

Peak Oil and Political Theory: The End of Modernity?

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I. The Other Side of the Mountain

In 1956, Shell geologist M. King Hubbert presented a paper before the American Petroleum Institute entitled “Nuclear Energy and the Fossil Fuels.” In retrospect, it may turn out to be the most important paper for political theorists written in the twentieth century, though few if any political theorists have heard of it, much less read it. In that paper – written at the height of America’s post-war power and influence – M. King Hubbert effectively predicted the end of modernity. Fifty years later, that moment has arrived.

Hubbert’s analysis was simple but breathtaking in its implications: based upon the known oil reserves existing below ground in the continental United States – most of which at the time had been discovered, even if they were not yet under production – Hubbert predicted that an inevitable peak of production would follow roughly thirty years after the peak of oil reserve discovery. Based on known reserves, Hubbert predicted that oil production in the continental United States would peak at 200 million barrels. Projecting then-current production rates forward, he pegged the year of peak oil production in the United States to occur in 1971. Appearing in the form of a bell-curve, “Hubbert’s Curve” showed that oil production would follow a predictable pattern: it would gradually rise as production and consumption increased, it would peak when half of the petroleum had been brought above ground, and it would decline in a similarly gradual fashion as the wells released less oil with each passing year. In 1971, America produced the most oil it would ever produce, and since that time has come to rely, each passing year, on energy imports from other, often politically unstable or tyrannical parts of the world. Hubbert’s prediction was correct.

In recent years, many analysts have taken the basic insight of Hubbert’s analysis and applied it to worldwide oil production. Most reputable geologists and oil analysts now recognize the validity of Hubbert’s conclusion (though that was not so at the time of the paper’s initial delivery, when people believed the supply of oil beneath the ground to be near-infinite), and have concluded that world oil production will follow the same curve, gradually sloping upward

to the moment of worldwide peak oil production, then falling ineluctably downward, indicating the unstoppable decline of oil production for the rest of humanity's future. Based upon known worldwide oil reserves (which is a tricky proposition, since some countries, and in particular the most oil-rich nations such as Saudi Arabia, do not disclose their known reserves), most geologists and analysts predict that the world is now reaching the point of peak production. Most agree that it will occur during most of our lifetimes. The most optimistic believe that the peak will not arrive until approximately 2030. Most analysts, however, put the date much closer to the present, and in some cases contend we have already passed peak. One acolyte and student of Hubbert – Princeton University geologist Kenneth Deffeyes – has concluded that worldwide peak production occurred on Thanksgiving Day, 2005.

While there continue to be debates over when peak oil will occur, most reputable geologists, scientists and analysts recognize that it will occur. In recent months and years, increasing numbers of once-skeptical or silent authorities have come to acknowledge its impending arrival. The imminent arrival of peak oil has been acknowledged by a respected oil investor and analyst who participated in Vice President Cheney's Energy Task Force of 2001, Matthew Simmons; conservative Congressman Roscoe Bartlett, R-MD, has spoken of the "coming Tsunami" of peak oil on the floor of the United States Congress; former President Clinton has insisted that he only learned of peak oil after his Presidency, and has been speaking out in alarm on the subject; and even the OPEC oil producing nations, in a recent report, have indicated that peak oil is an imminent occurrence. Furthermore, some familiarity with "peak oil" has crept into the public awareness. A recent story in Harper's magazine, itself a lengthy commentary on a bestselling book about peak oil entitled *The Long Emergency* by James Howard Kunstler, brought the issue to the public awareness of many readers outside a small circle. Stories have appeared in the *Wall Street Journal* and on the Bloomberg website, among other places. A recent issue of *Nature* magazine featured an article entitled "Energy: That's Oil, Folks," which described the corps of respected geologists and energy analysts who endorse the peak oil theory. The first "hit" on a Google search for "oil" brings up the website "Life After the Oil Crash" (<http://lifeaftertheoilcrash.net>), which begins with the ominous words, "Dear Reader: Civilization as we know it is coming to an end soon." Peak Oil, once seen as the apocalyptic fancy of a small clique of Malthusian pessimists, has gone mainstream.

For many, the first response to learning of "peak oil" is to conclude that the future will be one of alternative energy, of hybrid cars and solar panels. Some welcome the prospect of increasing oil prices – following, as it must, the classic curve of decreasing supply and increasing demand – as the trigger that will make alternative energy a feasible and attractive option. Free-market "techno-optimists" envision a continued future of remarkable human innovation and ingenuity, with necessity once again engendering invention. Coming with the now near-universal

recognition of the existence of global warming, the prospect of a reduction in the use of fossil fuels comes as a somewhat welcome, if admittedly initially jarring, prospect.

With characteristic American optimism, many look forward to a future of continuing and ever-increasing prosperity, ingenuity and wealth. People speak of the benefits of globalization, of the spread of free markets and democracy across the world, of “democratization” and the increase of human knowledge and potential. If the “end of history” – Kojeve’s “universal and homogenous State” – has been put on hold while the forces of Western civilization battle an anti-liberal jihad, the “end of history” remains an implicit goal of thinkers across the political spectrum.

However, 1971 may be instructive, since it was humankind’s first encounter with “peak oil,” albeit in limited form, occurring only – but significantly – in the United States. Until 1971, the United States had been the world’s great provider of oil, and had in large part built its national wealth upon the employment and sale of this remarkable resource. Almost all the forms of American wealth – whether via the railroads, export of its crops, through the automobile industry, the rise of the airline industry – are directly or indirectly traceable to America’s bountiful supply of oil. In the early years of the 1970s, the United States went from being a net oil exporter to an oil importer.

The result of an OPEC oil embargo of 1973 was significant economic dislocation. A global recession occurred within a year of the embargo. In the United States, a severe recession ensued. By 1974, shares on the United States stock market had lost upwards of 97 billion dollars in value. Unemployment spiked and inflation rose to unprecedented levels. Indeed, according to classic economic theory, declining economic output should result in the lowering of inflation, just as rising economic output will lead to a rise of inflation. The Federal Reserve sets interest rates in an effort to achieve a balance between economic growth and the low growth of inflation. What the oil shocks of 1973, and the subsequent oil shock of the early 1980s following the Iranian revolution, proved is that certain situations can lead to an economic outcome in which the economy shrinks and inflation soars – “stagflation” as it came to be known. While the reasons for this were undoubtedly complex, very simply put, this is the expected result of peak oil: overall economic activity will contract as there is less net energy in the world; and, since the modern industrial economic base rests fundamentally upon the energy provided by oil, as that commodity becomes more scarce its price will rise, thereby leading to overall price inflation in spite of decreasing economic growth. As a response to the rise in inflation, the Federal Reserve raised interest rates to the mid-teens throughout the late 1970s and early 1980s. Money itself, like most goods, became more expensive: the nation was, as a whole, poorer. While many take credit for the eventual returned health of the American economy in the 1980s – including

Ronald Reagan – the simplest explanation may be that good relations with OPEC nations were restored, cheap oil flowed back to world markets, and the economic system was again allowed to balance growth and inflation as economics textbooks predict is the case.

During the years of the 1970s, civic morale was low, institutions were strained and there was widespread pessimism regarding the future. Americans confronted shortages and want, and as a result, fights and skirmishes at gas lines were often the result of frayed nerves and frustration. On July 15, 1979, President Jimmy Carter delivered a speech that came to be known as the “malaise speech.” In the course of that speech, Carter addressed the pessimistic mood of the nation:

"I want to speak to you first tonight about a subject even more serious than energy or inflation. I want to talk to you right now about a fundamental threat to American democracy....

The threat is nearly invisible in ordinary ways. It is a crisis of confidence. It is a crisis that strikes at the very heart and soul and spirit of our national will. We can see this crisis in the growing doubt about the meaning of our own lives and in the loss of a unity of purpose for our nation....

"The symptoms of this crisis of the American spirit are all around us. For the first time in the history of our country a majority of our people believe that the next five years will be worse than the past five years. Two-thirds of our people do not even vote. The productivity of American workers is actually dropping, and the willingness of Americans to save for the future has fallen below that of all other people in the Western world.

"As you know, there is a growing disrespect for government and for churches and for schools, the news media, and other institutions. This is not a message of happiness or reassurance, but it is the truth and it is a warning."

This speech – later maligned by Ronald Reagan and "conservatives" as fundamentally un-American in its pessimism – nevertheless articulated the widespread sense of crisis and stress that the country was experiencing. This experience – the result of America’s encounter with peak oil – was at once artificial yet predictive of likely future events. It was artificial, since at that point there were sufficient quantities of oil in the ground in other parts of the world to make up America’s shortfall, and in effect, to put a stop to the downward spiral of economic contraction and widespread sense of pessimism about the future, including toward the basic institutions of American political life. It was predictive because, in the situation of worldwide peak oil, it gave intimations of the actual experience of decreasing supply without end.

It was also revealing inasmuch as it showed that political theory is not itself predictive – one

might say it is largely responsive to conditions, and itself never had to respond to the crisis as a permanent condition. Famously, it is widely regarded that political theory was revived in 1971 with the publication of John Rawls's *A Theory of Justice* – the very year of peak oil in America. Rawls's work represented an effort to justify redistribution of income and possessions, and took place within the American context of ever-greater prosperity that had been the American experience since the end of World War II. The theory itself sought to demonstrate “the difference principle,” which justified that the least well off should be provided for within designated levels of difference from the most-well off. Psychologically, it was a theory designed for a growing economy: it was both a formalization, and an echo, of John Locke's dictum that the least well-off in society could expect to benefit from a prosperous society, and an anticipation of Ronald Reagan's adage that “a rising tide lifts all boats.” Whether it was a political philosophy that held much appeal to a widening economic and political crisis is questionable.

But, more significantly, it was a political philosophy perfectly fitted for the year 1971, the year that the United States would produce as much oil as it ever would. Oil is an amazing substance, containing a remarkable amount of energy in a compact and transportable form. Its widespread use effectively allowed the flourishing of the modern industrial economy, making easy, almost laughable, what were once agonizingly difficult tasks such as transportation, agriculture, and manual labor. When Aristotle imagined the possibility of universal leisure, he fancifully described the widespread existence of automatons or robots, such as those created by Daedalus, which would relieve humans of much of the labor that absorbed their time (or the time of their slaves). He might just as well have imagined an abundant and cheap energy source that powered any number of these sorts of automatons. Oil – now in the greatest abundance that would ever occur in the most prosperous liberal democracy that had ever existed – rightly gave people the sense that thoroughgoing liberation and autonomy were possible. No longer would humans have to acknowledge their need, their partiality and their reliance upon others. In the years leading up to 1971, movements of liberation abounded – the counter-culture, sexual liberation, feminism. This sense of individual independence, it might be said, culminated with the political philosophy that rightly coincided with the moment of peak oil in the United States – a political philosophy that imagined the possibility of fundamental human-decision making taking place in a thoroughly isolated, individual and autonomous way. John Rawls was peak oil's philosopher.

We may well find that this sort of political philosophy – indeed, the goal of autonomy itself, built upon a presumption of continued human mastery over nature – was a momentary result of circumstance, and has no real future beyond raw fancy. America's relatively brief encounter with economic contraction and widespread sense of social crisis during the 1970s and early

1980s was only the harbinger of the world's experience of peak oil. The era of the ever-growing industrial economy will end. There will be less overall energy, and as a result, less overall production and a contraction of civilization. With it comes the challenging question whether modernity itself will survive. Some aspects of modernity that may be regarded with nostalgia, or with bemused wonder, include globalization, feminism, and liberalism itself. Modernity flourished as a result of the one-time infusion of oil, millennia in the making; its demise may result from the exhaustion of the substance in just over one century's time.

The collapse of modernity is a worst-case scenario certainly, and humans have not had to confront many worst-case scenarios in recent times. Many believe that we have sufficiently mastered nature not to have to face such worst-case scenarios in the future. Yet, this belief may be one of the non-material luxuries of our oil engorgement. That we have not have suffered worst-cases may be a direct consequence of our use of the one-time bounty of oil, a resource that has allowed us to escape many of the ravages experienced by past generations. As the well begins to dry, some bills may come due, and we will no longer have the resources to pay them. Modernity began with the call to control nature, and it may end with nature's reassertion of her authority. But, before reviewing the various ways that modernity may come to an end, something should first be said about what modernity is, and how it began down the path of its own suicide.

II. Modernity: The Relief of Man's Estate

Modern political thought is marked, perhaps above all, by a growing confidence in human powers of understanding and the admonition to exert those powers in the control of nature – the natural world and human nature alike. Modernity was inaugurated by a transformation of scientific understanding – from the distinction of “science” as the observation of natural phenomena to the active effort to employ knowledge of natural operations in the active interference of those operations toward the goal of “the relief of the human estate.”

The move toward modernity was inaugurated initially in the effort to control chance, or “fortune.” Rejecting Stoic or Christian conceptions that commended a form of resignation to the vagaries of life and death – whether the result of pure chance or the will of God – modern thought began with the effort to exert control over those vagaries and, in effect, to put humans on the course of controlling otherwise inexplicable phenomena. As such, a new “faith” replaces an old faith – now, faith is directed at the explicability of otherwise incomprehensible effects. More than merely a search for causes, modern science begins with the belief that every effect

has an explicable cause. By knowing the cause of effects, modern science opens the possibility of altering, adjusting, preventing or adjusting those causes, and thereby governing the effects. By anticipating the effects of causes, if not ultimately the causes themselves, modern natural science can begin to exert control over natural phenomena.

This hope and confidence was expressed in the famous metaphor articulated by Niccolò Machiavelli in *The Prince*. Machiavelli was speaking of the role of Fortune in the lives of humans. Longstanding metaphors referred to “Fortuna” in terms that reflected the dominion and mastery of Fortune over human affairs: for instance, for Boethius, fortune was a “wheel” which turned inexorably would stop wherever it pleased, portending consequences for humans over which they could exert no fundamental control. His counsel – in classic Stoic terms – was acceptance and resignation.

By contrast, Machiavelli famously spoke of fortune as “a woman” who must be “mastered, beaten and struck.” Machiavelli argued that, in order to defend human freedom, we must accept the view that “fortune determines one half of our actions, but that, even so, she leaves us to control the other half, or thereabouts.” In discussing that half of human affairs that Fortune governs, Machiavelli appears to echo the kind of resignation to the majesty and dominion of fortune – now compared to nature – that was expressed by such thinkers as Boethius. Machiavelli writes, “I compare her to one of those torrential rivers that, when they get angry, break their banks, knock down trees and buildings, strip the soil from one place and deposit it somewhere else. Everyone flees before them, everyone gives way in the face of their onrush, nobody can resist them at any point.”

However, this is only half the story – or “thereabouts.” Humans must come to recognize that they control half of fortune, and the half that they control, significantly, in fact renders the ravages of fortune almost wholly tractable, practically speaking. “But although [the torrents of Fortune] are so powerful, this does not mean men, when the waters recede, cannot make repairs and build banks and barriers so that, if the waters rise again, either they will be safely kept within the sluices or at least their onrush will not be so unregulated and destructive.”

Indeed, while Machiavelli – anticipating Madison’s efforts to “control the effects” of nature (in this case, human nature) – emphasizes the effort to exert influence or to minimize the damage resulting from the Fortune, he reveals that these efforts will in fact “discourage” the causes of those effects in the first instance: “The same happens with Fortune: She demonstrates her power were precautions have not been taken to resist her; she directs her attacks where she knows banks and barriers have not been built to hold her.” Reading this passage with some care, it appears that Machiavelli in fact suggests that by controlling half of fortune, humankind

effectually controls the whole of fortune. Fortuna will only be able to wreak its havoc on those whom are ill-prepared, leaving those who have in advance altered the landscape in anticipation of Fortuna's effects effectively immune to most if not all of her ravages.

Notably, Machiavelli speaks of the rule of the political leader in terms of a metaphor of controlling nature. This is an inaugural, but continuous theme, of modern political thought. In contrast to classical theory, in which humankind is a part of nature, and hence substantially subject to its dictates ("Man is by nature a political animal"), modern political thought poses nature as an obstacle to humanity's endeavors. Nature must be altered or controlled in order that humankind can achieve a desired condition of freedom. Freedom is initially understood to be the absence of external obstacles and the overcoming of hazardous consequences associated with nature's dominion.

Modernity also comes to understand liberty as well in a more "positive" form of the active harnessing of nature's resources for the securing of human comfort and prosperity. Francis Bacon inaugurated the modern scientific tradition which aimed at the active investigation into nature for the ends of "the relief of the human estate." Science was to be understood not as the contemplation and understanding of nature – science as "theoretical science," in Aristotle's terms - but as the active intervention and manipulation of natural forms for the ends of human comfort, dominion, and wealth. "Knowledge is power," wrote Bacon, inaugurating a belief that knowledge was a weapon to be used against a recalcitrant and hostile nature. Writing in the *New Atlantis* about the final aim of the "Salomon's House," or "The College of Six Days," Bacon wrote that "the End of our Foundation is the knowledge of Causes, and the secret motions of things; and the enlarging of the bounds of Human Empire, to the effecting of all things possible." In this latter formulation one sees a characteristic call for "enlargement": modernity understands human dominion as necessarily entailing the "enlargement of orbits," of the expansion and extension of human dominion over all natural phenomena. This includes mastery over external nature, even beyond the bounds of earth itself; it also means the expansion and extension of human nature, including the overcoming of that most basic of human conditions, the fact of our mortality. Bacon new science aimed to point humankind toward the most sublime and final end of knowledge: by means of learning, "man ascendeth to the heavens" and achieves that to which "man's nature doth most aspire, which is immortality or continuance."

This theme of human dominion in the form of expansion of control over ever greater sphere is reflected again in the youthful writings of John Milton. Scientific discovery would be the means of expanding human mastery to an ever-greater expanse. Milton predicted that "when the cycle of universal knowledge has been completed, still the spirit will be restless in our dark imprisonment here, and it will rove about until the bounds of creation itself no longer limit the

divine magnificence of its quest.... Truly [man] will seem to have the stars under his control and dominion, land and sea at his command, and the winds and storms submissive to his will. Mother Nature herself has surrendered to him. It is as if some god had abdicated the government of the world and committed its justice, laws, and administration to him as ruler.” Echoing Bacon, human control of nature would come to resemble god-like power, the ability of creation and destruction, mankind as separate from, superior to, and master of all of nature. By implication, in extending human control of nature to such infinite extent, humanity would thereby change its own nature – from one of mere animal to one of divinity itself. Indeed, Francis Bacon argued that through scientific mastery of nature, human beings would make themselves into “mortal gods.”

This phrase found new definition in the thought of Bacon’s personal secretary, Thomas Hobbes. Hobbes wrote of a similarly niggardly nature, one that deprived naturally acquisitive humans from achieving comfort and plenty. By means of a compact, humankind created an artificial person, a conventional entity called “Leviathan” which he called “a Mortall God.” This wholly contrived figure wielding expansive power allowed the full flourishing of human civilization; absent this figure, the natural human condition was one in which “there is no place for industry..., no culture of the earth, no navigation, nor use of the commodities that may be imported by sea, no commodious building, no instruments of moving and removing such things as require much force, no knowledge of the face of the earth, no account of time, no arts, no letters, no society...” Man’s natural condition is one in which nature rules and humans exert no power or control over an apparently arbitrary fortune; one can observe humans in their natural condition, those “savages” in “America” who live in a wholly “brutish manner.” By means of human science – now, “political science” – human beings are enabled to devise the means for the conquest and harnessing of a recalcitrant nature. Bringing out the implicit connections of Machiavelli’s metaphor, political science allows for the extension of human science into all spheres of life. The aim of life becomes mastery, now expressed in the form of “commodious living” – the increase of human comfort through the expansion of human power manifested as the control of natural forces and extraction of resources.

John Locke would expand considerably Hobbes’s commendation of “commodious living.” In his discussion “Of Property” in his Second Treatise of Government, Locke articulated the philosophical justification of an unlimited growth economy. Locke described a primitive world in which economic growth does not occur because of the existence of the “spoilage limit,” that is, natural limits to acquisition based upon current use. Only that amount of material needed for human subsistence could be justified under such primitive economic conditions. However, with the invention of money, Locke argued that the “spoilage limit” was superceded, and, moreover, that unlimited acquisition was not only possible, but justified. Unlimited acquisition, far from

creating a “prejudice against the rest of mankind” – that is, depriving others of the benefit of one’s growing acquisition – in fact benefited one’s fellow citizens (and, playing out his argument to account for international trade, the whole of humanity). This benefit accrued due to an increasing standard of living shared by all persons living in a growth economy, regardless of whether one was “industrious and rational” or rather subject to “covetousness of the quarrelsome and contentious.” Even the least well-off member of a growth economy was better off than the wealthiest and most elite member of a static or subsistence economy: “a king of a large and fruitful territory there [in primitive America] feeds, lodges, and is clad worse than a day-laborer in England.”

Locke describes an economy that does not rely upon ample resources, but rather, efficient and concentrated use of nature to increase its offerings – in effect, using nature rather than leaving it in its native condition. Thus, he argues, “this shews how much numbers of men are to be preferred to largeness of dominions; and that the increase of lands, and the right of employing of them, is the great art of government; and that the prince, who shall be so wise and godlike, as by established laws of liberty to secure protection and encouragement to the honest industry of mankind ... will quickly be too hard for his neighbors.” Again, evoking Machiavelli’s original formulation, politics becomes the art of increase, of growth and dominion over nature. Nature is worthless without active use, “employment,” and exploitation of its offerings. Politics becomes tantamount to the art of the use and employment of nature, its conquest for the sake of “increase,” growth without inherent or natural limit. Human convention and artifice, the science of politics and the science of technology, become the means of securing human comfort and above all, human liberty. Modern liberalism is a theory that rests fundamentally not only upon a theory of human rights, but the material conditions of plenty and growth that justify the growing material inequalities that such unleashing of human productivity naturally fosters. The “industrious and rational” can point to the increased wealth of the society at large, even to the quarrelsome and contentious. The growth of material wealth, in turn, leads humans away from their over-involvement in partisan public affairs, ensuring the rational and efficient governance by competent and impartial governors.

Modernity itself, and liberalism specifically, is a philosophy that rests upon a basic presupposition of the desirability, and necessity, of growth. It was a political philosophy that, on the one hand, laid the preconditions for a massive expansion of economic growth and an unparalleled extension of human dominion over nature. However, in turn, it was a political philosophy whose very success was premised upon the success of that undertaking. Liberalism was a wager that unlimited growth was a possibility, that human ingenuity, extended toward ever-greater control and exploitation of nature, could continue indefinitely until (in Milton’s words) “the bounds of creation itself no longer limit the divine magnificence of its quest.” That

wager has been wildly successful, unimaginably compensated, and apparently worth every risk while liberals “let it ride.” However, if the gathering clouds of global warming, of wildlife depletion and extinction, of topsoil erosion and worldwide war and genocide over increasingly exhausted resources do not already indicate that this has not been a costless wager, its very viability is about to be tested with the realization that its fundamental underpinning – “increase,” growth, and control of nature – is about to end. Abundant cheap oil was the grease that allowed the wager to succeed for roughly 150 years during the oil age; its cessation forbodes revealing that the odds have been in favor of the “house” all along – that nature is not subject to one of her own creatures, and that this momentary period of “commodious living” has been an illusion whose soon-realized limits will unleash consequences will be fierce and dire upon the creature that dared to master her.

III. Prophesizing a Possible Future: Back to the Past

When most people consider rising energy prices, they reflexively translate this eventuality into their most immediate experience of these costs: increased commuting costs. There can be little doubt that rising energy costs will have a significant effect upon the commuting habits of millions of people in industrialized economies, none more so than citizens of the United States where landscapes have been fundamentally altered in keeping with the “restlessness,” or mobility, that Tocqueville regarded as a hallmark of American democratic life. Indeed, according to some estimates, seventy percent of oil consumed in the United States goes to supplying the American transportation habits.

However, declining oil production does not solely imply more costly commutes; indeed, when considering the profound effects of higher energy costs (i.e., less net energy in the world), higher commuting costs seem to be of comparatively negligible importance. The effects of peak oil throughout the economic system (including in the most obvious form of higher transportation costs) have far-reaching and world-altering consequences.

First, declining amounts of energy raises serious questions about the viability of “globalization.” This phrase, taking the descriptive form of a process, implies an apparently inevitable and irreversible set of actions that no human activity can resist or prevent. The phrase itself is eerily reminiscent of the inevitability with which social scientists of the 1950s and 1960s regarded the rise of “secularization,” another apparently irreversible trend of the modern world. In recent years, scholars have come to recognize that the formulation of “secularization” was, for many, a form of wishful thinking or even a form of faith rather than a fact or an accurate prediction.

Peter Berger – one of its original proponents – admitted that he was mistaken in believing in the inevitability of the process in a recent essay entitled “The Desecularization of the World.”

Globalization, simply put, describes a world in which ever-greater interpenetration of culture and peoples has occurred as a result, at base, of economic expansion and interconnections. These economic interconnections themselves have been the consequence of the spread of free market economic system worldwide, a system that has depended essentially upon thoroughgoing mobility and ease of transportation. The current form of global capital rests on a worldwide labor market in which low-cost markets produce goods for more wealthy high-cost labor markets, which in turn trade for developments in technology and what Robert Reich has called the “products” of “symbolic analysts.” We inhabit a world almost unthinkable, if nevertheless attributable at least in theory, to Adam Smith, in which extremely low cost markets, producing goods largely made of plastic and chemical derivatives (i.e., petroleum), supply high-labor markets with products produced more cheaply than if those same products were produced in the same town as the consumer. The low cost of the raw materials (forms of petroleum) and the overall low cost of bulk transport (shipping and air-freight, propelled by petroleum), result in the cheap production of a nearly unimaginable array of products, all of which rest significantly on a platform of cheap and ample fossil fuels. Peak oil implies higher costs. However, higher prices are themselves a signal of a more fundamental phenomenon, namely less overall energy and less overall material. To the extent that the material form of globalization rests upon this base, the arrival of peak oil means that this basis of globalization will begin to unwind.

“Symbolic analysts” and hence advanced modern economies will be also adversely affected. In the simplest form, declining energy (as was evidenced in 1971) will result in less overall economic activity. A contraction of the economy will occur, and with it, the basis of many of the jobs that now result from an economy based upon growth. Much of the financial services industry will unravel; indeed, banking itself will come under extreme stress as fiat currencies loose value worldwide, and inflation makes existing and future loans increasingly worthless and dries up sources of investment. Material and technological development itself will stall as there is less overall investment, and the basic platform of modern high-tech communication and computing – electricity – will become increasingly expensive. High electrical costs may be forestalled with the increased reliance upon nuclear energy, but that very increased reliance will quickly manifest itself in the form of higher prices due to limited worldwide supplies of uranium.

Movement of products and people will become more difficult and less frequent. There is significant question about the future viability of commercial aviation. Once exclusively the

privilege of a wealthy elite, it is likely that commercial aviation will again become the province of the very well-off and a rare experience for a middle-class that has come to take it for granted – but only after significant contraction in the number of existing carriers and, accordingly, flight routes. Many parts of the country and the world that were once isolated will find themselves again less accessible, and less easily departed from. Inasmuch as globalization has particularly rested on the long-term expansion of aviation, with the imminent arrival of peak oil, its future is deeply in question.

Domestically, the national economic system depends extensively upon trucking. This industry will become increasingly strained with the arrival of peak oil, most immediately in the form of higher energy costs which will be passed on to consumers in the form of higher prices for goods and services. The interstate highway system will come under stress, inasmuch as the primary ingredient of pavement – petroleum – will make repairs on roads more costly and therefore rare. Higher prices will mean less ability to afford even what have come to be regarded as the necessities of civilization. These include not only “necessities” such as labor-saving devices, pharmaceutical products (many of which are themselves based on petroleum products), household items and the like, but perhaps most importantly of all, food. Indeed, the implications of peak oil upon food costs, and food production itself, border on the apocalyptic.

The imminence of peak oil directly and adversely impacts our ability to grow and transport sufficient quantities of food. The amount of fossil fuels used to grow basic agricultural commodities, and hence, to provide feedstock and ultimately fill our supermarkets, in the form of fertilizers, fuel for farm equipment, refrigeration and food transportation, is enormous. It is estimated by some that it takes approximately the fossil fuel equivalent of ten calories to put one calorie of food on our tables – significantly higher if one considers a meat diet. Another way of considering this equation: the equivalent of approximately 300 gallons of petroleum or its derivatives are necessary to produce our annual diet. Still another way to consider this fact: our daily diet would require the equivalent of 111 hours, or three weeks, of human labor. With the arrival of peak oil, our capacity to continue to produce adequate food supplies for a planet of 6 billion people will increasingly come into question. Already it has been noted that the demand for corn for the processing of ethanol has led to a steep increase in food costs, particularly given the extent to which corn lies at the root of much of the modern industrial world’s diet. Some of the gloomiest prognosticators of the peak oil phenomenon foretell the horrors of a global “die off.”

The declining amounts of worldwide oil will result in a worldwide decline of the standard of living, manifest not only in most leading economic indicators, but in necessary changes to our daily habits, the ways in which we organize our lives together, and even our diets. One direct

effect of peak oil will be the opposite of globalization – i.e., re-localization. The form of living arrangements that have been devised throughout the twentieth-century will come under profound stress and may have to be abandoned. Suburban life depends extensively upon a base of cheap petroleum: long commutes, long supply lines to “big-box” stores and supermarkets that exist at significant remove from residential areas, an extensive network of roads and interstates, and the replacement of farmland for housing tracts, many of which have converted productive land for sprawling yards. The increasing size of homes in these suburban enclaves require massive amounts of heating and cooling, all of which will become increasingly expensive, and make this housing less financially sustainable. With peak oil, the housing market will itself be subject to collapse – the most fundamental basis of investment and wealth of average citizens of modern industrial economies. Economic contraction will make it increasingly difficult for people to maintain payments of exorbitant and often gimmicky mortgages, leading to a wave of foreclosures and added stress to the banking and financial industry. The loss of many citizens’ form of net worth would prove devastating, both economically and politically. A downward spiral of economic contraction and bankruptcy, of decreasing supplies and rising prices, of economic dislocation and disillusionment, could easily result in a potential economic and political catastrophe.

The strains on the food system – again, manifested in the form of higher prices – will make the need for more local production essential. Increasing numbers of individuals will need to return to the life of farming, now on a more regional and local basis. Delivery of food from afar will decline – again, will become the province of the very wealthy – and the need for local production will necessarily rise to replace declining food stores. A more local and agricultural-based economy will again arise, one that will have to be formed in close proximity to increasingly more densely-populated town centers. The necessity of more local forms of farming – and the decline of petroleum-based fertilizers and irrigation – will reveal, once again, that certain parts of the country and world are largely inhabitable, or at least that certain climates cannot maintain large centers of population. One can expect something of a “rewind” of population settlements that occurred throughout the twentieth century, now away from the arid southwest and west and the tropical south, and back toward the Northeast and mid-west, both of which can provide arable land and ample supplies of non-irrigated water. Living arrangements will essentially draw closer toward the center, and will necessarily be organized in the image of earlier forms of human settlement, with water, food, climate, and accessibility by water or rail forming the core reasons for the viability of future living arrangements.

Much of life will return to a local basis. An issue close to home to readers of this essay, as it were, will be significant implications and challenges for higher education. Elite institutions have increasingly embraced a role as global or cosmopolitan institutions. As globalization itself

declines, these institutions will necessarily return to a more local identification, including their student bodies and even faculty. Cosmopolitanism as a governing philosophy will again be the fancies of slightly kooky philosophers. However, before this happens, the era of ever-growing endowments will end, and with it, the growth of the modern University. Those institutions that survive will nevertheless shrink, and the educational objective will return to providing an education for the benefit of localities and regions rather than for a globalized economy. The land-grant institutions, in particular, will return to their original mission and will bear a special responsibility in re-educating a populace in the arts of farming and cultivation.

There is no shortage of potential implications of the full brunt of Peak Oil. As far-fetched as these “prophecies” might seem, they are the logical extrapolation of the reality of declining worldwide energy, and with it, declining wealth and the end of expansion and growth. Short of a miraculous invention that can replace the one-time source of profound energy and hence economic boom provided by fossil fuels, our future is more likely to resemble what I have described rather than a fanciful portrait that continues to assume unbroken growth and material progress. And, if this portrait is even somewhat correct, then the scenario is good, because the alternative is much worse.

Species have always exhibited the most brutal and vicious behavior in situations of declining resources. As the world begins to face the fact of inevitable limits, there will be – indeed, there already is – a scramble for the remaining scraps at the table. The wealthiest nations will plunder the poorest in order to maintain their way of life and their immense investments. Nations blessed with remaining energy stores (e.g., Russia, Iran, Venezuela) will begin to use them as weapons against their neighbors (indeed, already have). As we come closer to the “top of the mountain,” the great fear is that the world’s great powers engage in a last gambit, a militarized fight to the finish over the remaining resources in order to position themselves best for a post-oil glut future. As Vice President Cheney declared during the 2001 election, “the American Way of Life is non-negotiable.” Andrew Bacevich has declared that we are already in the midst of fighting World War III if not World War IV, and that this war is now being fought over the remains of the world’s oil resources. As those remains decrease, one can expect the fighting to become fiercer and even cataclysmic. The war in Iraq – already the first of the battles of the peak oil era – may only be a prelude of what lies ahead. As in all times of warfare – and it can be expected that this will be a situation of near-perpetual hot or cold warfare – power necessarily accrues to executive and military authority. Already the nation has seen a significant shift in power away from Congress to the Presidency, and ever-greater encroachments of executive power on civil liberties in the name of security. It is possible that constitutional democracy will cease to exist as we have known it, and that people – in the face of a decrease of all they have become accustomed to – will not only support the further rise of the imperial Presidency, but

demand it. Whether, over the long term, constitutional democracy will survive the end of the oil age is an open question. The worst-case scenario is one of perpetual warfare, massive numbers of deaths, the potential for nuclear war and the end of modern civilization. But, I suspect many readers will be most disturbed at the following suggestion: peak oil portends the end of a particular aspect of modernity, the end of liberalism.

IV. The End of Liberalism

Liberalism is a philosophy of limited government and political rights. As such, as a theory, it would seem that Peak Oil would have little necessary impact upon its viability. However, liberalism has also been deeply premised upon economic growth and the expansion of human dominion over nature, a prospect that is placed in considerable doubt by the arrival of Peak Oil. A fundamental question arises: whether liberalism has been necessarily dependent upon the presumption of growth and mastery, or whether those prospects are detachable from the theory of limited government and political rights.

Before turning to this harder question, first it should be stated that liberalism in its modern incarnation seems unlikely to survive. In its modern form – “progressive” or “radical” liberalism, premised especially upon a goal of radical human autonomy and liberty – liberalism is based far more explicitly upon the expansion of the modern project of mastery of nature and economic growth in extensive ways it rarely acknowledges. The liberal goal of individual autonomy – the liberation from oppressive limitations in the form of locality, custom, “given” circumstance, etc., are likely to be increasingly revealed as resting profoundly upon the oil platform – as much, if not more, than the success of the modern economy. While tending not to think of autonomy in these terms, nevertheless its basis upon open opportunity, liberation from circumstance, and extensive mobility, all can be seen in this light as deriving from the unparalleled wealth and liberty provided by our one-time use of the world’s fossil fuel reserves. Various iterations of this form of autonomy, including lifestyle choice, “self-creation” or Emersonian “self-reliance,” expressionist individualism, widespread irony indicating a studied distance from society’s norms, technologically-based personal expression (e.g., in the form of internet identities), and – perhaps most alarmingly to some – feminism in the form of liberation from the drudgery of the household and localities and easy entry into the mainstream economy, are potentially all in danger of extinction as the age of oil comes to a close. A future in which communal demands and local identification becomes far more prevalent suggest a fundamental redefinition of human identity away from a “liberationist” ethic and toward one of communal solidarity (in, perhaps, the most positive-sounding form of the likely change) or (to take the negative case)

loss of individual liberty and the oppressive inescapability of folkways and circumstance. A form of Stoicism – that philosophy overturned by modernity, as initiated by Machiavelli – is likely to stage a comeback in the post-oil age, albeit not without first witnessing the expression of frustration, consternation, and rage against the loss of liberty once enjoyed by modern peoples.

What of a more minimal liberalism, that philosophy formed before the age of coal or oil, the pre-Millian philosophy that did not forefront material progress and did not even imagine moral progress, but instead identified inexpugnable self-interest as the basis for legitimation of the modern state? What of the liberalism of Locke and the Founding Fathers of the United States?

Theoretically, there may be little reason to suppose that Peak Oil would implicate minimalist theories of liberalism. However, concomitant with liberalism's theory of limited government was a confidence in the human capacity to expand physically, geographically and materially. Liberalism, while a theory that appears to stress limited government, has practically resulted in greater centralization and the accrual of power to strong national governments. Liberalism justified not only the watchfulness of citizens who warily watched for encroachments upon rights, but the rise of strong executive power that necessarily created conditions to "secure these rights." In addition to a theory of rights, including the right to revolution, John Locke wrote of the central importance of "prerogative," that is, largely unfettered actions by the executive to secure the "public good." By the "public good" one understands not only the existence of rights to life, liberty, and property, but more broadly the expansion of property by means of creative and expansive economic activity. The executive branch has necessarily grown in power and prominence as the growth in economy has demanded both its protection and protection from its abuses. It can be argued that this growth is as central to the core philosophy of liberalism as its theory of "limited" government and political rights. Growth has been a precondition – or at least an accompanying condition – of the success of the modern liberal project.

Commerce is especially important to liberalism because it drains the populace of the forms of political faction and enthusiasm that marked pre-liberal society, and instead induced a kind of pacific orientation toward personal comfort and success. As Leo Strauss has suggested, the moderns built on the "low but solid ground" of self-interest, seeking above all the realizability of the modern conception of politics, against the fortune-bound aspirations of ancient political thought. The success of commerce, in particular, has been posited as a necessary condition of modern liberty. Montesquieu and Constant both stress the extent to which "modern liberty" is the beneficiary of successful economic life, and further, a necessary accompaniment to moving beyond the dominant forms of "ancient" liberty. As Constant wrote, "commerce does not, like war, leave in men's lives intervals of inactivity. The constant exercise of political rights, the daily

discussion of the affairs of state, disagreements, confabulations, the whole entourage and movement of factions, necessary agitations, the compulsory filling, if I may use the term, of the people of antiquity, who, without this resource would have languished under the weight of painful inaction, would only cause trouble and fatigue to modern nations, where each individual, occupied with his own speculations, his enterprises, the pleasure she obtains or hopes for, does not wish to be distracted from them other than momentarily, and as little as possible." Similarly, the Founders of the American republic saw commerce as the main source of activity of most citizens, an activity that at once drew attention away from participation in political "faction" even as its growth fostered the greater wealth and power of the nation.

Emphasis upon our economic lives, while encouraging a propensity toward greed and avarice, nevertheless had the beneficial result of providing liberation from authority in most forms, and particularly the authority in the form of religious or civic forms of education and cultivation. Following Adam Smith's theory of the "invisible hand" or Mandeville's belief in "private vices, public virtue," the pursuit of individual interest would result – economically and politically – in a form of order and stability in which individuals acted freely and the power of the State nevertheless grew substantially. Institutional mechanisms were designed to thwart the worst effects of such unbridled interest, and a dim view was taken on the historical failures of "moral [and] religious motives." In short, a vibrant and growing economic sphere, which garnered the attention of citizens and the devotion of most of their exertions, was a basic foundation in the success of the theory of liberalism. Absent this growth, a fundamental pillar of liberal theory would collapse, and with it, the viability of a theory that also commended limited government and individual rights. Indeed, it might be contended that a citizenry inadequately formed with "moral and religious motives" – ones fostered rather by the mechanisms of liberal institutions which do not require, and arguably actively discourage, such antique virtues – would be ill-prepared to confront a society that could no longer deliver the promise of future improvement and material amelioration. A recalcitrant citizenry would likely give rise to a mobilization of a not-so-limited government, or themselves demand a rise in its powers to deliver the growth that it had come to expect. A citizenry effectively taught that life consists in the ceaseless pursuit of "power after power" would be ill-prepared to confront a society in which power – and the energy that provided it – was in steep and permanent decline.

Thus, liberalism, most obviously in its "progressive" form, and even in its "minimalist" form, is likely to come under severe duress in the foreseeable future, and its survival is in question. Liberalism's success was premised upon the fruition of its philosophy of growth, and so long as the philosophy gave rise to results that powered that growth, liberalism thrived, flourished, and ruled. Liberalism began as a serious political program at the outset of modern capitalism and the industrial revolution: it at once gave rise to those phenomena, even as it benefited from

them. Liberalism has flourished in an age of growth, as it was intended. As we confront the limits of a natural world – limits which modernity itself had argued could be overcome by human mastery – the prospects of liberalism are dubious. Faced with the limits of nature, progressive liberalism is definitionally incompatible: “progress” itself will become a worldview of the past. Dreams of human autonomy, born of the human mastery of nature – including lifestyle liberty, self-creation and even many forms of feminism – would cease to exist. “Minimal” liberalism – the liberalism of Locke and the Founders – will also be put under severe stress, and to the extent that this philosophic tradition rests most deeply upon a foundation of growth and human mastery, it will be shown to be a system that worked exceedingly well so long as it could be powered by an immense source of energy. Having burned through its most potent form in only 150 years, liberalism may be entering, much like the age of oil itself, a future of permanent decline.

V. Stuck With Virtue

What is to be done? Partisans of the Left and Right alike recognize that we face a critical moment, and their calls follow the characteristics of their political worldviews. Partisans of the Right – particularly libertarian techno-optimists – counsel continued “laissez-faire” confidence that the market, in the form of price signals and the hopes, born of greed, of someone inventing the next great energy source, will inspire innovation and ultimately an adequate energy replacement. Partisans of the Left, in some senses no less techno-optimists, call for some Government intervention (often in the form of taxation upon oil companies) and believe that a combination of conservation and innovation will permit the continuation of our present economy and its resultant liberal autonomy. Both paradigms are fundamentally firmly within the modern worldview, believing that the goal of human life is ever expanding forms of personal liberty and the overcoming of limitations associated with traditional ways of life.

While realization of such hopes cannot be completely discounted, a severe caution is in order: business as usual cannot be assumed. We function under the belief that the success of humanity over the past 150 years in their mastery of nature and the provision of such material plenty to permit the widespread belief that we had surmounted basic forms of necessity and drudgery is a condition will continue to apply indefinitely. This assumption may not only be foolish, it may be cataclysmic. As creatures formed by cultures that we do not recognize to be cultures, we are conditioned to believe our own condition is “natural,” that it will continue to exist indefinitely. Constitutional democracy, market economies and globalization are the end of history. We do not pause to consider that this form of life has been the consequence of a

momentary and foolishly wasted inheritance of our organic forbears. We place our hope in the market: just as Malthus was proven wrong, the market will again defeat the pessimist. However, again, a caution is needed: it should be recognized that the stunning modern success of “the market” has only existed in the age of coal and oil. “The market” may be as much an artifact of fossil fuels as the growth economy and liberalism itself. We up the ante of modernity’s wager, believing that a fix will save us just in time. Very little must change, and we continue to invest our hopes in the future of progress. In the future, we may wonder how our ancestors could have been so blinkered.

Liberalism dismissed the central role of virtue in the cultivation of young persons out of a belief that such formation represented authoritarian constraint and a form of oppressive paternalism. Yet, it is highly likely that we will discover that such inculcation in virtue is a necessity when one cannot presume the viability of the conquest of nature. Virtue is the cultivated human capacity to operate midway between the necessities of nature and the aspirations of human freedom. In a post-oil age, the reality of nature – its limits and its governing position – will reassert itself, and concomitantly, the need to cultivate human virtue. Virtues such as moderation, frugality, loyalty, self-sacrifice, modesty, a concern for common good, the grace of manners that comes with living in close proximity to many others – these, and many other virtues will again become a necessity for life. “Virtue ethics” will cease to be philosophical object of study, or a philosophical option equally available for those who consider it a preference, but an inescapable necessity. We are, in the words of Peter Lawler, “stuck with virtue.” While liberalism thrived for a period of time by suspending the ancient insistence upon the centrality of virtue – indeed, arguably thrived because of this suspension – the arrival of Peak Oil may prove that this suspension could only be temporary at best. However, the great challenge of modern times will be recovery of ancient understandings of virtue, a recovery made difficult if not impossible due to the massive rupture represented by modernity. Our loss of this particular patrimony may portend a much harsher transition into a post-oil future, and only the active inculcation of ancient virtue will soften the heavy blow we face. Given modern suspicions of virtue – suspicions laced into modernity’s DNA – it is unlikely that we will be adequately prepared, not only physically and economically, but morally.

Many thinkers have noted that liberalism’s success depended for a long time on the continued persistence of a pre-liberal inheritance of ancient and religious moral traditions that were instantiated in the forms of family life, civic community, religious and civil institutions, as well as a longstanding set of practices that were themselves not undergirded by, and indeed were eventually undermined by liberalism. Tocqueville noted that Americans had a tendency to explain all of their actions in terms of self-interest alone, even when their actions were motivated by nobler forms of altruism and self-sacrifice. As such, he wrote, “they do more

honor to their philosophy than to themselves.” Over time, however, deed and speech came to coincide, and the very wellsprings of pre-liberal virtue came under increasing pressure and dissolution. According to this theory, liberalism’s success rested on a pre-liberal inheritance that it neither created nor restored, but rather upon which it was parasitic and which it finally exhausted, portending liberalism’s own self-destruction.

Perhaps in a related form, liberalism has relied as fully upon a pre-liberal material inheritance that it also neither created nor replenished. In this sense, oil is the material equivalent of ancient “moral and religious motives.” Like such older philosophies, it is an inheritance that was formed in a distant past and through the slow accretion of the ages. Fossil fuels are literally our material patrimony: they are the slow transformation of untold generations of plant and animal life that slowly absorbed the sun’s energy and, through eventual accumulation, offered to future generations a packet of indescribable energy. Fossil fuels are irreplaceable reservoirs of our past, and in a period of 150 years we have burned through half – and by far, the most easily extracted half – of this multi-million year legacy. In both its philosophical and economic forms, liberalism has been like a jet propulsion engine which burns hot and bright for a short period before exhausting the seemingly vast reservoirs propelling it. For a time it was able to leave the bounds of earth – briefly “roving” about until the bounds of creation itself no longer limit the divine magnificence of its quest - but appears poised to come down to earth with the exhaustion of its pre-liberal philosophic and material inheritances. Whether it will be a controlled descent or a crash-and-burn rests, ironically, upon our capacity to decide that we do not possess complete and thoroughgoing control of our own destiny.