil production or were in decline. It should be clear enough, then, that there will come a time when the global supply of oil will peak, and in fact, a consensus is forming that conventional oil supply peaked around 2006. This has even been acknowledged by the International Energy Agency in their World Energy Outlook 2010,¹⁴ released in November of that year, and the International Energy Agency, I should note, is a very conservative, mainstream institution. It seems, then, that peak oil is no longer the domain of fringe theorists and Wild Lawyers but has become a generally accepted fact by those who have explored the literature seriously.

And perhaps the peaking of oil supply shouldn't surprise us. Before we can extract oil we have to discover it, and world oil discovery peaked around 1965. Since that time, the trend has been to discover less oil each year, even though consumption of oil has steadily increased. A useful analogy here is a fruit tree: we pick the low hanging fruit first since that is the easiest, but once the easy stuff is gone, as time goes on it gets harder to find and pick the same amount of fruit. We've picked the low hanging fruit, it would seem, and the drilling in the Gulf of Mexico proves this. No one would go to the expense and danger of drilling in 3000 feet of water if there were more accessible oil on land. The fact is, the easy-to-find oil is gone, a point acknowledged even by the biggest oil companies. Today the world consumes approximately 3 barrels of oil for each barrel it discovers, a ratio that is plainly unsustainable. Furthermore, in the World Energy Outlook 2008,¹⁵ the IEA noted that the reserves in existing oil wells are declining

at roughly twice the rate they had previously thought, adding further support to the argument that conventional oil supply will not increase in the future and, after it's current plateau, enter terminal decline in the foreseeable future.

So, what's the problem with oil supply peaking? There are three main points here. The first is that there has been an extremely close correlation between oil supply and economic growth in the past, and this provides extremely strong grounds for thinking that economic activity is based on energy, a point that is well nigh indisputable. If the supply of cheap energy stagnates or declines, therefore, it is very likely that economic growth as we have known it will also stagnate or decline, and I refer you to Richard Heinberg's new book, *The End of Growth*, which came out in August 2011, for the details of these arguments.

The second point is that the trillions of dollars of debt that many nations have taken on in recent decades was predicated on the assumption that future growth would be similar to the growth experienced over the last few decades. But if it is the case that we are reaching the twilight of growth, those debts will become bad debts, the implications of which I do not wish to speculate upon. Suffice it to say that it will not be good news, which is to say, it will be bad news.

The third problem with the peaking of oil – one closely related to the first two – is that the *demand* for oil is still expected to grow significantly, despite a stagnation in supply. This increased demand is mainly due to the rapid industrialization of oil-hungry nations like China, India, and Brazil. The most basic economic principles tell us that as the supply of a commodity decreases and demand increases, the price of that commodity will increase, perhaps exponentially. The issue is not that human beings will ever run out of oil, therefore. We will never run out of oil, I want to be clear on that. The issue is that we may soon run out of cheap oil, and that is what peak oil is all about.

Over the last few years we have seen how fragile and delicate the global economic system is – owing in part to its oil dependency. We saw the price of oil spike to \$147 in July 2008, which we can be sure was not unrelated to the crash that followed. In fact, economist James Hamilton in a recent paper has shown that 10 out of the 11 economic recessions experienced by the US post-WII were preceded by high oil prices.¹⁶ This does not bode well for the global economy, for it is clear that the age of cheap oil has come to an end. This signifies a hugely significant turning point in history, in the sense that the future of energy supply, of liquid fuels in particular, may soon be less than it has been in the past. Of course, there are some alternative liquid fuels and alternative energies that are available to help mitigate the worst impacts of this turning point, but none will be able to replace the cheap oil that has been the foundation of economic growth historically. One thing is sure: peak oil is a subject we are all going to be hearing a lot more about over the next decade. It urgently needs more attention, and I encourage you all to give it its due.

CONCLUSION

In closing, readers will have noticed that there was a conspicuous absence of the word 'law' in this discussion. In the space available, this was necessary, but it should be clear enough that degrowth and peak oil have great implications for law and legal analysis. Over the last two centuries the legal systems of advanced capitalist societies have acquired a pro-growth structure, and this means that if

there is to be any desirable transition beyond those structures, a fundamental legal restructuring of the economy will be necessary. Exactly what this restructuring would involve, and how it might transpire, are questions that must be left for another day. But I hope this article has done enough to at least to show that these are important questions deserving of increased attention by the legal community and beyond.

REFERENCES

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 - ¹² See above n 2 and n 6. See also, Samuel Alexander and Simon Ussher, 'The Voluntary Simplicity Movement: A Multi-National Survey Analysis in Theoretical Context' *Simplicity Institute Report* (2011) available at www.simplicityinstitute.org/publications at 7 October 2011.
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