# Growth Bad

## Generic war

#### Resource scarcity ensures global war- multiple potential scenarios for escalation

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2011 (Richard, “Resource Wars: Geopolitics in a World of Dwindling supplies”, http://oilprice.com/Geopolitics/International/Resource-Wars-Geopolitics-In-A-World-Of-Dwindling-Energy-Supplies.html)

As nations compete for currency advantages, they are also eyeing the world’s diminishing resources—fossil fuels, minerals, agricultural land, and water. Resource wars have been fought since the dawn of history, but today the competition is entering a new phase.¶ ¶ Nations need increasing amounts of energy and materials to produce economic growth, but—as we have seen—the costs of supplying new increments of energy and materials are increasing. In many cases all that remains are lower-quality resources that have high extraction costs. In some instances, securing access to these resources requires military expenditures as well. Meanwhile the struggle for the control of resources is re-aligning political power balances throughout the world.¶ ¶ The U.S., as the world’s superpower, has the most to lose from a reshuffling of alliances and resource flows. The nation’s leaders continue to play the game of geopolitics by 20th century rules: They are still obsessed with the Carter Doctrine and focused on petroleum as the world’s foremost resource prize (a situation largely necessitated by the country’s continuing overwhelming dependence on oil imports, due in turn to a series of short-sighted political decisions stretching back at least to the 1970s). The ongoing war in Afghanistan exemplifies U.S. inertia: Most experts agree that there is little to be gained from the conflict, but withdrawal of forces is politically unfeasible.¶ ¶ The United States maintains a globe-spanning network of over 800 military bases that formerly represented tokens of security to regimes throughout the world—but that now increasingly only provoke resentment among the locals. This enormous military machine requires a vast supply system originating with American weapons manufacturers that in turn depend on a prodigious and ever-expanding torrent of funds from the Treasury. Indeed, the nation’s budget deficit largely stems from its trillion-dollar-per-year, first-priority commitment to continue growing its military-industrial complex.¶ ¶ Yet despite the country’s gargantuan expenditures on high-tech weaponry, its armed forces appear to be stretched to their limits, fielding around 200,000 troops and even larger numbers of support personnel in Iraq and Afghanistan, where supply chains are both vulnerable and expensive to maintain.¶ ¶ In short, the United States remains an enormously powerful nation militarily, with thousands of nuclear weapons in addition to its unparalleled conventional forces, yet it suffers from declining strategic flexibility.¶ ¶ The European Union, traditionally allied with the U.S., is increasingly mapping its priorities independently—partly because of increased energy dependence on Russia, and partly because of economic rivalries and currency conflicts with America. Germany’s economy is one of the few to have emerged from the 2008 crisis relatively unscathed, but the country is faced with the problem of having to bail out more and more of its neighbors. The ongoing European serial sovereign debt crisis could eventually undermine the German economy and throw into doubt the long-term soundness of the euro and the E.U. itself.¶ ¶ The U.K. is a mere shadow of its former imperial self, with unsustainable levels of debt, declining military budgets, and falling oil production. Its foreign policy is still largely dictated in Washington, though many Britons are increasingly unhappy with this state of affairs.¶ ¶ China is the rising power of the 21st century, according to many geopolitical pundits, with a surging military and lots of cash with which to buy access to resources (oil, coal, minerals, and farmland) around the planet. Yet while it is building an imperial-class navy that could eventually threaten America’s, Beijing suffers (as we have already seen) from domestic political and economic weaknesses that could make its turn at the center of the world stage a brief one.¶ ¶ Japan, with the world’s third-largest national economy, is wary of China and increasingly uncertain of its protector, the U.S. The country is tentatively rebuilding its military so as to be able to defend its interests independently. Disputes with China over oil and gas deposits in the East China Sea are likely to worsen, as Japan has almost no domestic fossil fuel resources and needs secure access to supplies.¶ ¶ Russia is a resource powerhouse but is also politically corrupt and remains economically crippled. With a residual military force at the ready, it vies with China and the U.S. for control of Caspian and Central Asian energy and mineral wealth through alliances with former Soviet states. It tends to strike tentative deals with China to counter American interests, but ultimately Beijing may be as much of a rival as Washington. Moscow uses its gas exports as a bargaining chip for influence in Europe. Meanwhile, little of the income from the country’s resource riches benefits the populace. The Russian people’s advantage in all this may be that they have recently been through one political-economic collapse and will therefore be relatively well-prepared to navigate another.¶ ¶ Even as countries like Venezuela, Bolivia, Ecuador, and Nicaragua reject American foreign policy, the U.S. continues to exert enormous influence on resource-rich Latin America via North American-based corporations, which in some cases wield overwhelming influence over entire national economies. However, China is now actively contracting for access to energy and mineral resources throughout this region, which is resulting in a gradual shift in economic spheres of interest.¶ ¶ Africa is a site of fast-growing U.S. investment in oil and other mineral extraction projects (as evidenced by the establishment in 2009 of Africom, a military strategic command center on par with Centcom, Eucom, Northcom, Pacom, and Southcom), but is also a target of Chinese and European resource acquisition efforts. Proxy conflicts there between and among these powers may intensify in the years ahead—in most instances, to the sad detriment of African peoples.¶ ¶ The Middle East maintains vast oil wealth (though reserves have been substantially overestimated due to rivalries inside OPEC), but is characterized by extreme economic inequality, high population growth rates, political instability, and the need for importation of non-energy resources (including food and water). The revolutions and protests in Tunisia, Egypt, Libya, Bahrain, and Yemen in early 2011 were interpreted by many observers as indicating the inability of the common people in Middle Eastern regimes to tolerate sharply rising food, water, and energy prices in the context of autocratic political regimes. As economic conditions worsen, many more nations—including ones outside the Middle East—could become destabilized; the ultimate consequences are unknowable at this point, but could well be enormous.¶ ¶ Like China, Saudi Arabia is buying farmland in Australia, New Zealand, and the U.S. Nations like Iraq and Iran need advanced technology with which to maintain an oil industry that is moving from easy plays to oilfields that are smaller, harder to access, and more expensive to produce, and both Chinese and U.S. companies stand ready to supply it.¶ ¶ The deep oceans and the Arctic will be areas of growing resource interest, as long as the world’s wealthier nations are still capable of mounting increasingly expensive efforts to compete for and extract strategic materials in these extreme environments. However, both military maneuvering and engineering-mining efforts will see diminishing returns as costs rise and payoffs diminish.¶ ¶ Unfortunately, rising costs and flagging returns from resource conflicts will not guarantee world peace. History suggests that as nations become more desperate to maintain their relative positions of strength and advantage, they may lash out in ways that serve no rational purpose.¶ ¶ Again, no crisis is imminent as long as cool heads prevail. But the world system is losing stability. Current economic and geopolitical conditions would appear to support a forecast not for increasing economic growth, democracy, and peace, but for more political volatility, and for greater government military mobilization justified under the banner of security.

#### Resource scarcity and climate change triggers conflicts

Evans, non-resident fellow at the Center on International Cooperation, 2010 (Alex, September 09, “Resource Scarcity, Climate Change and the risk of violent conflict”, http://siteresources.worldbank.org/EXTWDR2011/Resources/6406082-1283882418764/WDR\_Background\_Paper\_Evans.pdf)

As concern over both climate change and resource scarcity has increased in recent years, so speculation has grown that they will lead to increased risk or incidence of violent conflict. UN Secretary-General Ban Ki-moon, for example, said in 2007 that “changes in our environment and the resulting upheavals - from droughts to inundated coastal areas to loss of arable lands - are likely to become a major driver of war and conflict”.31¶ However, while climate change and resource scarcity do pose risks – especially for poor people and fragile states, which as discussed below are most vulnerable to their effects – caution is needed in forecasting their effects, particularly in the area of violent conflict.¶ In part, this is because the impacts of resource scarcity or climate change will in practice almost always blur with those of other risk drivers, with the effect that it becomes extremely difficult to attribute particular impacts solely to climate change or resource scarcity. The rise in the number of undernourished people from 854 million people in 2007 to over 1 billion in late 2009, for example, is only partly attributable to the effects of the food price spike: also critical were the subsequent effects of the global downturn, which further eroded the purchasing power of many poor people.32¶ Similarly, while poor people are undoubtedly vulnerable to the direct impacts of climate change, the most far-reaching effects of global warming may be the indirect “consequences of consequences” – such as political instability, economic weakness, food insecurity or large-scale migration (see below).33¶ Secondly, it is important to remember that the actual risk of violent conflict posed by climate change or resource scarcity depends as much on the vulnerability of populations, ecosystems, economies and institutions as on the strength of climate or scarcity impacts. The fact that poor people are more exposed to price spikes, resource scarcity and climate impacts is well-established, for example – as is the fact that environmental risks are among the most frequent, costly and impactful causes of the kinds of shock that can cause people to become poor in the first place, and that make escape from poverty so difficult.34¶ Similarly, the institutional and political weaknesses of fragile states have been argued to make them more susceptible to conflict risk arising from climate change and resource scarcity. A 2007 report from International Alert, for example, found that 46 countries, home to 2.7 billion people, would experience a “high risk of violent conflict” as a result of climate change interacting with economic, social and political problems, while in a further 56 countries with 1.2 billion inhabitants “the institutions of government will have great difficulty taking the strain of climate change on top of all their other current challenges”.35Climate change and resource scarcity are rarely, if ever, the sole cause of violent conflict, then: instead, they are better understood as ‘threat multipliers’ that will in practice interact both with other risk drivers, and with diverse sources of vulnerability.36 However, this is not to say that climate and scarcity do not increase the risk of violent conflict. On the contrary, as a United Nations Environment Programme report recently argued: “the exploitation of natural resources and related environmental stresses can be implicated in all phases of the conflict cycle, from contributing to the outbreak and perpetuation of violence to undermining prospects for peace”.37

#### Resource scarcity causes war

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#### Growth encourages totalitarian regimes and violent lashouts

Gat, professor of national security in the Department of Political Scence at Tel Aviv University, 2005 (“The Democratic Peace Theory Reframed”, *World Politics*, Project Muse)

A number of related reasons have been at work. In many nonliberal and nondemocratic industrial countries a militant ethos, often associated with a traditional warrior elite, was deeply embedded in the national culture. Led from above to national unification and modernization and then coming late to the imperial race, both Germany and Japan had successfully relied in the past on military force to assert their claims and expected to continue to do so in the future. Statism remained central to their modern development. Conjointly, they either rejected the logic of free trade in the name of national economy and/or feared that the global liberal trade system would give way to closed imperial blocs, leaving them out in the cold. In communist countries, for their part, the total rejection of the market principle went hand in hand with their ideological commitment to its destruction by force. Furthermore, since they were repressive at home, nonliberal and nondemocratic countries felt little compunction about practicing repression abroad. Contrary to a widely held view, it has been shown that their empires could and did pay off.31 So long as the advantages and/or very viability of the liberal economic model as opposed to the national-capitalist (and socialist) one remained in dispute, forceful nation-centered imperialism remained a temptation.

## **Warming**

#### Economic growth causes massive C02 emissions

PWC, global professional services firm, 2011 (“Counting the cost of carbon Low carbon economy index 2011”, http://www.ukmediacentre.pwc.com/imagelibrary/downloadMedia.ashx?MediaDetailsID=2007)

The economic downturn initially caused¶ global emissions to fall. Now total¶ emissions are increasing faster than¶ economic growth – indicating that¶ during the recovery in 2010, the long¶ term trend of slow decarbonisation has¶ gone into reverse. Unless economic¶ growth is rapidly decoupled from¶ emissions growth, the prospect of¶ achieving the 2 degrees goal stated by¶ governments in Cancun appears remote.¶ Delaying action to decouple emissions¶ from economic growth means that the¶ reductions required in future are steeper¶ and probably more costly.¶ The British Chancellor, George Osborne,¶ said: “we will not save the world by¶ putting the UK out of business”. Rapid¶ low carbon economic growth is required¶ to tackle climate change, but not at any¶ cost. There is a risk that consumers will¶ object to climate change action if the¶ cost, passed on through fuel and¶ electricity bills, is excessive. Currently,¶ in many countries, low carbon¶ generation requires substantial¶ government subsidy or market reform¶ to make them viable.¶ One exception to this could be in rural¶ areas of developing countries which¶ are off-grid. Rural electrification,¶ particularly in sub-Saharan Africa, will¶ be instrumental in achieving broader¶ development goals. In these areas,¶ conventional power generation may¶ come from expensive and small scale¶ diesel generation – so here, renewable¶ technologies may be competitive with¶ the fossil fuel alternative. In addition¶ to green jobs and economic growth, the¶ low carbon pathway, in this context.¶ offers the potential to improve access to¶ mobile phones, provide clean lighting¶ and improve indoor air quality.¶ Addressing some of the institutional¶ and risk-related barriers to these¶ technologies is necessary, but not¶ sufficient for large scale economy-wide¶ deployment. Innovative financing¶ mechanisms, such as NER300 which¶ leverages private finance with public¶ funding, and other targeted incentives¶ are necessary to make the transition to¶ a low carbon economy viable and¶ affordable.

#### **Growth increases emissions- developing countries and cost**

PWC, global professional services firm, 2011 (November 7, “G20 fuel a dirty global recovery as carbon emissions exceed economic growth”, http://www.ukmediacentre.pwc.com/News-Releases/G20-fuel-a-dirty-global-recovery-as-carbon-emissions-exceed-economic-growth-1138.aspx)

¶ Global emissions are increasing faster than economic growth, reversing a slow, but gradual, reduction in carbon emissions intensity.¶ ¶ The findings, from new analysis in the PwC Low Carbon Economy Index released today, show that for the first time since 2004, no improvement has been made in reducing the carbon intensity (which reflects the fuel mix, energy efficiency and the balance of industry and services) of the G20, despite modest economic recovery globally.¶ ¶ The results call into question the likelihood of global decarbonisation ever happening rapidly enough to limit global warming to 2 degrees Celsius. With three weeks to the UN Climate Summit in Durban, the report also highlights the scale of the low carbon financing challenge yet to be resolved.¶ ¶ During the recession, many countries including the UK, saw carbon emissions fall quicker than GDP, because manufacturing output fell. But that trend was reversed during 2010, when global GDP growth was 5.1% but emissions growth was higher at 5.8%.¶ ¶ The increase in carbon intensity of 0.6% was the first time in many years that carbon intensity has risen. The rapid growth of high carbon intensive emerging economies during 2010 including China, Brazil and Korea; colder winters at the beginning and end of the year; the fall in the price of coal relative to gas; and a drop in energy renewable deployment, all contributed to increase carbon intensity last year.¶ ¶ Globally, carbon intensity now needs to reduce by 4.8% a year, over twice the rate required in 2000. The UK needs to reduce carbon emissions intensity 5.6% per year, with broad low-carbon reforms across every sector needed to reduce emissions, the current equivalent of turning off power to the entire UK for a third of the year, every year, until 2020 to stay within our carbon budget.¶ ¶ The report warns that unless the tie between economic and emissions growth is severed , the prospect of achieving the 2 degrees goal stated by governments less than twelve months ago in Cancun, appears remote.¶ ¶ Leo Johnson, partner, sustainability and climate change, PwC said:¶ ¶ “The results are the starkest yet. Our analysis points unambiguously towards one conclusion, that we are at the limits of what is achievable in terms of carbon reduction, when you consider the growth cycles predicted for developed and developing nations, versus what is required in terms of carbon reduction to stay within the 2 degrees scenario.”¶ ¶ “The G20 economies have moved from travelling too slowly in the right direction, to travelling in the wrong direction. It is only in exceptional circumstances that countries have come close to removing 4.8% emissions from their economies over the course of a decade.”¶ ¶ Jonathan Grant, director, PwC sustainability and climate change said:¶ ¶ “The economic recovery, where it has occurred, has been a dirty one. Even where there has been growth in OECD countries during the global financial crisis, it is too carbon intensive, and hasn’t increased carbon productivity.”¶ In the UK, the annual capital expenditure of the six largest utilities would need to triple by 2020 to reach the government’s low carbon targets, with a cumulative investment of £199bn needed by then. Germany also plans to increase low carbon power generation, and estimates that it needs €20bn per year to meet its 2050 targets.¶ ¶ Jonathan Grant, director, PwC sustainability and climate change commented:¶ ¶ “Achieving the rates of carbon productivity needed requires a revolution in the way the world produces and uses energy. Married to that, and in the midst of a global financial crisis, we need a transformation in financing to achieve the transition at the scale and speed needed.“The trade-off between cost and carbon is not inevitable. In the developing world particularly, where countries do not have an existing grid infrastructure, renewables may be competitive with the fossil fuel alternative.¶ ¶ “Already consumers are objecting to higher fuel and electricity bills, and may not be prepared to pay the extra required to meet climate change goals. Yet delaying action to break the link between high carbon and economic growth means that the reductions required in future are steeper, and will be more costly, threatening even greater consumer impacts in the future."

#### **Growth can’t solve emission output- only preventing growth solves**

Simms, policy director of nef (the new economics foundation), 2/1/12 (Andrew, “Clinging to economic growth suffocates the imagination”, http://www.guardian.co.uk/commentisfree/2012/feb/01/limits-to-economic-growth)

¶ For one thing, the model used by the MIT scientists didn't make precise "predictions", but projected what was likely to happen if certain trends continued, allowing for "adjustable assumptions" of resource use. Their real finding was not that collapse was likely to occur by a particular year, but that population and the global economy would contract rapidly after peaking. The only circumstances under which some kind of stabilisation, rather than collapse, was achieved, was constraining population and the scale of the economy.¶ ¶ Models and reality are not the same thing. But – strikingly given the relatively crude computer modelling available at the time – the MIT projections have proved remarkably accurate. Today they can be checked against decades of actual data. Population, industrial output, pollution and food consumption all track the lines in the model.¶ ¶ 1There is a popular view that economic growth can be saved by efficiency measures, recycling and technological substitution, such as nuclear and renewable energy replacing fossil fuels. Yet the model allowed even for these variables, and crashed under the pressure of growth just the same.¶ I took part in a debate last week with Michael Jacobs who was an environmental adviser to Gordon Brown's Treasury. My job was to respond to a lecture he gave at University College London called The Green Moment? The Crises of Capitalism and the Response of Progressive Politics. Jacobs's critique, which several on the left share, is that pointing out the non-viability of economic growth (at least at the global aggregate level and where rich countries are concerned) is a mistaken article of faith in the green movement.¶ His argument is that, firstly, opposing growth is bad politics, it's bad spin for the green movement that "puts people off". Secondly he argues that low growth is compatible, even in rich countries, with environmental constraints. The first point is immaterial if the limits are scientifically real. It is an inconvenient reality that cannot be spun away. The second point is a claim that must be backed with evidence, it cannot simply be asserted.¶ And while I have yet to see any figures to illustrate how growth in rich countries can, in perpetuity, be compatible with environmental limits, several assessments point to the opposite conclusion. The Tyndall Centre for Climate Change Research at Manchester University found that to prevent dangerous global warming, economic growth in rich countries would not be possible. With colleagues at the New Economics Foundation, I came to a similar conclusion.¶ Jacobs quotes, admiringly, the work of Tim Jackson on "prosperity without growth" with the former government advisory body the Sustainable Development Commission. Yet Jackson's work too, as the name suggests, foresees a future without growth.¶ Work by the Stockholm Resilience Centre on environmental "planetary boundaries" shows several have already been transgressed, requiring large absolute reductions of consumption in rich countries.¶ One thing is sure: advocates of growth need to be able to show not only that environmental impact can be cancelled out by efficiency and resource substitution, but that deep, absolute reductions in resource use can be achieved simultaneously, and that such gains can be made year, after year, after year, ad infinitum.¶ A key insight by the original MIT group was the problem of time lag. Environmental problems became obvious and were acted on too late. Damage became locked in. This is the moment we are now living through. Nasa climate scientist James Hansen recently pointed out that if the rich world had started reducing emissions as recently as 2007, the annual reductions necessary would have been 3%. Wait until next year and the figure rises to 6%, wait further until 2020 and the annual target leaps to a staggering 15% reduction per year.¶

#### **Transition is critical to reducing emissions**

Gerken, Associate Green Editor at the Huffington Post, 5/1/12 (James, “Climate Change And Sustained Economic Growth Link Observed In New Study “,http://www.huffingtonpost.com/2012/05/01/climate-change-economic-growth-linked\_n\_1468100.html)

Will sustained global economic growth intensify the effects of climate change? A new study from the University of Michigan's Institute for Social Research suggests that a transformation of the world's economies or a limit to economic growth may be needed to curb the rise of atmospheric carbon dioxide concentrations.¶ Published online in the journal Environmental Science & Policy, the study examined the impacts on global CO2 levels caused by the world economy (measured in global GDP), population, volcanic eruptions and the El Niño Southern oscillation. It is the "first analysis to use measurable levels of atmospheric carbon dioxide" rather than only estimates, "which are less accurate," according to a press release.¶ José Tapia Granados and Edward Ionides, both from Michigan, and Óscar Carpintero of the University of Valladolid, Spain, discovered "no observable relation" between short-term global population growth and CO2 levels, but greater carbon dioxide levels were observed in years of "above-trend world GDP" between 1958 and 2010.¶ The researchers found that for each trillion in U.S. dollars that global GDP deviates from the trend, there is an accompanying deviation in CO2 levels of about half a part per million (ppm), reported LiveScience.¶ Noting that the study "more or less" echoes 1972's "The Limits to Growth," author and environmental activist Bill McKibben told HuffPost in an email, "We should change the meaning of 'business-as-usual' to focus on building more resilient, localized, community-focused economies, instead of the sprawling ones that for the last few decades have been awarding their bounty to the 1%."¶ Study co-author José Tapia Granados offered a remedy, saying in a press release, “One solution that has promise is a carbon tax levied on any activity producing CO2 in order to create incentives to reduce emissions. The money would be returned to the population on a per capita basis so the tax would not mean any extra fiscal burden."¶ The Michigan study comes at the same time as research from PBL Netherlands Environmental Assessment Agency, a Dutch national environmental policy institute, which found that annual global equivalent CO2 emissions in 2020 are likely to exceed 2010 estimates by 2.5 billion tons. The projected 50.9 billion ton annual output in 2020 is "some 7-11 billion tones [sic] beyond levels needed to prevent runaway climate change," reports Reuters.

#### **Collapse solves emissions and warming**

ScienceDaily 5/1/12 (“Global Warming: New research Blames Economic Growth”, http://www.sciencedaily.com/releases/2012/05/120501134327.htm)

"If 'business as usual' conditions continue, economic contractions the size of the Great Recession or even bigger will be needed to reduce atmospheric levels of CO2," said Tapia Granados, who is a researcher at the U-M Institute for Social Research.¶ For the study, the researchers assessed the impact of four factors on short-run, year-to-year changes in atmospheric concentrations of CO2, widely considered the most important greenhouse gas. Those factors included two natural phenomena believed to affect CO2 levels -- volcanic eruptions and the El Niño Southern oscillation -- and also world population and the world economy, as measured by worldwide gross domestic product.¶ Tapia Granados and colleagues found no observable relation between short-term growth of world population and CO2 concentrations, and they show that incidents of volcanic activity coincide with global recessions, which may confound any slight volcanic effects on CO2.¶ With El Niño outside of human control, economic activity is the sole modifiable factor. In years of above-trend world GDP, from 1958 to 2010, the researchers found greater increases in CO2 concentrations. For every $10 trillion in U.S. dollars that the world GDP deviates from trend, CO2 levels deviate from trend about half a part per million, they found. Preindustrial concentrations are estimated to be 200-300 parts per million.¶ To break the economic habits contributing to a rise in atmospheric CO2 levels and global warming, Tapia Granados says that societies around the world would need to make enormous changes.¶ "Since the mid 1970s, scientists like James Hansen have been warning us about the effects global warming will have on the Earth," Tapia Granados said. "One solution that has promise is a carbon tax levied on any activity producing CO2 in order to create incentives to reduce emissions. The money would be returned to individuals so the tax would not burden the population at large.¶ "What our study makes clear is that climate change will soon have a serious impact on the world, and the time is growing short to take corrective action."

## **AT- Reduces emissions**

#### **Decoupling fails- increased efficiency increases emissions**

Sorrell and Ockwell, Sussex Energy Group, 2010 (February, “Can we decouple energy consumption from economic growth?”

The potential for decoupling may be¶ further limited by the ‘rebound effects’¶ from energy efficiency improvements.¶ For example, a driver may take¶ advantage of the cheaper running¶ costs of a fuel-efficient car to drive¶ further and more often. Alternatively,¶ she may put the cost savings¶ towards an overseas holiday and¶ thereby increase energy consumption¶ elsewhere in the economy. In some¶ cases, these effects could be¶ sufficiently large to lead to an overall¶ increase in energy consumption. This possibility was first recognised in the¶ 19th century, when improvements¶ in the energy efficiency of steam¶ turbines were found to lead to more¶ coal being consumed. Energy efficient¶ turbines were adopted in a wide range¶ of industries and their application to¶ coal mining and steel manufacturing¶ led to positive feedbacks that¶ further expanded the market for¶ coal. Similar patterns have since¶ been observed with other ‘general purpose¶ technologies’ such as electric¶ motors, lighting and computing.¶ Over time, such technologies can¶ lead to revolutionary changes in¶ industrial processes, technical¶ infrastructures, consumer products¶ and lifestyles. While improvements¶ in such technologies frequently¶ reduce energy consumption per unit¶ of economic output, they also boost¶ overall productivity and output to¶ such an extent that aggregate energy¶ consumption increases.¶ These effects may explain why¶ reductions in the energy intensity of¶ economies are almost universally¶ accompanied by rising energy¶ consumption. The causal links are¶ complex, but ecological economists¶ such as Robert Ayres have developed¶ alternative models of economic growth¶ which partly explain this phenomenon.¶ These models reproduce historical¶ trends in economic growth extremely¶ well, without attributing any role to¶ technical change. Instead, a key¶ driver of economic activity is the¶ ‘physical work’ obtained from the¶ conversion of energy – which may¶ either be increased by using more or¶ higher quality energy or by improving¶ energy efficiency. In these models, the¶ productivity of energy is around ten¶ times greater than its share of costs,¶ implying that efficiency improvements¶ could dramatically increase¶ economic output. This in turn could¶ increase rather than reduce energy¶ consumption.

## **Trade War**

#### Growth causes trade wars- Challenges to the Dollar’s reserve status

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2011 (Richard, “Currency Wars/Post-Growth Geopolitics, http://richardheinberg.com/museletter-229)

Since the economic crisis began, stresses in trade between the U.S. and China have led to unfriendly official comments on both sides regarding the other nation’s currency. Some financial commentators suggest that “currency wars,” which might also embroil the European Union and other nations, may be in the offing, and that these could eventually turn into trade wars or even military conflicts. The U.S. dollar, as the world’s reserve currency and as the national currency of the country leading the world into the post-growth era, appears to be central to these “money wars.”¶ It takes a little history to understand what currency conflicts are about.[1] Prior to the 20th century, most national currencies either consisted of gold or were tied to gold; therefore the currency of one nation was fairly easily convertible to that of another. National monetary reserves consisted of gold, and balance of payments deficits were settled in gold. Limited supplies of gold kept public spending within fairly tight bounds. Inflation through the debasement of a currency resulted in the refusal of other nations to accept that currency in trade. Typically the financing of wars presented the only exigency strong enough to overcome disincentives to debase money.¶ World War I, a conflict that engulfed at least 17 nations, was the first occasion when several countries simultaneously abandoned a hard money policy. Britain took on long-term war loans while Germany issued short-term bonds. Deficit financing arguably prolonged the war, resulting in millions of needless casualties.¶ Though Germany had entered the war with a thriving economy, its short-term debt, compounded by the harsh post-war terms of the Versailles Treaty, resulted in economic ruin through hyperinflation, leading to the destruction of its middle class and to the rise of Hitler, setting the stage for World War II.¶ At the Conference of Genoa in 1922, a partial return to the gold standard came about as the central banks of the world’s powerful nations were permitted to keep part of their reserves in currencies (including the U.S. dollar) that were directly exchangeable by other governments for gold coins. However, under this new Gold Exchange Standard, citizens could not themselves redeem national banknotes for gold coins. Now dollars and pounds were effectively equivalent to gold for the currency issuer, but not for most currency holders. This was an inherently inflationary development from a monetarist point of view (in that it meant that money could be issued substantially beyond the amounts of gold on deposit); however, the world’s growing energy supplies and manufacturing capacity required an increase in the money supply, so for most countries and in most years measurable rates of price inflation remained relatively low.[2]¶ As World War II neared its end, Japan and the European powers lay in ruins; the United States was relatively unscathed. At the Bretton Woods monetary conference of 1944 the Allied nations laid the groundwork for a postwar international economic system that included new institutions such as the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (IBRD), which today is part of the World Bank. The U.S. would assume a dominant role in these institutions, and the (partially) gold-backed dollar became, in effect, the world’s reserve currency. Throughout the next half-century and more, citizens and businesses in nations around the world—even in the Soviet Union—who wanted a hedge against instability in their own national currency would hoard U.S. greenbacks. ¶ In the early 1970s, as the U.S. borrowed heavily to finance the Vietnam War, France insisted on trading its surplus dollars for gold; this had the effect of emptying out U.S. gold reserves. President Nixon’s only apparent option was to ditch what remained of the gold standard. From then on, the dollar would have no fixed definition, other than as “the official currency of the United States.”[3]¶ After 1973, many currencies kept a fixed exchange rate with the dollar. As of 2008, there were at least 17 national currencies still pegged to the U.S. currency, including Aruba’s florin, Jordan’s dinar, Bahrain’s dinar, Lebanon’s pound, Oman’s rial, Qatar’s rial, as well as the Saudi riyal, Emirati dirham, Maldivian rufiyaa, Venezuelan bolivar, Belize dollar, Bahamian dollar, Hong Kong dollar, Barbados dollar, Trinidad and Tobago dollar, and Eastern Caribbean dollar.¶ While the U.S. dollar now had no gold backing, in effect it was being backed by the oil of several key Middle East petroleum exporting nations, which sold their crude only for U.S. dollars (thus creating and maintaining a worldwide demand for greenbacks with which to pay for oil) and then deposited their enormous earnings in U.S. banks, which in turn made dollar-denominated loans throughout the world—loans that had to be repaid (with interest) in dollars.[4]¶ Meanwhile exchange rates for most currencies (including those of the European countries) floated relative to one another and to the dollar. This provided an opening for the emergence of the foreign exchange (ForEx) currency market, which has grown to an astonishing four trillion dollars per day in turnover as of 2010.¶ 1999, most members of the European Union opted into a common currency, the euro, that floated in value like the Japanese yen. One of the motives for this historic monetary unification was the desire for a stronger currency that would be more stable and competitive relative to the U.S. dollar.¶ ¶ For decades, China has been one of the countries that kept its currency pegged to the dollar at a fixed rate. This enabled the country to keep its currency’s value low, making Chinese exports cheap and attractive—especially to the United States.¶ ¶ However, for smaller countries, fixed exchange rates have meant vulnerability to currency attacks. If speculators decide to sell large amounts of a country’s currency, that country can defend its currency’s value only by holding a large cache of foreign reserves sufficient to keep its fixed exchange rate in place. This reserve requirement effectively ties the country’s leaders’ hands during the attack, preventing them from spending (for example, to prop up banks); if the pegged exchange rate is abandoned under such circumstances, the currency’s value will plummet. Either way, the nation faces the risk of economic depression or collapse—as occurred in the cases of the recent Argentine and East Asian financial crises.¶ ¶ Altogether, the world’s currencies could hardly even be said to comprise a coherent “system”: harmony and functionality are maintained only at great cost (with most of that cost ending up as profits to currency traders and speculators). But as world economic growth shifts into reverse, stresses within the global community of currencies may become unbearable.¶ ¶ With its enormous levels of public and private debt and its continuing trade deficits, the U.S. has something to gain from a lower-valued dollar. This would make its export goods more attractive to foreign buyers; meanwhile, by making imports more expensive, it would help encourage savings and investment in domestic production. It would also enable the country to pay back its government debt with currency of lower value, effectively wiping out part of that debt. Maintaining low interest rates helps reduce the dollar’s value, and the United States has kept interest rates low since the start of the crisis. But the U.S. doesn’t want to announce to the world that it is seeking to trash the dollar, because this could reduce the dollar’s viability as the world’s reserve currency—a status that yields multiple advantages to America’s economy, and one that is increasingly being challenged.[5]

## **Democracy**

#### Rapid Economic growth promotes totalitarian regimes

Gassebner et al., Princeton university, 2007 (Martin, “Extreme Bounds of Democracy”, http://www.princeton.edu/~pcglobal/conferences/globdem/papers/Gassebner-Lamla-Vreeland.pdf)

In an early large-n study of democracy, Almond and Verba (1963) propose a cultural¶ explanation of democracy. Using survey-based research in five countries, they argue that¶ a “participant” culture (as opposed to a “subject” or “parochial” culture) is required for¶ democracy. The “civic culture” argument is tested cross-nationally in the work, of¶ Inglehart (1988), who finds that democracy is correlated with the percentage of people¶ reporting high levels interpersonal trust, low levels of support for revolutionary change,¶ and high levels of life satisfaction. His findings are of course, disputed by Seligson¶ (2002), who shows that the correlation disappears when one controls for level of¶ economic development. Przeworski et al. (2000) test a full range of other cultural¶ variables, finding that none has a robust relationship with democracy once one accounts¶ for level of economic development.¶ Economic explanations of democracy date back to Lipset (1959) who is often cited as the¶ first “modernization theorist.” Modernization Theory argues that as countries develop¶ economically, social structures become too complex for authoritarian regimes to manage¶ – technological change endows owners of capital with some autonomy and private¶ information, complex labor processes require active cooperation rather than coercion, and¶ civil society emerges. At some point in this process, dictatorship collapses and¶ democracy emerges as the alternative.¶ Huntington (1968) adds that sustainable democracy requires political development along¶ with economic development, but basically agrees that as a dictatorship experiences¶ economic development democratization becomes more likely. Without political¶ development, however, rapid economic development can also destabilize democracies.¶ Thus he proposes a “bell-shaped” pattern of stability of regimes with respect to economic¶ development.¶ In their expansive large-n study of democracy and development, Przeworski et al. (2000)¶ thoroughly explore the relationship. They begin with the observation that the correlation¶ between level of economic development and democracy is strong. They question,¶ however, the process by which this correlation is driven. They suggest, in contrast to¶ modernization theorists, that this correlation is possible even if the emergence of¶ democracy is completely random with respect to economic development. The correlation¶ may be driven instead by a relationship between economic development and the survival¶ of democracy.¶ This is in fact what their book argues. The emergence of democracy has no relationship¶ with level of economic development; the correlation instead is entirely driven by the¶ survival of democracy. In other work, Przeworski (2005: 253) argues that “Democracy¶ prevails in developed societies because too much is at stake in turning against it.”¶ Conversely, in poor democracies, “the value of becoming a dictator is greater and the¶ accumulated cost of destroying capital stock is lower” (Przeworski and Limongi, 1997:¶ 166 fn. 1).¶ It should be noted, however, that while Przeworski et al. (2000) show that transitions to¶ democracy are not well predicted by economic development and survival of democracy¶ is, the estimated effect of economic development on the transition to democracy is¶ statistically significant in their specification.1 We suspect (and show below) that it is not¶ a robust relationship.¶ Since the Przeworski et al. (2000) study, many large-n studies of democracy have been¶ pursued – too many to adequately review here. We are in the process of collecting data¶ from all available studies and we describe them briefly in the appendix. (Suggestions of¶ data from studies we still need to collect would be greatly appreciated.) Given the¶ interests of the particular audience for this conference, we continue by highlighting some¶ specific studies.¶ The Przeworski et al. (2000) study ignores the oil rich countries of the Middle East. As¶ these scholars were originally interested in estimating the effect of regime on economic¶ growth, they chose not to include oil rich countries, whose process of augmenting GDP¶ per capita is much different from that of other countries. Nevertheless, these countries¶ present a real challenge to the modernization theory argument that should be considered.¶ The argument of Boix (2003) provides a compelling answer.2 He argues that level of¶ economic development, income distribution, and – importantly – asset specificity¶ together impact the probability of the emergence of democracy. Where asset specificity is¶ high and the income distribution is highly skewed, such as in many oil-rich countries, the¶ rich face severe redistributional consequences for allowing popular sovereignty, and they¶ have no credible threat to flee the country taking their productive capacity with them.¶ Thus, it is in their interest to pay high costs of repressing democracy, maintaining¶ dictatorial rule. If assets are not highly specific, however, the rich have a credible exit¶ threat. If the rich flee the country, taking the productive capacity along with them, they¶ can severely harm the national economy. The credible threat restrains the redistributional¶ demands of the poor and may make democracy possible even in countries with relatively¶ low levels of economic development, such as India. Asset specificity aside, if¶ redistributional demands diminish at higher levels of economic development, Boix argues¶ that economic development should make democracy more likely both to emerge and to¶ survive.

## **AT- Tech Solves**

#### Substitution impossible- Diminishing rare minerals and economic inefficiency

Heinberg, , Senior Fellow-in-Residence at Post Carbon institute, 2011 (Richard, March“Won’t Innovation, Substitution, and Efficency Keep Us Growing?”, http://richardheinberg.com/226-won%E2%80%99t-innovation-substitution-and-efficiency-keep-us-growing)

¶ Increasingly, substitution is less economically efficient. But surely, in a pinch, can’t we just accept the less-efficient substitute? In emergency or niche applications, yes. But if the less-efficient substitute must replace a resource of profound economic importance (like oil), or if a large number of resources have to be replaced with less-useful substitutes, then the overall result for society is a reduction—perhaps a sharp reduction—in its capacity to achieve economic growth.¶ ¶ As we saw in Chapter 3, in our discussion of the global supply of minerals, when the quality of an ore drops the amount of energy required to extract the resource rises. All over the world mining companies are reporting declining ore quality.[10] So in many if not most cases it is no longer possible to substitute a rare, depleting resource with a more abundant, cheaper resource; instead, the available substitutes are themselves already rare and depleting.¶ ¶ Theoretically, the substitution process can go on forever—as long as we have endless energy with which to obtain the minerals we need from ores of ever-declining quality. But to produce that energy we need more resources. Even if we are using only renewable energy, we need steel for wind turbines and coatings for photovoltaic panels. And to extract those resources we need still more energy, which requires more resources, which requires more energy. At every step down the ladder of resource quality, more energy is needed just to keep the resource extraction process going, and less energy is available to serve human needs (which presumably is the point of the exercise).[11]¶ ¶ The issues arising with materials synthesis are very similar. In principle it is possible to synthesize oil from almost any organic material. We can make petroleum-like fuels from coal, natural gas, old tires, even garbage. However, doing so can be very costly, and the process can consume more energy than the resulting synthetic oil will deliver as a fuel, unless the material we start with is already very similar to oil.¶ ¶ It’s not that substitution can never work. Recent years have seen the development of new catalysts in fuel cells to replace depleting, expensive platinum, and new ink-based materials for photovoltaic solar panels that use copper indium gallium diselenide (CIGS) and cadmium telluride to replace single-crystalline silicon. And of course renewable wind, solar, geothermal, and tidal energy sources are being developed and deployed as substitutes for coal.¶ ¶ We will be doing a lot of substituting as the resources we currently rely on deplete. In fact, materials substitution is becoming a primary focus of research and development in many industries. But in the most important cases (including oil), the substitutes will probably be inferior in terms of economic performance, and therefore will not support economic growth.

## **Growth Impossible**

#### Growth is impossible and ensures their impact if we continue to adhere to the ideology of infinite growth

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2011 (Richard, “Life after the end of economic growth”, http://www.guardian.co.uk/commentisfree/2011/nov/30/end-of-growth)

But doubts about growth are no longer theoretical. We seem to have arrived at a moment when further economic expansion is hemmed in by financial as well as natural limits. As extraction industries chewed through the low-hanging fruit of the world’s oil, coal, natural gas, and other minerals, and turned to lower-grade and thus more expensive ores and fuels, managers of the economy tried to keep growth going by piling up debt in the mistaken belief that it is only money that makes the economy run, not energy and raw materials. Today, high oil prices are keeping a lid on commercial expansion in the older industrial nations as petroleum demand shifts to the hyperactive economies of Asia, which for now can afford steeper fuel prices. Meanwhile we in the West seem to have maxed out government and consumer credit, and that realization is sending financial markets into fibrillation. With energy resources and credit both stretched tight, that means more economic growth may simply not be possible in the US and Europe, regardless of our opinions about it.¶ ¶ If policy makers fail to recognize this and continue assuming that the current debt crisis is just another turning of the business cycle, then we may lose whatever opportunity still remains to avert a crash that could bring civilization to its knees. Over the short run, this is scary business. Financial markets have a hair trigger, and fears about flagging growth could bring down governments and banks.¶ ¶ Still, over the longer term there will undoubtedly be life after growth, and it doesn’t have to play out under miserable conditions. With less energy to fuel globalization and mechanization there should be increasing requirement for local production and manual labor. We could meet everyone’s basic needs by prioritizing jobs in manufacturing and agriculture while downsizing the financial industry and the military. We will also have to reduce economic inequality and corruption (as the rapidly spreading Occupy movement rightly insists). As we do these things, we must reform economics to reflect ecological reality: nature is not, after all, just a pile of raw materials waiting to be transformed into products and then waste; rather, ecosystem integrity is a precondition for society’s survival. Adaptive responses cannot only be left up to government officials and economists; for their part, households must rein in debt and over-consumption while contributing more to community resilience.¶ There’s light at the end of the tunnel. If we focus on improving quality of life rather than boosting quantity of consumption, we could be happier even as our economy downsizes to fit nature’s limits.¶ ¶ But a benign future is unlikely to transpire if we all continue living in a dream world where growth knows no bounds, where debt can be repaid with more debt, and where natural resources are assumed to be endless.

## **Transition Now**

#### Peaceful transition is occurring now- Economic growth prevents the transition

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2010 (Richard, March, “Life after Growth”, http://richardheinberg.com/214-life-after-growth)

On a trip to New England in 2007, I met Lynn Benander, a community energy activist and entrepreneur who had started a project called Co-op Power to bring renewable energy to low-income and multi-ethnic communities throughout the Northeast. Typically, renewable energy projects cost more to get going than conventional coal or gas power projects, and so they tend to be found in wealthier communities and regions. Conversely, the most polluting energy projects tend to be sited in or near poor neighborhoods or regions. Co-op Power aims to change that imbalance of power—in a way that any community can copy. A typical project: You help four people put up a solar hot water system and everyone comes to help you put up yours; you save 40 to 50 percent off your total system price, get to know your neighbors, and learn how your system works. Co-op Power had also pioneered a cooperative financing method that cuts through the usual roadblocks to renewable energy projects in poorer neighborhoods by leveraging member equity.¶ Individually, these initiatives and projects may seem to be on too small a scale to make much of a difference. But multiplied by thousands, with examples in nearly every community, they represent a quiet yet powerful movement.¶ Few of these efforts have gained national media attention. Most media commentators who address economic issues are focused on the prospects—positive or negative—of the existing growth-based economy. These projects don’t seem all that important within that framework of thinking. But in the new context of the no-growth economy, they may mean the difference between ruinous poverty and happy sufficiency.¶ The trends are already in evidence: as the financial crisis worsens, more people are planting gardens, and seed companies are working hard to keep up with the demand. More young people are taking up farming now than in any recent decade. In 2008, more bicycles were sold in the U.S. than automobiles (not good news for the struggling car companies, but great news for the climate). And since the crisis started, Americans have been spending much less on non-essentials—repairing and re-using rather than replacing and adding.¶ Many economists assume these trends are short-term and that Americans will return to consumerism as economic crisis shifts into recovery. But if there is no “recovery” in the usual sense, then these trends will only grow.¶ This is what the early adopters are assuming. They believe that the nation and the world have turned a corner. They understand something the media either ignore or deny. They’re betting on a future of local food systems, not global agribusiness; of community credit co-ops rather than too-big-to-fail Wall Street megabanks; of small-scale renewable energy projects, not a world-spanning system of fossil-fuel extraction, trade, and consumption. A future in which we do for ourselves, share, and cooperate.

## **Collapse- Resources**

#### Collapse inevitable- resource scarcity

Bell, assistant Professor of Logistics at the University of Tennessee, 3/12/12 (John, “Natural Resource Scarcity in the Supply Chain”, http://www.scmr.com/article/natural\_resource\_scarcity\_in\_the\_supply\_chain/)

Building a global supply chain in a world of seven billion people is a complex and uncertain endeavor, especially since an increasing percentage of the world’s population is demanding industrial products. However, the planet has a finite supply of natural resources that may not support the upward global trend toward 10 billion people this century. ¶ The ability to maintain a balance between supply and demand in supply chains is dependent on natural resources, such as metals, petroleum, crops, and fresh water. The location, quantity, and quality of these resources significantly impact a supply chain’s capabilities and logistics costs. Since the beginning of the industrial revolution, resource scarcity has typically been overcome by the ability of technology to find substitute products or discover new sources of natural resources. However, there are indications that such substitution may not overcome the growing imbalance between global demand and the limited amount of natural resources on the planet. So how will the managers of tomorrow build and operate a supply chain that is marked by unprecedented natural resource scarcity? Understanding “where,” “why,” and “when” natural resource scarcity will occur and “how” to manage it is critical for supply chain management in a changing world.¶ “Where” can natural resource scarcity occur? Natural resources appear in almost every product; they are consumed in industrial and service processes across the globe. Natural resources typically are classified as either non-renewable or renewable. Non-renewable resources include all of the minerals and metals that are mined, as well organic resources such as petroleum that cannot be re-created in short periods of geologic time. In contrast, renewable resources, such as agricultural crops, timber, and fisheries, can generally be harvested and re-generated in relatively short time periods.¶ Resource scarcity is either a local or global phenomenon that impacts the logistics in a supply chain. For example, when a resource such as coal is locally scarce, supplies may have to be transported long distances to meet local demands. Other resources, like platinum, are scarce on a global level. Meeting the demand for these resources is increasingly difficult. In such instances, prices for the resource may skyrocket, and supply chain managers may be forced to find alternative materials or methods to provide utility to their customers.¶ “Why” is resource scarcity appearing in our supply chains? Seven forces shape the current scarcity level of a natural resource. Forces such as substitution, discovery, recovery, and reclamation decrease the resource’s scarcity level and help provide continued availability. However, other forces, such as consumption, degradation, and competition, increase a resource’s scarcity levels. In recent years, these latter forces have started to create local or even global scarcity for many key resources. In the past, technology has been closely tied to the forces of substitution and discovery. They traditionally have been harnessed to create new materials or processes that substitute for a scarce resource; they also are used to find new deposits of resources, such as oil and natural gas. However, these two forces alone may not keep up with growing forces of consumption and competition triggered by increased levels of population and economic growth around the world.¶ “When” will natural resource scarcity occur in the supply chain? Scarcity is already a major factor for companies and industries all over the globe. Natural resource scarcity has been a major theme in a number of recent Wall Street Journal articles. The history and potential economic impact of recent scarcity occurrences was discussed in a 2008 article that described shortages in everything from precious metals to fresh water Additional articles have described the competition for coal reserves in Australia that will help meet future demand in China and India. Similarly, increased demand for rare earth metals to make industrial magnets, LED lighting, wind turbines, and other high-tech products has led to over 300 new exploration projects around the globe to find new resource deposits. Finally, major corporations such as GE are impacted by the rising prices of scarce resources. They are not only trying to avoid the use of scare resources in product designs, but they also are actively working with customers to return and recycle rare metals, such as rhenium, used to manufacture aircraft engines.

#### Market instability inevitable- goldilocks status of resources caps growth

Heinberg, Post Carbon institute, 2011 (Richard, feb. 21, “How markets may respond to resource scarcity: The Goldilocks syndrome”, http://www.energybulletin.net/stories/2011-02-21/how-markets-may-respond-resource-scarcity-goldilocks-syndrome)

¶ Before examining limits to non-energy resources, it might be helpful to consider how markets respond to resource scarcity, with petroleum as a highly relevant case in point.¶ ¶ The standard economic assumption is that, as a resource becomes scarce, prices will rise until some other resource that can fill the same need becomes cheaper by comparison. What really happens, when there is no ready substitute, can perhaps best be explained with the help of a little recent history and an old children’s story.¶ ¶ Once upon a time (about a dozen years past), oil sold for $20 a barrel in inflation-adjusted figures, and The Economist magazine ran a cover story explaining why petroleum prices were set to go much lower.[1] The U.S. Department of Energy and the International Energy Agency were forecasting that, by 2010, oil would probably still be selling for $20 a barrel, but they also considered highly pessimistic scenarios in which the price could rise as high as $30 (those forecasts are in 1996 dollars).[2]¶ ¶ Instead, as the new decade wore on, the price of oil soared relentlessly, reaching levels far higher than the “pessimistic” $30 range. Demand for the resource was growing, especially in China and some oil exporting nations like Saudi Arabia; meanwhile, beginning in 2005, actual world oil production hit a plateau. Seeing a perfect opportunity (a necessary commodity with stagnating supply and growing demand), speculators drove the price up even further.¶ ¶ As prices lofted, oil companies and private investors started funding expensive projects to explore for oil in remote and barely accessible places, or to make synthetic liquid fuels out of lower-grade carbon materials like bitumen, coal, or kerogen.¶ ¶ But then in 2008, just as the price of a barrel of oil reached its all-time high of $147, the economies of the OECD countries crashed. Airlines and trucking companies downsized and motorists stayed home. Demand for oil plummeted. So did oil’s price, bottoming out at $32 at the end of 2008.¶ ¶ But with prices this low, investments in hard-to-find oil and hard-to-make substitutes began to look tenuous, so tens of billions of dollars’ worth of new energy projects were canceled or delayed. Yet the industry had been counting on those projects to maintain a steady stream of liquid fuels a few years out, so worries about a future supply crunch began to make headlines.[3]¶ ¶ It is the financial returns on their activities that motivate oil companies to make the major investments necessary to find and produce oil. There is a long time lag between investment and return, and so price stability is a necessary condition for further investment.¶ ¶ Here was a conundrum: low prices killed future supply, while high prices killed immediate demand. Only if oil’s price stayed reliably within a narrow—and narrowing—“Goldilocks” band could serious problems be avoided. Prices had to stay not too high, not too low—just right—in order to avert economic mayhem.[4]¶ ¶ The gravity of the situation was patently clear: Given oil’s pivotal role in the economy, high prices did more than reduce demand, they had helped undermine the economy as a whole in the 1970s and again in 2008. Economist James Hamilton of the University of California, San Diego, has assembled a collection of studies showing a tight correlation between oil price spikes and recessions during the past 50 years. Seeing this correlation, every attentive economist should have forecast a steep recession beginning in 2008, as the oil price soared. “Indeed,” writes Hamilton, “the relation could account for the entire downturn of 2007-08. . . . If one could have known in advance what happened to oil prices during 2007-08, and if one had used the historically estimated relation [between oil price spikes and economic impacts] . . . one would have been able to predict the level of real GDP for both of 2008:Q3 and 2008:Q4 quite accurately.” [5]¶ ¶ This is not to ignore the roles of too much debt and the exploding real estate bubble in the ongoing global economic meltdown: As we saw in the previous two chapters, the economy was set up to fail regardless of energy prices. But the impact of the collapse of the housing market could only have been amplified by an inability to increase the rate of supply of depleting petroleum. Hamilton again: “At a minimum it is clear that something other than [I would say: “in addition to”] housing deteriorated to turn slow growth into a recession. That something, in my mind, includes the collapse in automobile purchases, slowdown in overall consumption spending, and deteriorating consumer sentiment, in which the oil shock was indisputably a contributing factor.”¶ ¶ Moreover, Hamilton notes that there was “an interaction effect between the oil shock and the problems in housing.” That is, in many metropolitan areas, house prices in 2007 were still rising in the zip codes closest to urban centers but already falling fast in zip codes where commutes were long.[6]¶ ¶ By mid-2009 the oil price had settled within the “Goldilocks” range—not too high (so as to kill the economy and, with it, fuel demand), and not too low (so as to scare away investment in future energy projects and thus reduce supply). That just-right price band appeared to be between $60 and $80 a barrel.[7]¶ ¶ How long prices can stay in or near the Goldilocks range is anyone’s guess (as of this writing, oil is trading in New York for over $90 per barrel), but as declines in production in the world’s old super-giant oilfields continue to accelerate and exploration costs continue to mount, the lower boundary of that just-right range will inevitably continue to migrate upward. And while the world economy remains frail, its vulnerability to high energy prices is more pronounced, so that even $80-85 oil could gradually weaken it further, choking off signs of recovery.[8] ¶ ¶ In other words, oil prices have effectively put a cap on economic recovery.[9] This problem would not exist if the petroleum industry could just get busy and make a lot more oil, so that each unit would be cheaper. But despite its habitual use of the terms “produce” and “production,” the industry doesn’t make oil, it merely extracts the stuff from finite stores in the Earth’s crust. As we have already seen, the cheap, easy oil is gone. Economic growth is hitting the Peak Oil ceiling.¶ ¶ As we consider other important resources, keep in mind that the same economic phenomenon may play out in these instances as well, though perhaps not as soon or in as dramatic a fashion. Not many resources, when they become scarce, have the capability of choking off economic activity as directly as oil shortages can. But as more and more resources acquire the Goldilocks syndrome, general commodity prices will likely spike and crash repeatedly, making a hash of efforts to stabilize the economy.

Collapse inevitable- Resources and Population

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2010 (Richard, March, “Life after Growth”, http://richardheinberg.com/214-life-after-growth)

The idea was heretical at the time—and still is: during the past few decades, growth has become virtually the sole index of national economic well-being. When the economy grows, jobs appear, investments yield high returns, and everyone is happy. When the economy stops growing, financial bloodletting ensues. And so predictably a book saying that growth cannot and will not continue beyond a certain point proved profoundly upsetting in some quarters, and soon Limits to Growth was prominently “debunked” by public relations efforts organized by pro-growth business interests. In reality, this “debunking” merely amounted to taking a few numbers in the book completely out of context, citing them as “predictions” (which they explicitly were not), and then claiming that these predictions had failed. The ruse was quickly exposed, but rebuttals often don’t gain nearly as much publicity as accusations, and so today millions of people mistakenly believe that the book was long ago discredited. In fact, the original Limits to Growth scenarios have held up quite well\*.¶ In principle, the argument for eventual limits to growth is a slam-dunk. If any quantity grows steadily by a certain fixed percentage per year, this implies that it will double in size every so-many years; the higher the percentage growth rate, the quicker the doubling. A rough method of figuring doubling times is known as the rule of 70: dividing the percentage growth rate into 70 gives the approximate time required for the initial quantity to double. If a quantity is growing at 1 percent per year, it will double in 70 years; at 2 percent per year growth, it will double in 35 years; at 5 percent growth, it will double in only 14 years, and so on. If you want to be more precise, you can use the Y^x button on your calculator, but the rule of 70 works fine for most purposes.¶ Here’s a real-world example: Over the past two centuries, human population has grown at rates ranging from less than one percent to more than two percent per year. In 1800, world population stood at about one billion; by 1930 it had doubled to two billion. Only 30 years later (in 1960) it had doubled again to four billion; currently we are on track to achieve a third doubling, to eight billion humans, around 2025. No one seriously expects human population to continue growing for centuries into the future. But imagine if it did—at just 1.3 percent per year (its growth rate in the year 2000). By the year 2780 there would be 148 trillion humans on Earth—one person for each square meter of land on the planet’s surface.¶ It won’t happen, of course.¶ In nature, growth always slams up against non-negotiable constraints sooner or later. If a species finds that its food source has expanded, its numbers will increase to take advantage of those surplus calories—but then its food source will become depleted as more mouths consume it, and its predators will likewise become more numerous (more tasty meals for them!). Population “blooms” (that is, periods of rapid growth) are always followed by crashes and die-offs. Always.¶ Here’s another real-world example. In recent years China’s economy has been growing at eight percent or more per year; that means it is more than doubling in size every ten years. Indeed, China consumes more than twice as much coal as it did a decade ago—the same with iron ore and oil. The nation now has four times as many highways as it did, and almost five times as many cars. How long can this go on? How many more doublings can occur before China has used up its key resources—or has simply decided that enough is enough and has stopped growing?¶ It makes sense that economies should follow rules analogous to those that govern biological systems. Plants and animals tend to grow quickly when they are young, but then they reach a more or less stable mature size. In organisms, growth rates are largely controlled by genes. In economies, growth seems tied to factors such as the availability of resources—chiefly energy resources (“food” for the industrial system). During the 20th century, cheap and abundant fossil fuels enabled rapid economic expansion; at some point, therefore, fossil fuel depletion could put a brake on growth. It is also possible that industrial wastes could accumulate to the point that the biological systems that underpin economic activity (such as forests, crops, and human bodies) begin to fail.

## Collapse- Debt

#### Collapse of the U.S. economy is inevitable- Debt, political disputes, and market instability

Heinberg, , Senior Fellow-in-Residence at Post Carbon institute, June 2012 (Richard, “End of Growth Update Part 1”, http://richardheinberg.com/museletter-241-end-of-growth-update-part-1)

¶ The real current status of the American economy is a matter of controversy. There are several relevant metrics—including GDP, unemployment, house prices, durable goods orders, government deficits, trade deficits, new debt, personal income, and personal spending—and some numbers look better than others. Which ones are more important? You can describe the glass as half-full or half-empty, depending on your preferences and how you cherry-pick the data. Still, just about everyone agrees that the statistics show persisting weakness. Job growth and GDP growth are both slowing. And the ratio of US government spending to government income rose to 1.46-to-1 in calendar year 2011. Immediately on the horizon is a gradual curtailment of extended unemployment benefits for the millions who lost their jobs after the 2008 meltdown: this will decrease the buying power of consumers just as the economy struggles to gain altitude.¶ ¶ But it’s not so much the monthly numbers as the deep, structural trends that are the greatest cause for concern. The unsustainable bubble of household debt built up over the last 30 years still has a long way to go in order to deflate back to realistic levels, while tranches of toxic assets still lurk in the asset portfolios of major banks. And Wall Street appears to have learned nothing from the 2008 crisis, as shown by JPMorgan’s recent $2 billion trading loss. If European sovereign defaults occur on a large scale, derivatives contracts will be triggered—contracts written (in most cases) with Wall Street investment banks, which will quickly be sucked into the whirlpool.¶ ¶ Of equal concern is the highly dysfunctional US political system, which now seems incapable of solving even the most trivial of problems, and is apparently intent on exacerbating just about every crisis the nation faces. Substantive policy appears to emerge not from the public deliberations of elected leaders, but from unaccountable government agencies and private interest groups with highly disparate agendas. One of the two US political parties has evidently taken leave of reality altogether, preferring to exist in its own hermetically sealed ideasphere in which climate change is a hoax and all economic problems can be solved by cutting spending and taxes, and in which everyone who disagrees with that agenda is by definition a Communist-terrorist-Muslim. The other party, which spends most of its time shoring up the allegiance of its traditional constituencies, takes mostly center-right positions on issues, is ineffectual, and has no realistic strategy for coping with the economic unraveling. It’s probably safe to say that most dinner conversations these days among knowledgeable journalists, social scientists, and retired public figures eventually devolve into expressions of the opinion that the United States is showing all the signs of an empire in steep decline. Heads nod wearily until someone changes the subject.¶ ¶ There’s been no more relevant and disturbing symptom of this national political incapacity than last year’s showdown on the debt ceiling, which Republican House Speaker Boehner has voiced intentions of restaging this year. In 2011, the crisis was defused only with a joint agreement to a series of mandatory spending cuts that are scheduled to kick in soon after this year’s presidential election—unless nearly inconceivable budget reforms are achieved. Erskine Bowles, co-chairman of President Obama’s budget-deficit commission, recently described the series of “cliffs” the country faces at the end of 2012, when the George W. Bush tax cuts expire and the mandatory cuts begin. “If you add all those up,” said Bowles, “it’s probably $7 trillion worth of economic events that are going to occur in December. And there’s been little to no planning for that.” The Congressional Budget Office is now warning that the economy will shrink by 1.3 percent in the first half of next year if these measures go into effect.¶ ¶ It’s likely that last-minute negotiations will keep the country from going over the cliff solely as a result of the mandatory spending cuts. But America appears to be careening from crisis to crisis, and the stopgaps are losing efficacy.

#### Collapse and transition is inevitable- band-aid solutions fail

Heinberg, , Senior Fellow-in-Residence at Post Carbon institute, 6/11/2012 (Richard, “End of Growth Update Part 1”, http://richardheinberg.com/museletter-241-end-of-growth-update-part-1)

And so the hypothesis stands: Maximum world economic output is nigh. If that is truly the case, the most reasonable forecast would be for a significant decline soon, as debts default and as investors pull back. We may be in for a series of subsequent booms and busts (the booms never managing to bring us back to current output levels, the busts plunging us further into economic turmoil). Mere stagnation would be a benign outcome, one that would require considerable planning and effort to achieve, but even then resource limits (which we’ll get to in Part 2, next month) would ensure contraction sooner or later.¶ Our solution is our problem and its name is growth. We can’t live with it because, as Herman Daly points out, most growth is now uneconomic—we’re actually worse off because of it. More growth just means more debt, more pollution, more loss of biodiversity, and a further destabilization of the climate. And yet we can’t live without it: absent growth, there will be insufficient tax revenues and jobs, and existing debt levels will prove unsustainable in the starkest sense of that term.¶ The purely financial or monetary aspects of our dilemma will probably continue to take center stage in the public discussion. National treasury officials and central bankers will strive to stabilize the system, and may be able to do so for a while—probably a matter of weeks or months rather than years. They will need a long-term strategy, though, because eventually stimulus and bailout Band-Aids will lose adhesion. Yet there is little evidence of such a strategy.¶ Even more, they will need a sense of ecological and historic context, so that they understand that the current growth crisis is not just a momentary speed bump on an inevitably soaring ramp of progress, but an irreversible phase change for the economy and for civilization itself.

## Collapse- China

#### China collapse inevitable- Coal

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2011 (Richard, May, “Shrinking Pie: Competition and Relative Growth in a Finite World”, http://richardheinberg.com/museletter-228)

China’s appetite for resources and raw materials is driving up worldwide prices of a wide range of commodities including oil, iron, copper, cotton, cement, and soybeans. But for the Chinese economy, perhaps the single most important resource is coal. Indeed, it may not be an oversimplification to say that the fate of China’s economy rests on its ability to maintain growth in coal supplies.¶ ¶ China relies on coal for 80 percent of its electricity and 70 percent of its total energy; coal also supports China’s steel industry, the world’s largest. Altogether, China is one of the most coal-dependent nations in the world. In order to become the world’s second-largest economy, it has had to more than double its coal consumption over the past decade, so that it is now using nearly half of all coal consumed globally, and over three times as much as is consumed in the next nation in line, the U.S. (which prides itself on being “the Saudi Arabia of coal”).¶ ¶ As China energy expert David Fridley and I argued in a recent op-ed in Nature, while China claims it has enough coal to fuel continued economic growth, that claim is questionable.[2]¶ ¶ The nation has recently updated its proven coal reserves to 187 billion metric tons, putting it second in line after the U.S. in terms of supplies. That would be about 62 years’ worth of coal at 2009 rates of consumption (over three billion tons per year). But this simple “lifetime” calculation is highly misleading.¶ ¶ Reserves lifetime figures are calculated on the basis of flat demand and lose meaning if demand grows over time. China’s coal consumption is accelerating rapidly, so that the expected “62 years’ worth” must be adjusted downward. Demand forecasts from China’s Energy Research Institute would reduce the reserves lifetime to about 33 years; but if coal demand were to grow in step with projected Chinese economic growth, the reserves lifetime would drop to just 19 years.¶ ¶ Yet this still doesn’t capture the situation. Production will peak and decline long before China’s coal completely runs out. Further, as with oil production, coal mining proceeds on the basis of the “best-first” or “low-hanging fruit” principle, so we must assume that China is extracting its highest-quality, easiest-accessed coal now, leaving the lower-quality and more expensively mined coal for later. Unlike the U.S., China does not have vast deposits of surface-minable coal; over 90 percent of China’s coal comes from underground mines up to 1,000 meters in depth, and those mines face increasing engineering challenges.

#### China collapse inevitable- Exports

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2011 (Richard, May, “Shrinking Pie: Competition and Relative Growth in a Finite World”, http://richardheinberg.com/museletter-228)

Fast forward to China, 2011. Like Japan, China subsists largely on exports while investing heavily in infrastructure, paying for the latter with private savings that come from tamping down consumption. Beijing adopted the Japanese growth model in the 1990s, when its deregulation and opening up of the country’s economy was widely praised. While these policies created tens of millions of jobs, as well as thousands of new roads and millions of new buildings, they have also generated imbalances reminiscent of Japan in the 1980s—except that in many ways China has gone even further out on a limb.¶ ¶ Devine recites the startling numbers:¶ “China is far more dependent on exports and investment than Japan ever was, and the numbers are still moving in the wrong direction. Investment accounts for half of China’s economy while consumption is only 36 percent of GDP—the lowest in the world, drastically lower than even other emerging economies such as India and Brazil. But as the Japan example illustrates, low consumption leads to high savings, and China’s thrifty citizens, coupled with booming net exports, have bestowed upon the country the world’s largest current account surplus, triple that of Japan’s in 1985.”[11]¶ China’s legendary trade surpluses cause problems for its trading partners while stoking price inflation at home. And inflation, the usual result of an undervalued currency, is dangerous in a country where hundreds of millions of people still have trouble affording basic essentials.¶ ¶ To outsiders, China has looked like a shining example of what growth can accomplish, yet it has achieved its success by strangling personal consumption (which was the engine of growth in the U.S. and Europe) and sidelining small-scale entrepreneurs in favor of state-owned businesses and selected multinational corporations. Only a small percentage of its population has shared in the bounty.¶ ¶ China’s leaders are aware of the pitfalls of pursuing the Japanese development model, and have issued a comprehensive slate of reforms to foster consumption and curb excessive capital investment. But these efforts will only work if the U.S. and the rest of the world return to a path of growing consumption. If not, China’s choices may be limited. An export-driven economy can only succeed if others can afford to import.

#### China collapse inevitable- Aging population

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2011 (Richard, May, “Shrinking Pie: Competition and Relative Growth in a Finite World”, http://richardheinberg.com/museletter-228)

Beijing’s one-child policy, introduced in 1979, was largely effective—though it had the abhorrent side effect of encouraging a disdain for female infants, a prejudice that has led to abortion, neglect, abandonment, and even infanticide. Applying mainly to urban couples of Han descent, the policy reduced population growth in the country of 1.3 billion by as much as 300 million people. This meant that by the 1980s and ’90s, young workers had fewer dependents to support—and China’s manufacturing boom drew strength from young people moving from country to city to work in factories. For the nation as a whole, having a few hundred million fewer mouths to feed has acted as a social safety valve so far, and will reduce misery in the decades ahead as world resources deplete and human carrying capacity disappears.¶ ¶ However, there is a demographic price to pay. Beginning in 2015, China will see a growing number of older citizens relying on a shrinking pool of young workers.¶ Most of the nation’s factories are located in its coastal cities, of which some, like Shenzen, were built from scratch as industrial centers. Shenzen hosts the Foxconn Technology Group, an electronics manufacturer that makes components for Dell, Hewlett-Packard, and Apple; nearly all its workers are under 25.¶ ¶ China’s older workers have largely been left behind in rural villages, or pushed from their urban homes into apartment blocks on cities’ outskirts to make way for new apartments and office buildings occupied by younger urbanites and the companies hiring them. Age discrimination is a fact of life.¶ ¶ All of this will gradually change as China’s work force ages. Within a generation, the average age of a Chinese worker will be higher than that of an American worker.[12] One of China’s leaders’ biggest fears, expressed repeatedly in public pronouncements, is that the nation will grow old before it grows rich (Japan, in contrast, got rich before it grew old).¶ ¶ To avoid this fate, China is trying to grow its economy as fast as possible now, while it still can.¶ ¶ One way it does this is to offer paltry pensions and poor-quality health care to older citizens. This makes China an attractive place for foreign corporations to do business. In the U.S., health care costs for older workers are often double the costs for workers in their 20s, 30s and 40s. By keeping its workforce young and denying them benefits, China’s leaders keep costs down. American or European companies that move production to China or buy Chinese goods gain leverage to rewrite terms of employment with their older workers at home—or they can simply shut down domestic factories.¶ ¶ China’s youthful labor force attracts foreign investment. But as the country’s work force ages, its competitive advantage may evaporate. Moreover, the lack of adequate pensions and health care for Chinese workers will eventually result in worsening social stresses and strains.¶ ¶ It is the financial sacrifices of its people that have given China the opportunity to attract capital investment to its industries, and that generate subsequent profits that are then loaned back to the United States and other industrialized nations.¶ ¶ To understand the significance of those sacrifices, one must understand a little of the country’s recent history. At the end of the Communist revolution in 1949, China was impoverished and war-ravaged; the overwhelming majority of its people were rural peasants. Communist Party chairman Mao Zedong set a goal of bringing prosperity to the populous, resource-rich nation. A period of economic growth and infrastructure development ensued, lasting until the mid-1960s. At this point, Mao appears to have had second thoughts: concerned that further industrialization would create or deepen class divisions, he unleashed the Cultural Revolution, lasting from 1966 to the mid-1970s, when industrial and agricultural output fell. As Mao’s health declined, a vicious power struggle ensued, leading to the reforms of Deng Xiaoping. Economic growth became a higher priority than ever before, and it followed in spectacular fashion from widespread privatization and the application of market principles. “To get rich is glorious,” Communist officials now proclaimed.

#### China collapse inevitable- Real estate bubble

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2011 (Richard, May, “Shrinking Pie: Competition and Relative Growth in a Finite World”, http://richardheinberg.com/museletter-228)

Once again, China is following in Japan’s footsteps. Massive real estate projects—houses, shopping malls, factories, and skyscrapers—have been proliferating in China for years, attracting both private and corporate buyers. As prices have soared, investors have turned into speculators, intent on buying brand-new properties with the intention of flipping them.¶ ¶ Building is being driven by artificially inflated demand—the very definition of a bubble. And this is resulting in oversupply. In city after city, acres of commercial space sit vacant. Indeed, whole cities intended for millions of inhabitants have been built in the Chinese interior and now stand all but empty.[14] Some might argue that the Chinese are investing in infrastructure now in anticipation of many millions more citizens moving into urban centers over the coming decades—however, this presupposes continuing rapid economic growth, which is exactly what is in question. If growth sputters, this infrastructure overbuild will be a dead weight on the Chinese economy. ¶ ¶ Though Beijing initiated an effort to cool the real estate and stock markets in 2008, the global financial crisis forced officials to relent in favor of lavish stimulus spending on shovel-ready infrastructure projects. The Chinese funneled 4 trillion yuan (about $590 billion) into what in many cases turned out to be yet more empty new shopping malls, empty new cities, and empty new factories.¶ ¶ For Chinese citizens, investment in the stock market hardly makes sense, given dramatic episodes of turbulence in recent years. Instead, a condominium or a house is seen as the most sensible and profitable investment. But this results in a bidding up of prices to the point where, in major cities like Beijing and Shanghai, a condo can cost 20 times a worker’s annual salary. A worker in Tokyo might expect to pay only eight times her annual wages for a similar property.

#### China collapse causes U.S. economic collapse

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2010 (Richard, February, “China or the U.S.:Which Will be the Last Nation Standing”, http://richardheinberg.com/213-china-or-the-u-s-which-will-be-the-last-nation-standing)

A collapse of China would similarly devastate the U.S. Obviously, the loss of a source of cheap consumer products would discomfit WalMart shoppers, but the shock soon would go much deeper. The Treasury would lose its main foreign buyer of government debt, which means that the Fed would be forced to step in and monetize that debt (in common parlance, “turn on the printing presses”), undermining the dollar’s value. The result: a hyperinflationary economic crash. Such a crash is probably inevitable at some point anyway, but a collapse of the Chinese system would hasten and worsen it.

## Collapse- Currency

#### Collapse inevitable- Race to the weakest currency

Heinberg, Senior Fellow-in-Residence at Post Carbon institute, 2011 (Richard, “Currency Wars/Post-Growth Geopolitics, http://richardheinberg.com/museletter-229)

¶ Investment money tends to “chase yield,” which has the effect of driving up the value of the currencies in countries where investment opportunities and higher yields are to be found—currently, the young, industrializing countries of Asia. China and the other industrializing nations are responding by doing everything they can to keep exchange rates for their currencies low relative to the dollar so as to maintain trade advantages and reduce the impacts of an influx of yield-seeking money.¶ China has led the way in the international competition to weaken national currencies, but Japan and the U.S. are seeking to lower the value of the yen and the dollar, respectively. According to Bill Black, writing in Business Insider on December 13, 2010,¶ The E.U., taking its lead from Germany, has allowed the Euro to appreciate against many currencies. Germany’s high-tech exports can survive a strong Euro, but Greece, Spain, and Portugal cannot export successfully under a strong Euro and their already severe economic crises can become much worse. The Irish will have serious problems, and their export problems would have been crippling if they were not a corporate income tax haven. Italy’s, particularly southern Italy’s, ability to export successfully is dubious.[6] ¶ If U.S. dollar tumbles, that hurts China and other countries with fixed exchange rates; they feel pressured to drop their peg or revalue their currencies higher. Countries whose currencies are pegged to the dollar have had to resort to currency interventions and a massive buildup of foreign reserves to stop their currencies from appreciating. This is inflationary for those countries, and is one reason for the housing and equities boom in Asia.[7] China’s way of pushing back against a lowering of the dollar’s value is its threat of ceasing to purchase U.S. Treasury debt (which it has in fact partly done). If neither the United States nor the industrializing nations back down, the result could be a final refusal of the latter nations to continue funding deficits in the U.S.[8]¶ ¶ As the U.S. dollar has weakened, it has done so only against those currencies that are free floating. This has meant that countries like Japan and Germany have had to endure upward pressures on the value of their currencies. German Finance Minister Wolfgang Schäuble, interviewed in November 2010, had harsh words for his American counterparts, noting that “The U.S. lived on borrowed money for too long,” and adding that¶ “The Fed’s decisions [to buy U.S. Treasury debt] bring more uncertainty to the global economy. They make it more difficult to achieve a reasonable balance between industrialized and emerging economies, and they undermine the U.S.’s credibility when it comes to fiscal policy. It’s inconsistent for the Americans to accuse the Chinese of manipulating exchange rates and then to artificially depress the dollar exchange rate by printing money.”[9]

# **Growth Good**

## **Warming**

#### Growth solves warming- innovation and development

Bowman, head of research at the Adam Smith Institute, 2010 (Sam, October 14, “Economic growth will deliver us from the pessimism of WWF predictions”, http://www.telegraph.co.uk/earth/earthcomment/8064274/Economic-growth-will-deliver-us-from-the-pessimism-of-WWF-predictions.html)

The WWF says that humans are using more natural resources than the world can sustain, and that during this century resources will dwindle, harming biodiversity and the environment. This could not be more wrong.¶ The campaigning organisation has committed the zero-sum fallacy of thinking that one person’s gain can only be at the expense of somebody else. It has assumed that humans can only become rich by using natural resources – taking a share of the Earth’s pie to the cost of other species, so to speak. In fact, human progress has come from a smarter use of, and less reliance on, raw materials.¶ Economic growth comes in large part from being smarter about how we use the scarce resources available to us. This is achieved through human ingenuity, which the environmental economist Julian Simon called the "ultimate resource", and it is growing exponentially.¶ The sharpest declines in biodiversity since the 1960s, according to the WWF, have occurred in low-income countries. Incredibly, they blame the carbon emissions of high-income countries for this, and suggest that forced limits on carbon emissions are the way to better living standards.¶ It is partially correct in blaming carbon emissions on wealth: the world’s carbon footprint in prehistoric times was admittedly very small. And, no doubt, biodiversity was very high then too. But human living standards were miserable, and this should matter.¶ The way to promote biodiversity and reduce carbon emissions is not to retard economic growth but to encourage it. Tourism from wealthy countries has allowed countries like Kenya to afford wildlife preserves, and foreign investment and consumption is what allows the developing world to grow economically. Without this growth, luxuries like clean air will, for poor countries, remain unaffordable.

## War

#### Growth creates peaceful societies

Gat, professor of national security in the Department of Political Scence at Tel Aviv University, 2005 (“The Democratic Peace Theory Reframed”, *World Politics*, Project Muse)

¶ By comparison, liberal democratic countries have differed in some crucial respects. Socialized to peaceful, law-mediated relations at home, their citizens expect the same norms to be applied internationally. Living in increasingly tolerant, less conformist, and argumentative societies, [End Page 87] they have grown more receptive to the Other's point of view. Promoting freedom, legal equality, and (expanding) political participation domestically, liberal democratic powers, although initially in possession of the greatest colonial empires, have found it increasingly difficult to justify rule over foreign people without their consent and/or without granting them full citizenship and voting rights. Conjointly, sanctifying life, liberty, and human rights, liberal democracies have ultimately proved to be failures at forceful repression.32 Liberal economy, dominating despite periodical lapses, in any case rejected war and military subjugation in favor of peaceful economic growth and mutually beneficial trade. Furthermore, with the individual's life and pursuit of happiness elevated above group values, the sacrifice, let alone self-sacrifice, demanded by war has increasingly lost legitimacy in liberal democratic societies. Democratic leaders have shared the above outlook and norms or else have been forced by public pressure to conform to them or face being removed from office. As scholars now tend to agree, structural and normative factors are intertwined in creating the democratic peace.¶ For these reasons, even though nonliberal and nondemocratic states, too, became much less belligerent in the industrial age, liberal democracies have proven inherently more attuned to its pacifying aspects. This applies most strikingly to the relations among democracies, but, as scholars have become increasingly aware, it applies also to their conduct in general.33

#### Wealth prevents wars from occurring- liberal economics prove

Gat, professor of national security in the Department of Political Scence at Tel Aviv University, 2005 (“The Democratic Peace Theory Reframed”, *World Politics*, Project Muse)

Throughout history, rising prosperity has been associated with decreasing willingness to endure the hardships of war. Freedom from manual labor and luxurious living conditions achieved by the rich in prosperous premodern societies conflicted with the physical hardship of campaigning and life in the field, which thereby became more alien and unappealing. As the industrial-technological age unfolded and wealth per capita rose exponentially, the wealth, comfort, and other amenities formerly enjoyed by only the privileged elite spread throughout society. Thus, increasing wealth has worked to decrease war not only through the modern logic of expanding manufacturing and trading interdependence but also through the traditional logic that affluence and comfort affect society's willingness to endure hardship. Because new heights of affluence and comfort have been achieved in the developed world in the post–World War II era, when practically all the world's affluent countries have been democracies, it is difficult to distinguish the effects of comfort from those of democracy in diminishing belligerency. Obviously, as already noted, the two factors have to some degree been interrelated.¶ It is difficult for people in today's liberal, affluent, and secure societies to visualize how life was for their forefathers only a few generations earlier and largely still is in poor countries. Angst may have replaced fear and physical pain in modern societies; yet, without diminishing the merits of traditional society or ignoring the stresses and problems of modernity, this change has been nothing short of revolutionary. People in premodern societies struggled to survive in the most elemental sense. The overwhelming majority of them endured a lifetime of hard physical labor to escape hunger, from which they were never secure. The tragedy of orphanage, of child mortality, of premature death of a spouse, and of early death in general was an inescapable fact of life. People of all ages were afflicted with illness, disability, and physical pain, for which no effective remedies existed. Even where state rule prevailed, violent conflict between neighbors was a regular occurrence and, [End Page 89] therefore, an ever-present possibility, putting a premium on physical strength, toughness, honor, and a reputation for all of these. Hardship and tragedy tended to harden people and make them fatalistic. In this context, the suffering and death associated with war were endured as just another nature-like affliction, together with Malthus's other grim reapers: famine and disease.¶ By comparison, by contrast even, life changed dramatically in affluent liberal societies. The decline of physical labor has already been mentioned. Hunger and want were replaced by societies of plenty, where food, the most basic of needs, became available practically without limit, with overweight rather than starvation becoming a major problem, even and, indeed, sometimes especially, among the poor. Infant mortality fell to roughly one-twentieth of its rate during preindustrial times. Annual general mortality declined from around thirty per thousand people to between seven and ten per thousand.34 Infectious diseases, the number one killer of the past, were mostly rendered nonlethal by improved hygiene, vaccinations, and antibiotics. Countless bodily irritations and disabilities—deteriorating eyesight, bad teeth, skin disease, hernia—that used to be an integral part of life, were alleviated by medication, medical instruments, and surgery. Anesthetics and other drugs, from painkillers to Viagra, dramatically improved the quality of life. People in the developed world live in well-heated and air-conditioned homes, equipped with all manner of electrical appliances. They have indoor bathrooms and lavatories. They wash daily and change clothes as often. They drive rather than walk. They are flooded with popular media entertainment with which to occupy their spare time. They take vacations in faraway places. They embrace "postmodern," "postmaterialistic" values that emphasize individual self-fulfillment. In an orderly and comfortable society, rough conduct in social dealings decreases, while civility, peaceful argument, and humor become the norm. Men are more able to "connect to their feminine side." Whereas children and youth used to be physically disciplined by their parents and fought among themselves at school, on the playground, and in the street, they now encounter a general social abhorrence of violence. Social expectations and psychological sensitivity have risen as dramatically as these changes. People in affluent liberal societies expect to live, to control their lives, and to enjoy life rather than merely endure it, with war scarcely fitting into their life plan.

#### Increased Growth stops war

Humphreys, assistant professor of political science at Columbia, 2003 (Macartan, “Economics and Violent Conflict”, http://www.unglobalcompact.org/docs/issues\_doc/Peace\_and\_Business/Economics\_and\_Violent\_Conflict.pdf#)

If economic growth makes conflict less likely, why then has there been a rise in the number of conflicts during a period of global growth?16 One explanation for this counterintuitive fact is that other factors that are positively correlated with conflict – such as population sizes – have been rising over time. This makes it possible that the conflict-inducing effects of these factors may outweigh the mitigating effects of increased wealth. Another explanation is that global economic growth has been unbalanced with the benefits from globalization being spread unevenly across different regions.17 Some regions – notably Africa – have had negative average growth rates and high rates of conflict. The result is a world in which conflicts are increasingly concentrated in poorer parts of the world, with differences in income between countries in conflict and those not in conflict becoming greater now than they have been in the past.18 3¶ Is there also a relationship between wealth and inter-state war? Some international relations theorists have argued that as states get richer they look for conquests abroad to fuel their economies.19 But the statistical evidence for this hypothesis is very mixed and most recent research suggests that there is no strong relationship. Nor is there a strong relationship between short term income fluctuations – the business cycle – and conflict onset.20 A long tradition in international relations theory looks to the international distribution of power—itself often proxied by economic wealth—rather than to levels of wealth to explain stability, with some suggesting that an equal distribution of power will lead to stability21 and others suggesting that inequality produces stability.22 However, the evidence strongly suggests that wealthier states are less likely to go to war with each other. One possible reason for this (discussed below) is that wealthier states are also more likely to trade with each other.

#### Strong economics prevent conflict escalation

Humphreys, assistant professor of political science at Columbia, 2003 (Macartan, “Economics and Violent Conflict”, http://www.unglobalcompact.org/docs/issues\_doc/Peace\_and\_Business/Economics\_and\_Violent\_Conflict.pdf#)

ECONOMIC POLICIES DURING TRANSITIONS TO PEACE. Economics is central to transitions to peace. Many of the links are straightforward: if economic issues were in part responsible for the initial war outbreak then addressing the original economic issues will likely help to avoid war re-occurrence. And whatever the origins of the conflict, the destruction brought about by war will produce the need for economic reconstruction, for the re-organization of production and trade, for the retraining and reintegration of ex-combatants and possibly for provisions for distributing resources to winners or losers. All of these require extraordinary financing; yet governments are likely to be in financial straits after a conflict, in part because in the short run, security budgets are likely to remain high (especially if the conflict does not end definitively), the tax base is likely to remain low, and coercive means used to collect taxes during a conflict may have to be foregone in peacetime.198 Unless there is ready access to aid or foreign debt high interest and inflation rates are likely to persist.¶ The economic compensation for winners or losers takes a central position at the end of a conflict. Before the Second World War, economist John Maynard Keynes argued that all sides need to benefit from a settlement to prevent grievances being rekindled.199 For international wars at least, Keynes’ position finds support in the theory that the reparations imposed on Germany after the First World War was in part responsible for the Second World War.200 The principle is, however, applied unevenly at the end of civil conflicts. The peace accords in Mali included clauses to provide jobs for the ex-combatants within the national army and in the Malian administration. It also provided for increased investment in the north, notably funds for small to medium sized enterprises. The accords were successfully implemented in 1995 and since then there have been no further outbreaks of conflict. In contrast in Liberia the accords contained no substantial economic provisions and resulted in a further concentration of economic and political power in the hands of Charles Taylor; Liberia is now again facing civil war. The implications of different re-distributive clauses for the return to civil war is an important and open research question.

## Sustainability

Technological advances mean growth is sustainable

Temin, M.I.T., 2012 (Peter, Journal of Interdisciplinary History volume 43

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Galor’s economic models explain the transition from Malthusian to modern economic growth in a series of growth-theory models that start from maximizing individuals, contain one undifferentiated good, are limited to closed economies, and do not contain money or credit. Transitions are from one state to another: “The economy exits from the subsistence-consumption regime when potential income, z, exceeds the critical level z-tilda (161).” How large is z-tilda? Galor does not define it explicitly, but he asserts that per capita income fluctuated around $450 a year for the first millennium (11). This figure comes from Angus Maddison, The World Economy: Historical Statistics (Paris, 2003), and it is in 1990 international dollars. One might speculate that z-tilda is somewhere near this figure.¶ Galor presents a striking set of regressions that show technology and various physical indicators to have affected population size in 1 c.e. and 1,000 c.e. but not income per capita (91). Because no governments collected national-income data and no newspapers reported economic data [End Page 78] during those times, Maddison had far less evidence for them than for more recent years, forcing him to make far more assumptions. He clearly assumed that the world was in a Malthusian state at that time, estimating that incomes around the world in both 1 c.e. and 1,000 c.e. varied only from $400 to $450. Galor’s regressions on these data therefore do not reveal the contours of early history; they instead reveal how Maddison constructed his data. This observation does not mean that Galor is wrong, only that the apparent precision gained from his sophisticated economic theory and statistical inquiry is illusory.¶ Galor’s interest, however, is theoretical, not empirical. He asserts that technological progress is a function of education and population size (155). Since education is endogenous, what drives technology is population size. When the population becomes large enough to make technology advanced enough, parents decide to educate their children, and modern economic growth replaces Malthusian stagnation. At the end of his book, Galor adds another possible path to this transition: “A sufficiently large technological shock would place the economy on a trajectory that leads to a sustained-growth regime (266).”¶ Which path corresponds most closely to what we know about the Industrial Revolution? Galor’s preferred path describes the view championed by Jared Diamond, Guns, Germs and Steel: The Fate of Human Societies (New York, 1997); Gregory Clark, A Farewell to Alms: A Brief Economic History of the World (Princeton, 2007); and Joel Mokyr, The Enlightened Economy: An Economic History of Britain, 1700–1850 (New Haven, 2009). It conflicts with the view of Robert Allen, The British Industrial Revolution in Global Perspective (New York, 2009), which argued that generalized technological sophistication was not enough. The Industrial Revolution started with the addition of inanimate power to production, which Allen argued was stimulated by low fuel costs. The expansion of Europe—not mentioned by Galor—set in train a Malthusian expansion that led to trade and higher incomes in Britain. Coupled with British geography and geology, British factor prices produced “a sufficiently large technological shock.” Galor’s preferred path describes why the Industrial Revolution happened in Europe; only Allen’s approach can explain why it was British rather than Dutch or French.¶ How should historians regard this book? It is an impressive work of economics and will receive a lot of attention among economists. The history is not as clear; Galor’s work does not add to the analysis of Malthusian economies or the debate about the cause of the Industrial Revolution. If historians want to see how modern growth theory can be used to describe Malthusian economies more simply than in this formidable book, they might consult Paolo Malanima, Pre-Modern European Economy: One Thousand Years (10th–19th Centuries) (Leiden, 2009). [End Page 79]

#### New resources and technology advances ensure sustainable growth

Anderson and Huggins, Senior and research fellows respectively at the Hoover institute, 2003(Terry and Laura, “Economic Growth is Sustainable Development”, http://edwatch.org/DESD/EconomicGrowth.htm)

Thirty years ago, a group of academics known as the Club of Rome put forth the "limits to growth" theory, predicting disaster for humankind unless natural resource-depleting economic and technological progress were abandoned. This gloom-and-doom theory has been resurrected under the guise of sustainable development, calling for changes in virtually every aspect of our consumption and production.¶ "Sustainability," a seductive though vague term, argues that resource use today should leave future generations at least as well off as current generations. Of course nobody wants to make future generations poorer and less healthy, but this definition provides no guidance for how this result can be avoided. There is no way to know what resource use is acceptable today and no way to know what future generations may desire. Yet because of its deceptive simplicity, sustainability is applied to anything from agricultural practices to energy use to mining.¶ Implicit in the calls for sustainable development are two fundamental assumptions. The first is that we are running out of resources, thus leaving future generations with less; the second is that market processes are the cause of these depletions. But in fact, several studies offer evidence suggesting the opposite.¶ Resources are becoming less, not more, scarce. Agricultural yields for rice, corn and wheat have increased for decades. Known reserves of oil, natural gas and coal have been expanding, and accessible stocks of aluminum, zinc, iron and copper have grown as technology develops more-conservative production techniques and the price mechanism encourages exploration and new discoveries of underground reserves. Moreover, life expectancy, housing, nutrition and education levels are improving in both the developed and the developing world. In short, the prosperity we enjoy today is leaving future generations better off, not worse off.¶ How can this be? Growth, and increasing wealth through these methods, leads to improved environmental quality by raising demands for it and by providing the wherewithal to meet these demands. In this context, economic growth is not the antithesis of sustainable development; it is the essence of it.¶ Sustainable development stems from sustainable institutions - political and economic systems based on secure property rights and the rule of law.¶ It is not resources that are too scarce but the institutions that ensure human freedom. Only by sustaining those institutions will we be able to sustain development and advance environmental quality - only then can we have our environmental cake and eat it too!

#### Technology solves sustainability questions

NAS ’95 (National Academy of Sciences, “The Role of Technology in Environmentally Sustainable Development”, http://www.nap.edu/openbook.php?record\_id=9236&page=9)

Water treatment and re-use will have a decisive role in sustainable development in the public, industrial, and agricultural sectors. In the public sector, securing public health will remain the basic feature of urban water systems; water transportation and treatment¶ technologies must be chosen accordingly. Technologies now exist for controlling many types of pollutants. The future challenge will be the control of organic micropollutants and heavy metals. For the water-intensive industries, minimizing water consumption will become a necessity, and it will be a key factor determining the market compatibility of industrial products. For the agricultural sector new technologies for irrigation will be needed that minimize water consumption and prevent unsustainable groundwater extraction.¶ Increased food production and the improved means of storage and distribution —necessary to support a burgeoning global population—will also depend on technological advances. Biotechnology has produced new strains of crops resistant to disease and drought. Further advances in producing crop varieties naturally resistant to pests will permit a further reduction in toxic chemicals used as pesticides. Genetic engineering holds promise not only in agriculture, but also in aquaculture where it can lead to increased production of marine and freshwater seafood.¶ The negative environmental consequences of farming have been reduced in recent years, and environmentally sustainable farm practices appear to be within reach. The chemical industry is now producing pesticides that degrade more quickly, that have more focused effects, and that can be applied in lower concentrations. Best management practices include crop rotation systems, the use of computers to guide chemical use, and integrated pest management. Such prac-tices offer pathways to a sustainable future in the agricultural sector.¶ Manufacturers have begun to reduce, re-use, and recycle materials and products in a search for industrial ecosystems that can imitate natural ones. According to this concept, wastes from one part of the system are used as inputs to other parts of the system. Companies have begun to change product and process design in ways that give the environment the same level of consideration as worker safety and the cost and quality of products. Industrial uses of renewable agricultural and forestry resources are expanding.¶ The materials revolution that is now underway has profound implications for the environment. Traditional materials, such as steel, concrete, and plastic, are undergoing significant changes that reduce the environmental impact of their manufacture and use. Scientists and engineers are also beginning to design new materials based on a better understanding of their properties and the possibility to manipulate them at the atomic level.¶ In the future, new technological capabilities will contribute to the creation of materials with very specific¶ and closely controlled properties. These new materials will permit the development of products that are more energy efficient, that consume less of mineral resources for their manufacture, are lighter and stronger, and recyclable. Also under development are alloys lighter than aluminum and stronger than steel, and composites based on biological materials that are superior to other materials.¶ The mineral extraction industry is adopting environmentally sound practices and is developing approaches and technologies for remediating past environmental damage. These technologies are now also increasingly applied to rehabilitating degraded landscapes.¶ The remarkably broad-based technological revolution now underway is made possible by information technology. Information technology has the potential to alter how and where people work and live, and thus the nature of urban areas of the future. It is changing the way that enterprises are managed. It is improving the efficiency of air-, land-, and water-based transportation systems, among other sectors of the econmy.¶ Networks of fiber optic cables and systems of Earth-orbiting satellites are extending our ability to survey and protect the environment. These technologies permit real-time monitoring of environmental conditions. From automobiles to nuclear power plants, from chemical processing to mineral extraction, information technologies allow precise control of industrial processes, which improves our ability to minimize pollution and improve energy efficiency.¶

# Impact Defense

No war- Countries with poor economies won’t hurt their economies more

Humphreys, assistant professor of political science at Columbia, 2003 (Macartan, “Economics and Violent Conflict”, http://www.unglobalcompact.org/docs/issues\_doc/Peace\_and\_Business/Economics\_and\_Violent\_Conflict.pdf#)

Calculating the economic costs of war is necessary to determine the relative economic benefits of investing in war avoidance rather than in post-conflict operations.¶ NGOs and aid agencies argue that avoiding war makes economic sense. They point to cases where, ex-post, the cost of inaction considerably outweighs the costs of conflict prevention.77 However, such straight-forward cost-benefit comparisons, while striking, are misleading. One reason for this is that the results of inaction are not known in advance and so the expected costs are likely to be considerably lower than the actual costs. Another reason is that the benefits of preventative action are not known – preventive deployments may be unsuccessful in preventing atrocities or may succeed only in delaying them. While certainly successful prevention is better than cure, and while more resources are needed for prevention and for peace-building, the economic argument for investing in war prevention rather than peace-building requires more careful studies than those undertaken to date—studies that will have to make use of models that predict probabilities of conflict onset, expectations of the cost of wars, and estimates of the probability of success of preventative action.78¶ In what follows I focus on impacts of war for economies within zones of conflicts. I ignore the impacts in zones that are removed from the conflict, noting simply that in areas (or countries) that supply a conflict, war may lead to substantial rises in income79 while countries that neighbor countries at war typically suffer negative impacts.80 I also shift away from the focus on the most publicized and the most dramatic war economy activities – namely the looting of private and public assets and the pilfering of aid. While some recent research places much emphasis on these activities, acts of looting do not directly affect the aggregate income of an economy (except to the extent that they divert the looters’ labor away from productive activities). Rather, they represent transfers between parties. What matters more in terms of aggregate effects is the reaction to looting and expectations of looting by economic producers.