Hydrocarbons and the Illusion of Sustainability

**KENT A. KLITGAARD**

After fifty years, Paul Baran and Paul Sweezy’s *Monopoly Capital* has stood the test of time. Not only did it provide a lucid description of mid-century American society, but *Monopoly Capital* established a framework for analyzing events to come. Baran and Sweezy’s opus focused on the social and economic limits to growth and the realization of human potential in the post-Second World War era. The book synthesized a vast historical literature and introduced a generation of students to the works of major figures such as Thorstein Veblen, Evsey Domar, Michał Kalecki, and Josef Steindl, not to mention to classical Marxism. By bringing Marxian theory into their historical moment, they fomented many debates and encouraged the development of various perspectives, a legacy that has expanded to include analyses of the labor process, imperialism, finance, globalization, and the environment.

They elucidated a fundamental contradiction of the time. Capitalism is a system of self-expanding value that must continually accumulate, yet is confined by a social and institutional order that precludes rapid accumulation. This framework is especially useful for analyzing the fundamental problems of the twenty-first century. Among those crucial problems is the demise of the hydrocarbon economy. As the resources that provided the material basis of industrialization begin to run out, the effects on productivity, employment, international relations, global finance, and the climate are likely to be profound and potentially catastrophic. Consequently, we are not affected solely by society’s limits. We are also subject to the biophysical limits imposed by nature. How humanity adapts to these two sets of limits will be crucial in determining what “sustainability” might mean.

I was introduced to both *Monopoly Capital* and to the broader literature of the *Monthly Review* school as a college student in the early 1970s. The world was changing rapidly at the time. The Vietnam War raged while the economy suffered simultaneous inflation and stagnation. The security of my father’s unionized construction job was under assault by an aggressive open shop movement. In 1973, a CIA-backed coup deposed

**KENT A. KLITGAARD** is a professor of economics at Wells College. He is the author, with Charles A. S. Hall, of *Energy and the Wealth of Nations* (Springer, 2012).
democratically elected Chilean president Salvador Allende, and the global oil crisis followed a few months later. My political economy professors had predicted both the oil crisis and the coup. This gave their analyses instant credibility in my eyes, and those analyses were grounded in the ideas developed in *Monopoly Capital*.

Today, by contrast, the insulated position once held by dominant U.S. firms has given way to a more global oligopolistic rivalry. The reserve army of the unemployed has been globalized as well, with wages in many of the world’s rich nations stagnating for decades. Employment patterns in the West have shifted from manufacturing to services, and finance has come to dominate production in the leading capitalist nations. The rise of financialization, coupled with electronic technologies, created a financial crisis of a severity not seen since the 1930s, one that spread to all corners of the world. The locus of war has shifted from Southeast Asia to North Africa and the Middle East. Baran and Sweezy’s seventh chapter, on militarism and imperialism, stressed the struggle against socialism as a driving force of U.S. policy. That focus has changed, and now nearly perpetual war is waged on oil-producing nations in an attempt to maintain access to valuable resources.

Concerns over the quality of the environment and the cost of energy played a minor role in *Monopoly Capital*, yet today environmental degradation proceeds at an unprecedented pace. The twenty-first century will most likely be one that is energy-starved and climate-compromised. These biophysical limits will exacerbate the social and economic limits inherent in the capital accumulation process. Resource quality has been declining in the United States since the peak of discoveries in the early 1930s. In 1930 every unit of energy expended returned 100 units to society. By 2005 the ratio had dropped to 35 to 1 for the world and approximately 10 to 1 for the United States. Production of conventional oil in the continental United States peaked in 1970. While oil from the North Slope of Alaska disrupted markets when it came on line in 1977, the effect was short lived, as North Slope Oil peaked in 1989. Furthermore, Alaskan oil, along with other non-conventional oils such as deepwater, extra-heavy, and Canadian oil sands, are more expensive to acquire and refine than conventional oil.

After prices spiked in 2008 at $147 per barrel, the ensuing recession and reduced demand began to drive oil prices downward. In 2010 oil production companies developed new technologies that would allow them to recover oil from sources previously considered unreachable, such as shale. Given these new sources of supply, oil prices fell to around $27 per barrel in early 2011 and remain in the range of $40 per barrel in the
spring of 2016. While consumers may enjoy the lower prices, the decline in potential energy company profits has caused deep uncertainty in financial markets. Moreover, indications of the end of the “fracking boom” are already in evidence, as production in all the major “shale plays” has tapered off. The cost of producing a barrel of hydraulically fractured oil is approximately $60 per barrel. Selling prices below that level have not only limited production but have led to a mass exodus of drilling rigs from the nation’s shale fields.

Oil is not the only energy commodity to experience collapsing prices. Peabody Energy, the world’s largest coal company, filed for Chapter 11 bankruptcy protection in April 2016, burdened by debts from a failed merger and declining markets, as electricity generators have switched from coal to abundant natural gas. Coal prices have fallen by 60 percent since 2011, and production has declined from 1.2 billion tons to 895 million in the same period as the coal industry has eliminated over 31,000 jobs. The brief fossil fuel revival may dissipate as quickly as it arrived, leaving in its wake higher costs and fewer jobs as the march towards geological depletion continues.4

The Swedish chemist and Nobel laureate Svante Arrhenius, whose 1896 work on the greenhouse effect remains the basis for contemporary climate change research, referred to it as the emptying of coal mines into the atmosphere. As atmospheric carbon dioxide concentrations increase exponentially, climate effects are looming as additional limits to growth, and indeed, a planetary emergency. To keep the increase in global temperature to 2°C or less, we can emit no more than 1 trillion additional tons of carbon dioxide into the atmosphere. Emissions stood at more than 601 billion tons in mid-June 2016. To stay below the 2°C threshold would require a 2.7 percent annual reduction in global emissions until that goal is reached.

Instead, carbon dioxide concentrations continue to increase. Atmospheric concentrations of carbon dioxide at the Mauna Loa Observatory registered 408.90 parts per million by mid-April, a historic high. A recent paper in Nature predicts a 15-meter sea level rise by 2500, while the spring melt of the Greenland Ice has begun a month earlier than usual.5 Few climate scientists believe that the 2°C is attainable. Yet despite these dire warnings, global leaders could reach only the most tepid agreement at last year’s Paris climate meetings, all the while professing their commitment to sustainability.

The dilemma lies largely in the vague notion of sustainability itself. What exactly is to be sustained? If sustainability is defined as living within nature’s limits, then it must also mean a consistent decline in
production, consumption, carbon emissions, and fossil-fuel use. Perhaps if we were to begin now, we might preserve a planet something like the one we inhabit today. But for many in the wealthy nations of the global North and the elite of the global South, what must be sustained is instead capital accumulation. Marx had defined capital not as a thing, but as a process of self-expanding value, M-C-M'. From this perspective, a non-growing capitalism is a contradiction in terms. It would be a society deeply mired in perpetual depression, unemployment, and class conflict.

This profound contradiction is unsolvable within the framework of monopoly capitalism. A system already overrunning its limits cannot grow its way into sustainability, yet growth is integral to the sustainability of capital accumulation. Either capital accumulation can be sustained, or the planet’s biophysical systems can be sustained. How both can occur at the same time is a difficult, if not impossible, question to answer. If one listens to the spokespeople for the capitalist class, the message is consistent: sustainability can be achieved by a combination of entrepreneurial innovation, technological change, and resource substitutability. But such a position shows a systematic lack of understanding of how globalized monopoly-finance capitalism functions, the kind of insight that Baran and Sweezy provided half a century ago.

While capitalism as a system must grow to avoid depression and extreme unemployment, the system finds itself unable to grow rapidly and continuously in the monopoly era. The default position for a mature economy is not vibrant growth. Rather, the theory of monopoly capitalism holds that the normal state of monopoly capitalism is one of slow, if any, growth. In other words, the monopoly phase of capitalism tends towards stagnation.

The Theory of Monopoly Capitalism

The theory advanced in *Monopoly Capital* was based on the idea that the giant corporation had replaced the entrepreneurial firm as the representative entity in American business. The process of monopolization that began following the American Civil War still continues today. Instead of a new age of entrepreneurship and competition, concentration and centralization still dominate, interrupted only by periodic recessions, and returning with subsequent recoveries. The number of industries in which the top four firms control 50 percent of the market has increased from 5 to 185 since the mid-twentieth century. Gross profits of the top 200 U.S. corporations as a percentage of total gross profits in the U.S. economy have risen from less than 14 percent in 1950 to approximately 30 percent just before the financial crisis of 2008. Seemingly every day brings news of the latest merger or acquisition. In 2015 alone, the
Irish pharmaceutical company Allergan acquired Pfizer for $191 billion (subsequently cancelled in 2016 when the U.S. Treasury changed the tax laws); Vodaphone and Airtouch merged for $172 billion; Anheuser-Busch InBev (now a Belgian company) merged with SABMiller (now a British company) for $120 billion. In the United States, the value of mergers and acquisitions increased from $316 billion in 1985 to $2.38 trillion in 2015. Worldwide mergers and acquisitions rose from $347 billion to more than $4.5 trillion over the same period.

Recent evidence for a stagnant, slowly growing economy has come from a variety of sources. Mainstream economist Robert Gordon calculated the compound growth rate of the U.S. economy to be 1.9 percent per year. French economist Thomas Piketty notes that per capita world output has grown by only 1.6 percent since the Industrial Revolution. Even an architect of neoliberalism, Larry Summers, now proclaims that the U.S. economy has entered a period of secular stagnation. In April 2016, the International Monetary Fund (IMF) revised its estimate for world economic growth downward from 3.5 percent to 3.2 percent for 2016. Managing director of the IMF Christine Lagarde “warned that the recovery remains too slow, too fragile, with the risk that persistent low growth can have damaging effects on the social and political fabric of many countries.” The Japanese economy has been mired in stagnation for two decades. Empirical evidence, not just theory, suggests the normal state of globalized monopoly capitalism is stagnation.

Baran and Sweezy’s book provoked great controversy in the circles of Marxian political economy. The authors asserted that the arrival of the “monopoly stage of capital” had changed the fundamental value relations of capitalism. As far back as Theory of Capitalist Development in 1942, Sweezy expressed skepticisms about the tendency for the rate of profit to fall, while Baran developed the concept of economic surplus deployed in Monopoly Capital as a variant of surplus value in his 1957 Political Economy of Growth. Their thesis was that the tendency for the rate of profit to fall, a prominent part of Marx’s Capital, was driven by price competition amongst early industrial capitalists.

By the decades following the Second World War, conditions had changed. The cutthroat tycoon capitalism of the nineteenth and early twentieth centuries gave rise to co-respective behavior, price leadership, and the end of price competition among monopolized industries. Furthermore, the resurgent union movement forced large capital to share a portion of the aggregate surplus value with a segment of the U.S. working class. The tendency for the rate of profit to fall, Baran and Sweezy argued, would be replaced by a tendency for the economic surplus to
rise. Competition to reduce unit cost increased productivity, or the rate of exploitation, thereby reducing the cost of producing the surplus on the supply side. Competition to increase market share and create more customers expanded the demand side.

While Baran and Sweezy do not mention energy explicitly, the material basis of an economic surplus is a net energy surplus. Humans have been developing more powerful and efficient forms of energy since the Neolithic transition. Access to improved heat energy helped create the Bronze Age. When Europe was denuded of trees by the sixteenth century, its economies turned to coal. The first half of the age of oil was ushered in by the discoveries of commercial quantities of oil, first in Pennsylvania and later in Texas and many other parts of the world. The postwar period in which Baran and Sweezy wrote Monopoly Capital was a golden age of oil discovery and production. The United States was the world’s largest producer, and multinational oil companies still dominated the producing nations. Prices were low, and Americans had a seemingly endless thirst for cheap oil. The new fuels transformed production, consumption, and transportation, helping to enable the mobility and convenience of postwar life.

The combination of cheap and abundant fossil energy to power transportation, provide heat and electricity for home and industry, along with co-respective corporate behavior, led to a growing economic surplus. The inability to absorb that ever-growing surplus was the basis of stagnation. If spending outlets could not be found for the difference between the value of society’s output and the cost of producing it—especially the investment-seeking part of the surplus—economic growth would slow and perhaps decline. Surplus that was not absorbed today would not be produced tomorrow. Unabsorbed surplus left its statistical trace in the form of unemployment and excess capacity. In the middle chapters of Monopoly Capital, Baran and Sweezy provided a thorough overview of the surplus absorption process. In the broadest sense: surplus can be consumed, invested, or wasted.

It is because of this that mainstream notions of sustainability are incompatible with the logic of capital accumulation in the twenty-first century. Sustainability today would require a radical reduction in consumption. What would occur if the consumers of the rich world were to actually live within nature’s means by reducing, reusing, and recycling on a systematic basis? Consumption accounts for 70 percent of all economic activity in the United States, and disappointing sales portend future layoffs and declines in earnings. Reduced consumption, in a nutshell, would be a source of further stagnation and unemployment. Hence
the contradiction emerges. If consumers do not increase their spending, the economy stagnates, and unemployment and excess capacity increase. If consumer spending does increase, more resources are used, more pollutants are emitted, and atmospheric carbon concentrations grow, hurrying humanity towards a potentially catastrophic tipping point.

Since part of the surplus seeks investment, why could not market forces lead to a vibrantly growing economy? On this question, Baran and Sweezy rely heavily on the theoretical developments of Kalecki, Steindl, and Domar to explore the relation between economic expansion and excess capacity. Investment possesses a dual nature: it absorbs surplus directly, but also creates productive capacity. The stimulus of investment spending is short-lived, while the productive capacity is long-lived. Unused capacity depresses the operating rate, which reduces the profit rate and the incentive for future investment. At the beginning of the Great Financial Crisis, the automobile giant General Motors had the capacity to produce 18 million cars annually. However, they could sell but 12 million, prompting the potential for mass layoffs and plant closings. The only way employment could be partially maintained was to bail out the industry and extend the life of the fossil-fuel-gulping transportation system. Mainstream environmentalists who envision a seamless transition from the current hydrocarbon economy overlook both the economic and political power of large-scale multinational capital and the unwillingness of corporations to change path-dependent technologies for long-term investments that have yet to be fully amortized.

On a regular basis, if consumption and investment fail to adequately absorb the economic surplus, simply wasting it is one strategy to avoid stagnation. Baran and Sweezy devoted a considerable portion of Monopoly Capital to the problem of waste. The primary sources of waste, they argued, could be found in the military, an education system that robs youth of a future, and the sales effort itself. In fact, they rely heavily on the work of former advertising executive Vance Packard and his pioneering study of the advertising industry, The Waste Makers. Today the concept of waste should be extended to include patterns of energy production and energy consumption.

In an anonymously authored 1957 pamphlet on The Scientific-Industrial Revolution for the Wall Street firm Model, Roland and Stone, Sweezy wrote that “our country is richly endowed with conventional fuels and we have learned to use them efficiently.” Sadly, this is no longer the case. Our transportation sector, powered by gas-guzzling vehicles, displaces more rational and fuel-efficient public transit. Trucks have replaced trains to deliver most of the nation’s freight. The majority of liquid petroleum is
used for transportation. Even the new information economy depends on a backbone of nineteenth-century generation and transmission equipment. Most electricity is generated by burning fossil fuels—coal, natural gas, or oil—to boil water and create electricity in a steam turbine. Despite the growth of the wind and solar sector, renewables still account for less than 2 percent of the nation’s energy mix. Corn ethanol actually returns less energy to society than it takes to produce it.11

Reducing energy waste would affect not only transportation and production, but the prevailing, energy-intensive patterns of consumption, especially in the United States. It will be a difficult transition for those who have come to accept cheap energy and mindless consumption as a birthright. The question facing U.S. capitalism is whether the nation can reduce its wasteful energy consumption without increasing the size of the unabsorbed surplus and perpetuating the current state of stagnation.

**Hydrocarbons, Epoch-Making Innovations, and Monopoly**

Baran and Sweezy argued in *Monopoly Capital* that if stagnation is the normal state of monopoly capitalism, then an external force must account for economic growth. They assigned that role to epoch-making innovations. The theory of such transformative innovations was developed in the vibrant intellectual climate at Harvard University surrounding Joseph Schumpeter. His fundamental theory that innovations could change the nature of the accumulation process influenced not only Baran and Sweezy, but also pioneering ecological economist Nicolas Georgescu-Roegen, as well as Schumpeter’s great intellectual rival Alvin Hansen, who argued for the powerful role of the railroad and the automobile in counteracting the trend towards secular stagnation.12

Only three innovations are recognized as being epoch-making: the steam engine, the railroad, and the automobile. Epoch-making innovations absorbed surplus directly by creating large amounts of investment capital. Moreover, they indirectly spurred investment in myriad subsidiary industries. The automobile, for example, enabled highway construction, suburban housing, and therefore the forest products industry, repair shops, and shopping malls, to name but a few. The fast-food industry would have been impossible in the absence of the automobile. In the same anonymous pamphlet, Sweezy awards similar special status to the steam engine. The development of an efficient steam engine by James Watt opened the floodgates of mechanization. Changes resulting from the internal combustion engine and electricity simply continued the process opened up by steam.13

An additional criterion for an epoch-making innovation might be the transformation of the labor process. Andreas Malm argues that steam
replaced water in nineteenth-century manufacturing not because it was cheaper, but because it enabled British manufacturers to abandon the countryside, which contained not only the best water sources, but also recalcitrant rural workers. The alternative offered by farming made rural workers less willing to subject themselves to the discipline of the factory. The increased rate of exploitation achieved by the concentration of production in urban centers more than made up for the increased cost of raw materials.14

Following the same line of thought, Nicholas Georgescu-Roegen developed the idea of “Promethean innovations.” Promethean technologies permitted a qualitative transformation of energy (e.g., from the chemical bonds of hydrocarbons to mechanical work), and created the possibility of positive feedbacks. One of Georgescu-Roegen’s students, the ecological economist John Gowdy, terms them “species-altering innovations.” Only two innovations qualified for Promethean status: fire and the steam engine.

This raises an important point: all epoch-making and Promethean innovations in the modern era have depended upon fossil fuels. They can be sustained only as long as their fuel is forthcoming. Like the social relations of capitalism itself, Promethean innovations tend to undermine the material base of their own existence: natural resources and workers. Georgescu-Roegen respected Sweezy’s work, and the respect was mutual. Georgescu-Roegen’s essay “Energy and Economic Myths” represents an important connection between the social and biophysical limits to growth.15 In a 1974 letter to Georgescu-Roegen, Sweezy expressed admiration for the essay, but not without the kind of polite criticism that one colleague extends to another. Sweezy contended that Georgescu-Roegen had abstracted both ecology and economics from a broader social and historical context. He believed Georgescu-Roegen’s analysis implied a socialist revolution—though not one of the Soviet type—and was hopeful that considering ecological variables, as Georgescu-Roegen did, might also lead to a renaissance in Marxism itself.16

Behind the Industrial Revolution was a fossil-fuel revolution and a transformation of the labor process. If epoch-making innovations have fueled economic growth from a stagnant base, and hydrocarbons have fueled epoch-making innovations, then is it safe to say that hydrocarbons have played a significant role in producing prosperity? How long can this go on? We are now approaching the limits of fuel that could contain the extent of these innovations, as Georgescu-Roegen predicted. Does the limit to fossil fuels preclude another epoch-making innovation? Could decarbonizing the economy serve as an epoch-making innovation? A full appreciation of this prospect necessitates an understanding of both the
hydrocarbon economy and the logic of capital accumulation in the monopoly era. Certainly, decreases in energy quality and increases in the cost of energy by themselves will not make capitalists abandon the drive toward accumulation. While rising energy costs will mean less is left to pay for other things such as investment, conspicuous consumption, and the military, capitalists will still find ways to cut costs and increase market share, although this may become more difficult. Biophysical limits will exacerbate social limits to growth, but the logic of capital accumulation is not simply a function of energy. It therefore helps to understand that the evolution of the hydrocarbon economy and the evolution of monopoly go hand in hand. Such an understanding is embedded deeply in the works of Baran and Sweezy.

In 1938 Sweezy published his doctoral dissertation, *Monopoly and Competition in the English Coal Trade, 1550–1850*, which had won Harvard’s David A. Wells Prize. In it he linked the rise of the coal industry to the depletion of timber. The early industry was controlled by the mercantile Hostmen’s Guild, whose primary interest was restricting output and maintaining prices. As control passed to the large mine owners, the quest remained the same: to engage in co-respective behavior to limit price competition in order to restrict output and avoid the excess capacity that could cause cutthroat competition and reduced profits for all. Sweezy also acknowledged the important role played by the state to encourage or hinder competition. The railroad helped open up new areas of supply beyond the control of the large producers, thereby breaking their control of the London market and destabilizing the entire industry. Sweezy noted the concerted efforts of the coal industry to control labor in order to reduce costs. In chapter 10, the original version of the “kinked-demand” curve appears as a theoretical explanation for the problem of excess capacity.17 Many aspects of the analysis of the large corporation and oligopoly behavior that characterize *Monopoly Capital* were first developed here.

The case study for the development of domestic monopoly was John D. Rockefeller’s Standard Oil. The early Standard Oil Corporation ruthlessly practiced price-cutting in order to control the kerosene market, which Rockefeller did by the end of the nineteenth century. As Standard developed, its price-cutting practices were rendered ineffective as new discoveries, often outside the company’s control, created a nearly permanent glut in the oil market. Companies began to cooperate to manage output, often with the assistance of the state. Standard was able to adapt not only to the industry’s chronic overproduction, but also to the loss of market and the expansion of new ones. The invention of the electric light nearly destroyed the market for oil as an illuminant. It was only the invention
and expansion of the epoch-making innovation of the automobile that allowed Standard to survive and thrive. Standard was also instrumental in the evolution of the trust, whereby individual operating companies would sell their shares to a holding company to maintain profits by limiting overproduction.

Standard Oil appears as an early representative of the multinational corporation. Split into several operating companies by the Supreme Court in 1911, Standard not only worked out domestic market-sharing agreements, but was a crucial partner in many joint ventures to explore for oil and receive concessions in return for royalty payments in the Middle East and in Latin America. Vertically and horizontally integrated oil companies concerned with limitation of output to control overproduction produced far less than the host nations desired. (Baran and Sweezy present evidence to support the idea that despite the limitation of output, foreign operations were the greatest source of profits.) It was this arrogant and unilateral behavior of price-cutting, agreed upon by the major oil companies, that led to the formation of the Organization of Petroleum Exporting countries (OPEC) to wrest some control over the price of oil. In 1975, fresh on the heels of the October War and the Arab Oil Boycott, Monthly Review Press published a work by Joe Stark chronicling the role of multinational oil companies, and the historical resentment of colonialism, in the Middle East, and linking the behavior of oil multinationals to the emergence of permanent war.

Conclusion

At the end of his career, Paul Sweezy authored an article entitled “Capitalism and the Environment.” He argued that the process of environmental destruction was historical, dating to the emergence of monopoly capitalism, which was based on coal and steam railroads, and continuing into the era of petroleum and the automobile. He attributed the environmental problems of the early twenty-first century not solely to fossil-fuel consumption and industrial chemicals, but also to the system of capitalism itself. Despite the transformation from competitive to monopoly capitalism, the system remains one of the pursuit of private profit and accumulation to the exclusion of all other goals. Environmental movements have managed to constrain the worst excesses of capitalism, yet face power relations that limit their scope to reforms that cannot threaten the capitalist class.

In the end, to remain within nature’s limits, the size of the economy must shrink, not grow. But the capitalist system must expand, and resource use, carbon emissions, and pollution increase commensurately.
To absorb the economic surplus, consumption must be maintained. As rising energy prices increase the costs of production, profit-maximizing capitalists will turn elsewhere to reduce costs: to imperialism and to the further degradation of labor. To escape the social crises that this entails, the prevailing energy order must change. A system based on the fair distribution of use values, decent work, and production and consumption levels that remain within nature’s biophysical limits cannot occur without the abandonment of a social order based on profit and accumulation. Baran and Sweezy led the way in the advocacy of a system based on human need, a system of socialism. Such a system is the only basis for authentic and lasting sustainability.

Notes

2. After struggling through an irrelevant course on possessive individualism called Microeconomic Theory, I promised myself I would never take another economics class. Yet I found myself enrolled in one the next semester. Fortunately, my teacher, Will Cummings, introduced me to radical political economy. Moreover, he was the best teacher I ever had: the combination of an exciting subject matter and stellar presentation changed my mind about the relevance of economics. In the following semesters I took a political economy class from John Hardesty, who assigned Monopoly Capital. This was followed by Norris Clements’s Economic Development class, where I was introduced to dependency theory in the form of Andre Gunder Frank’s 1969 Capitalism and Underdevelopment in Latin America. In my final undergraduate year, I had the good fortune to take a labor history class from Clinton Jenkins, who assigned Harry Braverman’s Labor and Monopoly Capital in 1974, the year it was published. Clinton and Harry were personal friends, and Braverman actually taught our class for two weeks. I owe a great debt of gratitude to my undergraduate mentors and wish to acknowledge them on this important anniversary.
18. Italian oil magnate Enrico Mattei called the multinational companies that dominated world oil production (Exxon, Mobil, Chevron, Shell, BP, Gulf, and Texaco) the “seven sisters.”