

OIL:
THE BLACK SWAN OF CAPITALISM

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PRELUDE: THE OIL MENACE¹

America is addicted to oil.

– U.S. President George W. Bush²

Let me take this opportunity to outline what has been U.S. policy towards the Middle East and North Africa, and what will be my policy during the remainder of my presidency.

The United States of America is prepared to use all elements of our power, including military force, to secure our core interests in the region.

We will confront external aggression against our allies and partners, as we did in the Gulf War.

We will ensure the free flow of energy from the region to the world.

– U.S. President Barack Obama³

Oil has played a unique role in the economy and history of modern times. No other raw material has been so critical in shaping the destiny of nations, the development of military and global trade strategies, and relationships between countries. No other raw material has offered such great promises for improving the well-being of entire nations, promises which sadly remained unrealized, and which often turned into curses looming over their future. No other resource has had such a huge impact on the geography of our world, and the way our societies interact and are organized. More than any other raw material, then, petroleum has shaped our lives, and inevitably such a prominent role has made it the world's most controversial resource.

– Leonardo Maugeri, Belfer Center for Science and International Affairs⁴

Torrents of ink have been spilled trying to explain the significance of fossil fuels and, particularly, oil in human history. In fact, we seem to have reached a point in such history where the dependence from or, as George W. Bush more accurately put it, the addiction to oil and more broadly fossil fuels are posing an existential threat not only to human civilizations, but also to large parts of the biosphere. Naturally, the first and foremost question which needs to be asked is whose addiction are we talking about and, furthermore, what does this addiction signify in both cultural and evolutionary terms. In a word, what does our current predicament tell us about ourselves as a culture and, perhaps, as a species. Ultimately, these are the age old questions of who we are, what is our purpose, and where are we going. And while it is not my goal to provide an answer to such existential questions within the limited scope of this paper, I would nevertheless like to outline some possibilities if only to point to alternate solutions to what, by overwhelming scientific consensus, is the single most important and seemingly intractable problem of our time.

The reason why the problem seems so intractable is not because there are no solutions but, rather, that our current neoliberal market economy is structured in such a way as to prevent the

forceful implementation of the recommendations of the scientific community – the severe and immediate cut of global emissions of greenhouse gases (GHG). For this reason, and as I will try to demonstrate, the only credible path to effectively and rapidly mitigate catastrophic climate change is to rethink our economic priorities and, perhaps for the first time in history, engineer ex novo a global economic system that is ecologically just and sustainable.

Given this, the most pressing questions that need to be asked are: is such a change even possible? Are we as a species able to decide and enact such a radical planetary rearrangement of our economic priorities? If the answer is yes, as we are told it must be, what are the obstacles that stand in the way? Are these primarily economic, social or cultural? These are, once again, big questions which would be presumptuous to answer exhaustively in such a small setting. Still, if the history of science can be of any aid, it is to show that sometimes the simplest answers are the most difficult to unveil; and while we, as a species, have a tendency to come up with the most convoluted and/or phantasmagoric narratives to explain our mysteries, nature's logic seems instead rather simple and straightforward.

In this vein, I would argue that fossil fuels rather than being the culprit of our predicament are simply its most visible and recent embodiment. What I mean is that these natural resources did not simply pop out of the ground and begin to alter the ecosystems upon which we depend out of their own volition. Rather, they were exploited at a particular historico-cultural conjuncture for specific purposes by what was initially a voluntary act and later became a compulsion. In fact, the existence of oil, for one, was known long before the Industrial Revolution.⁵

The same can be said of technologies, the embodiment of specific cultural dispositions and tendencies crystalized into mechanisms (Sterne: 8). In themselves, they are neutral. A hammer, for example, can be used to build a house or to smash someone's head.⁶ In short, fossil fuels and their related technologies are not unlike the asteroid which possibly caused the extinction of dinosaurs

some 65 million years ago, thus making room for the small mammals which eventually led to humans. Rather, as Noam Chomsky poignantly wrote, it is we who are the asteroid (2014). Still, I would qualify this statement by saying that “the asteroid” is one of our socially constructed systems: namely, capitalism. Thus, it is my belief, along with many others that to explore the reasons behind our current predicament is to explain neoliberal corporate-state capitalism’s⁷ addiction to fossil fuels and, most importantly, the reasons why in order to end this dependency it is our economic system that must be reengineered. The good news is that unlike the primordial asteroid – which, differently than our economic system, was not a social construct – it is perfectly within our capabilities to eliminate the threat of the capitalist asteroid. The difficulty resides in overcoming those cultural systems which during the last several decades have constructed and reified The Market in order to justify and preserve specific socio-economic-political privileges (Ho: 32-3).

The main argument of this paper is that the existential threat posed by fossil fuels, coupled with the largely untold but no less felt devastation of the Second Great Depression (GDII),⁸ can also be viewed as a serious opportunity to move beyond an economic system that in less than three centuries has brought not only human civilization, but the entire biosphere to the brink of collapse. As such, I will argue that vis-à-vis capitalism, fossil fuels constitute what statistician and risk analyst Nassim Taleb termed a Black Swan event – a high impact event which has forced us to reckon with our role in the biosphere. The hope is that this reckoning will allow us to rethink capitalist relations before they irreparably compel us to disrupt the ecosystem upon which life on Earth depends. Yet, trying to guess at which one it will be is also beyond the feasible aim of this paper.

By capitalist relations I mean, as succinctly put by anthropologist Tania Li,

the ensemble of relations characterized by private and unequal ownership of the means of production (land, capital), a group of nonowners compelled to sell their labor, and the use of capital to generate profit under competitive conditions. Competition means that the owners of capital must seek profit to generate more capital to invest simply to reproduce themselves as they are, that is, as owners. To the extent they succeed, their accumulation squeezes others out, entrenching and sometimes deepening the unequal ownership with which the cycle began. (8)

In short, the “grow or die” imperative of capital (Baer: 47; Harvey 1990: 343-5; Klein: 21).⁹

In addition to demonstrating the applicability of Taleb’s concept to fossil fuels, I will show how their input into the economic process has been responsible for much of the growth of the past two centuries in the industrialized world and thus how their phasing out will require a certain amount of managed de-growth – something that is inherently incompatible with the logic of capital except for highly destructive crises (Foster 2009: 265). That we need to put on the breaks is also the thesis of Naomi Klein’s *This Changes Everything: Capitalism Vs. the Climate*. The book was released on September 16, 2014 as a companion to the Global Climate Convergence that accompanied the UN Climate Summit in New York City, USA (NYC) on September 23, 2014 with the intent to provide an exhaustive and thoroughly researched assessment of the climate crisis and, most importantly, of both existing and promising avenues of resistance. I think that it is important that such highly visible texts are discussed in the scholarly community in order to point out potential omissions and shortcomings. For this reason, and because this paper was primarily inspired by the events at the Convergence, I will engage at length with this text primarily vis-à-vis the avenues of climate redress.

By now, the question which may have arisen is: Why would a Ph.D. student in musicology write a paper on climate change? The simple answer is that I am a biological system first, a homo sapiens second, a scholar third, and a musicologist fourth. As a biological system I try to survive and perpetuate; as a homo sapiens, I try to envision possible futures and act in the present to bring them about; as a scholar, I have looked at enough research to understand that the survival of any species is dependent upon the preservation of its natural environment; and, as a musicologist, whose subject matter is utopian in nature, I believe that the seemingly impossible is actually probable if enough people put their minds to it.¹⁰ In short, the overwhelming scientific consensus tells us that catastrophic climate change is the most urgent problem of our time – with nuclear armaments being

close second – a problem that calls on humanity to morally engage regardless of persuasions, means or geographic locales.

It has been suggested (Hayes, Klein) that the abolition of slavery may provide some guidance in this regard. As we will see more specifically further along, it has been said that, like climate change, slavery was not just a moral issue but also an economic one, and that the rise of industrial capitalism set the stage that allowed the abolitionists to carry the moral argument forward. Ironically, two centuries of increasing inequality and economic instability have led many, beginning with Marx, to realize that capitalist relations have for the most part managed to recode domination and exploitation in different and less visible guises (Foster 2009: 50-1; Marx: 415-6, 682). This “combination of an ideology that stresses freedom with material relations that restrict it” is, in the words of Tania Li, “a distinguishing feature of capitalist relations” (6). It is this realization, coupled with the existential threat of impending climate disaster that compels a response. “We have reached a turning point in the human relation to the earth,” sociologist John Bellamy Foster states, such that “all hope for the future of this relationship is now either revolutionary or it is false” (2009: 7).

OF BIRDS AND PRIMATES

According to Nassim Taleb, a Black Swan “is an event with the following three attributes:

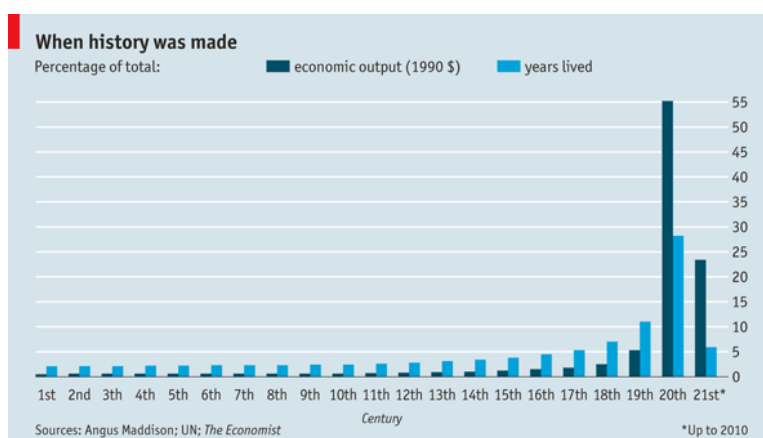
First, it is an *outlier*, as it lies outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility. Second, it carries an extreme impact. Third, in spite of its outlier status, human nature makes us concoct explanations for its occurrence *after* the fact, making it explainable and predictable. (*xvii-xviii*)

The corollary being that “the highly expected not happening is also a Black Swan” (*xviii*). Finally, according to Taleb’s cosmology, “a small number of Black Swans explain almost everything in our world, from the success of ideas and religions, to the dynamics of historical events, to elements of our own personal lives” (*xviii*).

The first thing we need to assess then is if oil can be construed as a Black Swan event by testing the applicability of its three attributes. First, is oil an outlier? Chart 1 below shows CE world

economic output (GDP) in relation to world population. The beginning of the Industrial Revolution is generally set to coincide with James Watt’s invention of the steam engine in 1776 in England which according to historian Barbara Freese is “perhaps the most important invention in the creation of the modern world” (Klein: 171). Taleb agrees and lists the steam engine as one of those unpredictable Black Swans that had an extreme impact on human history (172). Yet, according to Nicholas Craft of the London School of Economics “steam is seen to have had a relatively small and long-delayed effect on the growth rate of labor productivity” (19). This delayed effect is clearly visible in chart 1. There we can see how the 19th century – the period that saw the establishment of industrial capitalism in England and subsequently in Western Europe and the US – while seeing a doubling in terms of output compared to the 18th century, still accounted for roughly only 5 percent of total world output of the entire Common Era. To put it in historical perspective the growth, while definitely non-linear, was still within the scale of the preceding two centuries – roughly doubling every hundred years. Instead, in the 20th century we can observe a clear break with this previous quasi-geometric progression as it alone accounts for 55 percent of total CE output. In addition, the chart shows a complete reversal of the life/GDP ratio – also known as productivity. Thus, given that “the most important invention in the ... modern world” was only able to accomplish a doubling of world GDP in the ensuing 150 years, what else can account for the

Chart 1¹¹



unprecedented growth in the 20th century? Charts 2 and 3 below show world energy consumption – absolute and per capita, respectively – since the beginning of the Industrial Revolution. It is no coincidence that both energy consumption and economic output begin to take off in 20th century and then literally shoot upward beginning in 1950.

What Maugeri calls the “great revolution” – the birth of the oil industry – began in Titusville, Pennsylvania on August 28, 1859 when Ewin Drake, “a would-be ‘Colonel’ with no skill at all in geology or engineering,” was able to extract oil with a drilling machine (4). Yet, as seen in charts 2 and 3, oil only began to be the primary energy factor in the second half of the 20th century. Much of the growth in energy consumption in the previous half a century can for the most part be attributed to electrification, which took from 1880 to 1920 to be fully realized in the United States alone (Craft: 4). Charts 4 and 5 (next page) show the clear correlation between oil consumption, energy consumption, and real GDP.

Given such correlation, we can answer the question posited at the beginning of this section in the affirmative. Fossil fuels and oil in particular were clear outliers in world history since (a) their “discovery” had not been anticipated and (b) it took years after their rediscovery for their potential to be understood, let alone realized. In fact, if we consider that the existence of oil had been known since ancient Mesopotamia, we could say that it took millennia for that realization to happen. We

Chart 2¹²

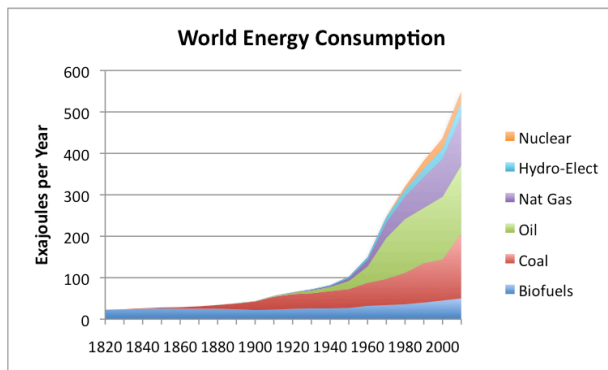
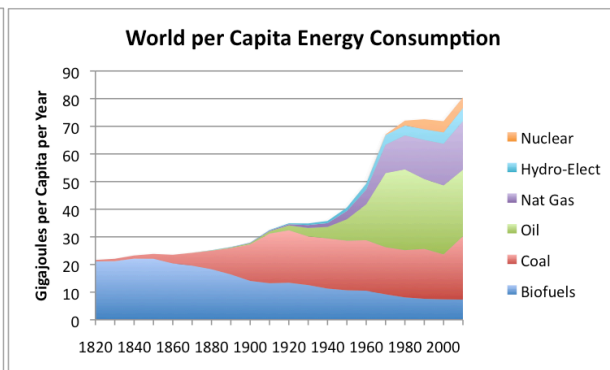


Chart 3



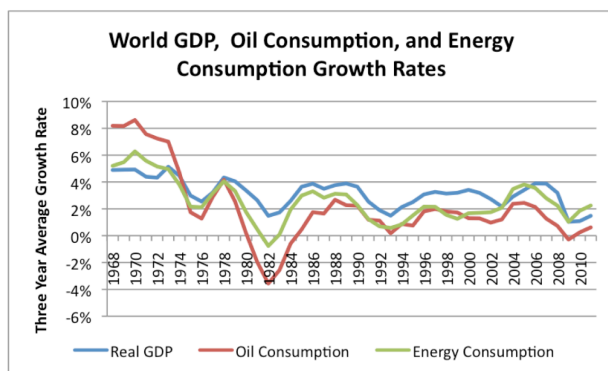


Chart 4¹³

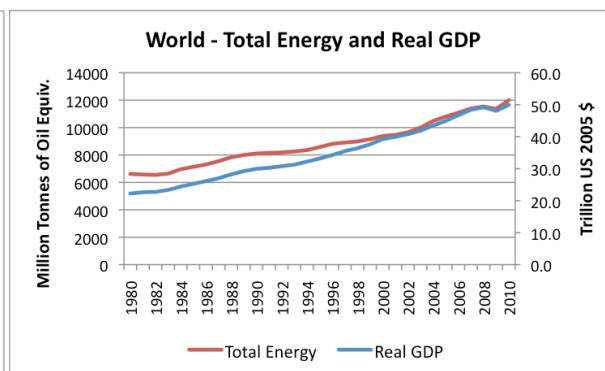


Chart 5

can also affirm that fossil fuels possess the second attribute of Black Swans – to carry an extreme impact – as they are clearly behind the unprecedented economic growth in the 20th century and the beginning of the 21st. The third and final attribute can be also corroborated by way of (b) above. As mentioned, while people today take fossil fuels largely for granted, such was not the case when they were discovered. In fact, as we will see, most fossil fuels were largely left unexploited for as long as the fuel currently in vogue was abundant and cheap.

Having demonstrated that the large scale exploitation of fossil fuels can be construed as a Black Swan event, it is now our task to define it as a negative type event – the opposite of what is constructed within the teleology of linear progress of certain modernist discourses (Ferguson, J.: 17).

A BRIEF HISTORY OF ENERGY

Up until the middle of 18th century, the primary source of fuel in Europe was charcoal. Although charcoal pollution was a serious problem in England and elsewhere, and although coal as a source of energy “was nothing new,” it was not until shortages of timber due to forest depletion created an industrial bottleneck that coal was seriously considered (Wallerstein, 26).¹⁴ Wallerstein continues,

Landes says, quite correctly, that the “use [of coal and steam], as against that of substitutable power sources, was a consideration of cost and convenience.” In seeking to explain why Darby’s method of coke smelting, invented in 1709, was not adopted by others in England for half a century, Hyde suggests the explanation was purely and simply “cost.” (26)

As much can also be said to explain the move from coal to oil a century later. Although coal pollution was plaguing industrial towns in Europe and the United States throughout the 19th century, oil, seemingly cleaner and more efficient, was not adopted until Drake developed his drilling machine in 1859 – later perfected in 1901 – which considerably lowered extraction costs (Maugeri: 5).

Here, given that this paper concerns itself primarily with fossil fuels and the energy derived from them, it is essential that we fully understand the latter's import. In economic terms, fossil fuels are raw materials. When they are used as an energy source for the production of commodities, they become what Marx calls an "accessory ... consumed by the instruments of labor" (288). Labor is "a process between man and nature, a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature" (283). As an accessory to labor, the function of energy in the capitalist mode of production is to increase labor's productivity. In a word, energy can be seen as a substitute for labor-power since with it, one person can produce something in less time that she could produce without it.¹⁵

Given what was said earlier on profit, as long as the cost of energy – which includes its extraction, refinement, transport and the development of the technologies to utilize it – is lower than the cost of labor-power per unit-output, capital will try to substitute the latter with the former in order to increase productivity. That energy plays such an important role in modern economy can be seen once again in chart 1 (6). Thus, it can be said that the dramatic increase in productivity during the 20th century is due primarily to the massive input of cheap and abundant energy. Yet, given that labor will always be necessary to some extent, capital's quest to minimize labor costs in order to increase profits – what Marx calls surplus-value (251) – is the primary reason why the capitalist system constantly drives technological innovation.¹⁶ In regard to the relationship between energy and productivity, economist Michael Hudson recently stated that "if, basically, every

country's GDP goes up in keeping with its energy consumption, you could say the rise in productivity for the last hundred years, throughout the whole Industrial Revolution, has been an increase in energy use per worker or energy use per unit of output. So it's the energy that's pushing it."¹⁷

Up to this point I have defined fossil fuels in sole economic terms interchangeably as an accessory to or a substitute for labor-power. Marxist philosopher Jean-Paul Sartre once wrote that "mankind came into possession of a source of accumulated energy derived from vanished vegetable matter; one might describe it capital bequeathed to mankind by other living beings. But at the same time every proprietor was eating away his own capital" (Sartre: 154).¹⁸ Here, Sartre equates fossil fuels with a specific kind of capital, what Marx called "primitive accumulation" (Marx: 873-6) and Adam Smith "previous accumulation" (Smith: 222). In Marxian theory, primitive accumulation is "an accumulation which is not the result of the capitalist mode of production but its point of departure" (Marx: 873). It involved "the forcible draining of men from the surface of the land" (848) which took place from 1760 to 1820 in England and later in continental Europe and the US. The pauperized laborers were then "left to support the tenant-farmer, the landowner; and the tithes of the Church" (Thompson: 217) and eventually "flocked to the towns where they emerged as an industrial proletariat" (Foster 2009: 235). It follows that when people were forcibly removed from the land, they were not only usurped of their rights to the land, but also those to what was beneath it.

When Sartre wrote that "every proprietor was eating away his own capital" vis-à-vis fossil fuels, he was specifically referring to Marx's notion that capitalist relations had produced an "irreparable rift" between human society and nature.¹⁹ In short, while capitalists understood their dependency on human resources (labor-power), and thus paid workers enough wages to sustain and reproduce themselves (Marx: 274-5), they failed to understand that the same logic applied to natural

resources.²⁰ This “metabolic rift,” as Foster puts it (2000: 155), corresponds to the beginning of “a new epoch in Earth history”— what some scientists have informally named Anthropocene (Steffen, et al.: 842). According to Steffen, et al., “the term Anthropocene suggests: (i) that the Earth is now moving out of its current geological epoch, called the Holocene and (ii) that human activity is largely responsible for this exit from the Holocene, that is, that humankind has become a global geological force in its own right” (843).

In sum, what I hope to have shown with this brief historical account – in addition to defining the function of energy within the capitalist mode of production – is that the present historical conjuncture was primarily brought by the combination of capitalism’s expansionist profit motive, its capacity for technological innovation, and its myopic disregard for the consequences of its extractivist exploitation of natural resources.

EXTERNALITIES: THE HIDDEN COSTS OF “FREE MARKETS”

Things are not much different today, greenwashing²¹ by the fossil fuels industry notwithstanding. Regardless of such public relations posturing, it is clear that the industry and its political insiders at various levels of government are doubling down on the use of fossil fuels without any consideration for either short or long term environmental effects. The resurgence of coal use in China, soon to be nuclear free Germany, and other parts of the world in the beginning of the 21st century – which can be seen in charts 2 and 3 above (7) – should put to rest the argument that the industry and their political attaches have any real concern for the sustainability of the ecosphere (Klein: 136-9). “Since coal’s many externalities are not included in its price, even in countries with a carbon tax, it often remains a cheaper option,” writes J.P. Morgan Asset Management’s Michael Cembalest (10). As it was said, in a world view where everything is commodifiable, profit is paramount. A 2011 UN-backed study has estimated the externalities of the top 3,000 businesses in the world at almost US \$2.1 trillion annually (WWF: 88).

If that was not enough, Klein tells us how the reserves of fossil fuel companies are already factored in their stock prices. This means that investors expect such reserves to be used given that they have already paid for them. In addition, energy companies are expected to have a “reserve-replacement ratio” of 100 percent, meaning that their reserves are expected to be equal to the amount currently in production. In 2011, the Carbon Tracker Initiative calculated that the current amount of such reserves is 2,795 gigatons of carbon (1 gigaton is 1 billion metric tons). Yet according to a 2013 IPCC Assessment Report, if we do not want to exceed a warming of more than 2 degrees Celsius (3.6 degrees Fahrenheit) by the end of the century – the nonbinding target set by the major polluting governments in Copenhagen in 2009 – the amount of carbon that can be safely absorbed by the biosphere between 2011 and 2049 is only 565 gigatons, a 5 to 1 ratio (Klein: 146-8). Because the goal of capitalist relations is the maximization of profit, capital has strong incentive to externalize costs – the lower the cost the higher the profit.

This truism could not be more evident than in the case of environmental pollution. As discussed in the previous section, increasing costs due to scarcity was the primary reason that made the industry switch from charcoal to coal and from coal to oil. In fact, the increased use of natural gas during the 1970s – see charts 3 and 4 above (7-8) – and the car industry’s research into more efficient vehicles during the 1980s can be attributed to the major oil shortages experienced by industrialized countries during and after the 1973 OPEC oil embargo. As seen in chart 6 (next page), raising costs were, as it should be expected, the determining factor which spurred technological innovation. Yet, in case someone may be tempted to interpret the 2006 spike in the chart as a hopeful sign, this is what Ryan Carlyle, Subsea Well Intervention Engineer at Chevron, has to say:

Except for a minuscule number of electric-powered vehicles, you can’t move anything anywhere faster than about 25 mph without oil. You can’t operate a modern military, and you can’t run a modern economy. There is no doubt in my mind whatsoever that **modern civilization would collapse in a matter of months if oil stopped flowing.**

...

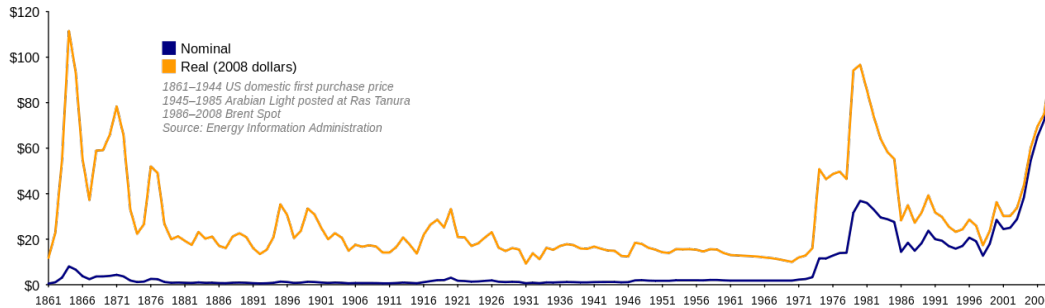


Chart 6²²

Unfortunately, that scale makes it next-to-impossible to technologically disrupt the oil industry. This is going to make some people mad, but it's reality. Not only is oil/gas critical *now*, but there are *no viable replacements in our lifetime*.²³ (original emphasis)

Cembalest concurs: “150 years after the oil age began, the global economy is inextricably dependent on oil and natural gas, and actually increasing its dependence on coal” (12). In sum, although spikes in oil prices have indeed spurred technological research in fuel efficiency and alternative fuels, this will not stop the industry from continuing to burn fossil fuels for as long as they are economically viable.²⁴ In fact, Foster tells us, that according to a phenomenon known as the Jevon’s Paradox, “efficiency gains under a capitalist economy result in further accumulation and economic expansion, with the increase in scale typically overwhelming gains in efficiency” (19). In addition higher prices, what we had until very recently, simply translate into bigger profits for the industry since, as Carlyle points out, we are apparently locked into a fossil fuel economy.

Even when costs are to a certain extent retroactively factored in – as in, for example, the 2010 BP oil spill in the Gulf of Mexico – because the penalties are only a fraction of the companies’ bottom line, such penalties tend to be written off simply as the cost of doing business rather than as an incentive to change business model.²⁵ In fact, according to Klein “oil and gas companies remain some of the most profitable corporations in history ... because they have dumped the cost of cleaning up their mess onto regular people around the world” (111). In addition, as the cleanup is left to the polluters themselves, there is mounting evidence that the chemicals used in the process,

such as those used by BP in the Gulf, are actually compounding rather than ameliorating the problems they initially caused (430-2).

I have used the expression, but what exactly is an externality? It is a neutral sounding term which has become common in environmental economics to describe the unaccounted environmental costs and benefits of economic activity (Baer: 171). The concept originated with economist Henry Sidgwick (1838-1900) and was later generalized by Arthur Pigou (1877-1959), who concluded that “markets are inefficient whenever externalities are present” (Clark: 275; Helbling). This is an important concept particularly in today’s neoliberal economic environment – the current incarnation of neoclassical economics – where markets are seen once more as the most efficient regulators of economic activity and allocators of resources (Wolff and Resnick: 61). In this regard, scholars have deconstructed the notion of the “free market” by showing how “market ideology in the West is intimately tied to British and American notions of individualism, property, and neoclassical economics” (Ho: 33). In particular, in her ethnography of Wall Street, Karen Ho has convincingly demonstrated how contemporary neoclassical economists have appropriated classical notions of private property and individual ownership and ill-fitted them onto the modern institution of the public managerial corporation in a manner that distorts Adam Smith’s original conception in order to mythologize and fetishize the notion of shareholder value (172-6). The result is what she calls “neoclassical virtualisms, where the fetishization of theoretical models, such as the market logics of invisible hands, obscures the actual daily practices of Wall Street investment banks” (241). In the real world, outside of the neoclassical reductive “virtual reality” (35), there instead exist “complex and unaccounted for extra-market effects” (Wolff and Resnick: 253). In regard to the environment, one such effect is pollution, which as early as 1920 Pigou – a neoclassical economist nonetheless – suggested should be taxed “an amount equivalent to the cost of the harm to others” by government (Helbling).²⁶

THE GREAT TRANSITION

One of the most recent and important contributions to the literature identifying capitalist relations as the primary obstacle to effectively addressing the climate crisis is Naomi Klein's *This Changes Everything*. As mentioned, the book release was timed to coincide with the People's Climate March, "the largest climate march in history" according to its sponsoring website, with 2,646 events in 162 countries scheduled around the U.N. Climate Summit which took place on September 23, 2014 in New York City. According to the organizers, the September 21 NYC march alone drew an unprecedented 400,000 participants.²⁷ Because of the publicity the book received and the importance of its message – *The New York Times*' Rob Nixon described it as "the most momentous and contentious environmental book" since Rachael Carson's *Silent Spring*²⁸ – it is worth spending a few words highlighting and exploring in depth the author's most original contributions.

One of Klein's interesting discoveries was made while attending several conferences sponsored by think tanks²⁹ funded by the fossil fuel industry where she had a chance to talk to numerous climate change deniers.³⁰ It was then that she had the startling epiphany that, unlike most mainstream environmental groups and so-called political centrists³¹ who preach "green capitalism" and "sustainable growth" – the idea that the capitalist expansionist model can coexist with ecological sustainability – and piecemeal incremental reform, climate change deniers seem to have a much better grasp of the implications of climate science:

when it comes to the political and economic *consequences* of those scientific findings, specifically the kind of deep changes required not just to our energy consumption but to the underlying logic of our liberalized and profit-seeking economy, they have their eyes wide open. The deniers get plenty of the details wrong (no, it's not a communist plot; authoritarian state socialism, as we will see, was terrible for the environment and brutally extractivist), but when it comes to the scope and depth of change required to avert catastrophe, they are right on the money. (43-4)

Not only capitalism must be rethought according to Klein – along with Baer, Foster (2000, 2009), Williams and many others – but this must be accompanied by a realignment in world human consumption. This realignment is what some economists have termed "The Great Transition"

(89).³² Yet, for this transition to be equitable, it is those regions who have had a head-start on polluting – the industrialized Global North – who must pay the heaviest penalties in terms of emissions and consumption. In addition, those regions who have suffered the brunt of extractivist environmental degradation and depredation and who have either been held back or pushed back – namely, the Global South – must be allowed to catch up with industrialized nations with considerable support from the latter. In this regard, some environmental researchers have developed a framework for an equitable approach to global emission reductions called the “Greenhouse Development Rights” (417).³³ Furthermore, within the Global North, cuts must also be distributed progressively, beginning with those economic strata who have benefited the most from the fossil-driven expansion of the last 200 years. Thus, according to emissions specialist Kevin Anderson, deputy director of the Tyndall Centre for Climate Change Research in the U.K., “it is a matter of the well-off 20 percent in a population taking the largest cuts.” In a word, “the truth is that if we want to live within ecological limits, we would need to return to a lifestyle similar to the one we had in the 1970s, before consumption levels went crazy in the 1980s” (Klein: 91).

The question is then, what are the chances that the world’s top 20 percent, the very sectors responsible for the colonization and exploitation of every continent on Earth and whose wealth and power is still predicated on such primitive accumulation, would voluntarily subject themselves to such radical realignment of global economic priorities and power? The simple and honest answer is: zero. It was delivered by US President Barack Obama, the contemporary embodiment of transnational capital’s Repressive Global Apparatus (RGA),³⁴ at the 2009 U.N. climate summit in Copenhagen where he brokered a modest nonbinding agreement among major polluting governments to keep temperatures increases within 2 degrees Celsius. Klein writes that

this well-known target, which supposedly represents the “safe” limit of climate change, has always been a highly political choice that has more to do with minimizing economic disruption than with protecting the greatest number of people. When the 2 degrees target was made official in Copenhagen, there were impassioned

objections from many delegates who said the goal amounted to a “death sentence” for some low-lying island states, as well as for large parts of Sub-Saharan Africa. (12)

On the last night of the summit, Klein recounts, one of the most prominent climate justice activists in Britain broke down and “began to sob uncontrollably” as he repeated “I really thought Obama understood.” For Klein this “was the moment when the realization truly sank in that no one was coming to save us” (11-2).

REALITY CHECK

The primary reason why hopes were dashed in Copenhagen and will most likely be dashed this month in Lima, Peru – the site of this year’s UN Climate Conference – is that “international relations” follow “fundamental social relations” (Gramsci, 176). Not only are our fundamental social relations capitalist and thus exploitative and extractivist in nature but, unlike the half a century when New Deal Keynesian economics prevailed after the debacle of speculative finance capital on October 29, 1929, we now find ourselves in an economic, political and ideological climate – particularly in the US – in many ways similar to the one that preceded that fateful day in October (Harvey 1990: 192-7).³⁵ It is thus no coincidence that the resurgence of neoclassical economics has been accompanied by the return of neoimperial politics. The point being, once again, that we cannot expect international relations of domination and conquest to change until we change the underlying social relations that generate them in the first place. In a word, to expect that the dominant social relations will somehow generate politics that can put those very relations into question is not only naïve, but outright reckless. “In studying a structure,” Gramsci writes, “it is necessary to distinguish organic movements (relatively permanent) from movements which may be termed ‘conjunctural’ (and which appear as occasional, immediate, almost accidental)” (177). “A common error in historico-political analysis,” he continues, “consists in an inability to find the correct relation between what is organic and what is conjunctural. This leads to presenting causes as immediately

operative which in fact only operate indirectly, or to asserting that the immediate causes are the only effective ones” (178). Within this framework, I will spend the remainder of the essay to the evaluation of current strategies of resistance, as outlined by Klein, with the assumption that “no society breaks down and can be replaced until it has first developed all the forms of life which are implicit in its internal relations” (177). It follows that effective transformative politics are predicated upon the realization that it is those internal relations that must be transformed.

Most analysts believe that fossil fuel companies, like tobacco companies before them, are going to have to be compelled by law to pay for the past and present environmental and social costs caused by their extractivist business model. In this regard, Klein tells us how finance capital understands that such day of reckoning may be on the horizon (112). The problem is that to hold the precedent of the tobacco companies as an example may not bode well for the future. While big tobacco was forced to pay hefty fines in the U.S. and other developed nations and its operations were somewhat curtailed in those countries, its freedom to operate in much of the rest of the world was left substantially intact. The lesson of tobacco is that a weak international regulatory system can allow transnational corporations to simply shift their business priorities to locales where they can operate more freely. As mentioned, the occasional penalties incurred such as those in the US – as seen in the case of BP – are easily written off as the cost of doing business.

In *Tobacco Capitalism*, anthropologist Peter Benson documents how “tobacco companies have continued to profit at home and abroad in spite of social awareness about health risks” (24). After all that has been said and done to account for the externalities of the tobacco industry, “tobacco remains the seventh most valuable agricultural commodity in the United States” (1). This is because, Benson argues, the neoliberal

ideology of individual responsibility that has been largely constructed by industries like tobacco (think also of beer commercials that instruct consumers to “drink responsibly” as another of the countless examples) combines with increasing levels of corporate philanthropy to further underwrite the notion that harm and misfortune are basically personal or domestic problems, not fundamentally linked to efforts on the part of

industries and comparatively advantaged groups to evade being responsible for historical, social, and medical burdens.

The pervasive depiction of smoking in contemporary Hollywood fare – a bona fide Ideological Global Apparatus (IGA)³⁶ – and the related steady increase of smoking worldwide do not speak well for a regulatory approach.³⁷ Moreover, the regulatory agencies that were involved in the fight against big tobacco during the 80s and 90s were still somewhat more responsive than their current iterations vis-à-vis fossil fuels. In this regard, Klein documents, fossil fuel companies

are so profitable that they have money not just to burn, but to bribe – especially when that bribery is legal. In 2013 in the United States alone, the oil and gas industry spent just under \$400,000 *a day* lobbying Congress and government officials, and the industry doled out a record \$73 million in federal campaign and political donations during the 2012 election cycle, an 87 percent jump from the 2008 elections. (149)

Throughout her book, Klein shows, implicitly, how Big Oil is already following the playbook of Big Tobacco. This model of corporate response to social and governmental critique has been clearly subdivided into three phases by Benson. Phase 1 – Denial: as the scientific consensus mounts, deny that a problem exists and cast doubt on the science by sponsoring studies countering the consensus and funding nongovernmental organizations. Phase 2 – Acknowledgement: admit that there is some validity to the critique but try to limit liability to symbolic gestures such as creating “safer” products. Phase 3 – Crisis Management: try to limit full internalization of externalities by appropriating the critique and discourses of oppositional movements in order to shape and minimize the impact of regulation. This third phase can include reframing externalities in terms of consumer responsibility and shifting more harmful operations to locales with weak regulatory systems where the entire script can be replayed if necessary (43-6). In sum, given that by Klein’s own admission oil and gas companies are “some of the most profitable corporations in history” (111) and that – as both Thomas Ferguson and, more recently, Gilens and Page demonstrate³⁸ – she who pays the piper calls the tune in money driven political systems such as the US (Ferguson, T.: 347-57), what hope is there but for an exact replay of the tobacco script, perhaps with even less positive outcomes?

BLOCKADIA AND THE CASE FOR ABOLITION

It is here that Klein resorts to the moral card of bottom-up social resistance. Given that voluntary industry-driven effective reform is extremely unlikely in the current conjuncture and that regulatory and political bodies are literally bought and sold by large corporate interests,³⁹ one of the most inspiring and promising aspect of Klein's research is her lengthy and forceful portrait of "Blockadia," what some have started to call the new climate warriors (293-336). In her own words, "Blockadia is not a specific location on a map but rather a roving transnational conflict zone that is cropping up with increasing frequency and intensity wherever extractive projects are attempting to dig and drill, whether for open-pit mines, or gas fracking, or tar sands oil pipelines" (294-5). These new climate warriors "do not look much like your typical activist, nor do the people in one Blockadia site resemble those in another. Rather, they each look like the places where they live, and they look like everyone: the local shop owners, the university professors, the high school students, the grandmothers" (295).

Unlike so many of their predecessors, who've spent years imagining the climate crisis through the astronaut's eye view, these activists have dropped the model globes and are getting lower-case earth under their nails once again. As Scott Parkin, a climate organizer with the Rainforest Action Network, puts it: "People are hungry for climate action that does more than asks you to send emails to your climate-denying congressperson or update your Facebook status with some clever message about fossil fuels. Now, a new antiestablishment movement has broken with Washington's embedded elites and has energized a new generation to stand in front of the bulldozers and coal trucks." And it has taken the extractive industries, so accustomed to calling the shots, entirely by surprise: suddenly, no major new project, no matter how seemingly routine, is a done deal. (296)

These tactics plays on the idea "stranded assets"— that is, to make the extraction of the current fuel reserves uneconomical (Hayes).⁴⁰

Blockadia shows up in the Greek village of Ierissos against Canadian mining company Eldorado Gold (Klein: 296-8); in the Romanian town of Pungesti against oil giant Chevron (298); in the Canadian province of New Brunswick against fracking by SWN Resources (299); all over the British countryside against the U.K. government's "dash for gas" (299-300); aboard Greenpeace's *Arctic Sunrise* against drilling in the Russian Arctic (300); in Inner Mongolia against the Chinese

government's plan to turn the region into its "energy base" (300); in New South Wales, Australia against coal mining (300-1); in Queensland, Australia against the endangering of the Great Barrier Reef by a planned coal port expansion (301); and, most famously, all over Canada and the United States against TransCanada's proposed Keystone XL pipeline, which would carry bitumen from the Alberta tar sands in Canada to Texas (301-3).

That the strategy of Blockadia is producing some tangible results can be seen in the fact that ExxonMobil's shareholders, for example, have recently demanded that the company reports on its exposure to the risk of stranded assets (Hayes). Yet, lest we romanticize the battle between Blockadia and Big Oil and thus risk overestimating the potential of those who are standing on the frontlines without much of a rear guard to support them, we shall also heed the warning of anthropologist Tania Li when she exhorts activists to beware of constructed and idealized notions of indigenous people "securely attached to their land and communities" (3, 164-5).

The ultimate and most powerful argument aimed at buttressing Blockadia's rear guard in the fight for climate justice is made by both Klein and Hayes when they draw an analogy between 21st century climate warriors and 19th century slavery abolitionists. Although Hayes and Klein steer clear of any entangling moral equivalencies,⁴¹ both authors agree that "while not equivalent, the dependency of the U.S. economy on slave labor – particularly in the Southern states – is certainly comparable to the modern global economy's reliance on fossil fuels" (Klein: 456) – what Hayes calls a "resource curse" or the "overreliance on a resource ... that stunts economic diversification and development." As is to be expected within a neoliberal ideological framework, Hayes's argument is primarily one of political economy. By tapping into the protestant ethic of deferred gratification, his goal it to convince readers (and the investor class more specifically) that beyond petroleum lies a potential for growth greater than in the current fossil fuel economy. Klein, on the other hand and as I have shown, while making a similar argument for the economic potential of a green economy also

does not shy away from outlining the painful realities that lie ahead for the top 20 percent of the population (i.e. the investor class). In addition, while refraining from moral equivalencies, she also stresses the parallels between the moral argument of abolitionists and the moral argument of climate activist when she writes that “the task is to articulate ... an alternative worldview to rival the one at the heart of the ecological crisis-embedded in interdependence rather than hyper-individualism, reciprocity rather than dominance, and cooperation rather than hierarchy.” Ultimately, Klein sees the climate justice struggle as a symbolic point of confluence of all living social and economic justice movements – “a rushing river fed by countless streams, gathering collective force to finally reach the sea” of human liberation (458-63).

POSTLUDE: THE BIG COW IN THE ROOM⁴²

In *This Changes Everything*, Naomi Klein goes to great lengths to show the environmental hazards related to capitalism’s addiction to fossil fuels as well as many promising avenues of addressing the climate crisis. Perhaps the biggest shortcoming in an otherwise outstanding and comprehensive work is the puzzling omission of the extent to which the energy intensive livestock industry and, by implication, the animal based diet is a major contributor to this crisis.⁴³ A 2014 study by Rob Bailey, et al., has concluded that “livestock production is the largest global source of methane (CH₄) and nitrous oxide (N₂O) – two particularly potent GHGs” (6). This amounts to 14.5 percent of total global GHG emissions (2). In addition, livestock production has negative impacts on land use,⁴⁴ soil conservation, water consumption,⁴⁵ biodiversity, human health and overall global food security (12-4). Most importantly, CH₄ “is 64 times more powerful than CO₂ in terms of climate change potential over 20 years and 23 times more powerful over 100 years” while N₂O “is 296 times more powerful than CO₂ over a 100-year period and remains around for 120 to 150 years.” The good news is that, unlike CO₂ which “has a removal time of more than 100 years,” CH₄’s removal time is only about 10

| US data on emissions from food consumption | |
|--|--|
| Type of diet | Annual emission per person from food consumption (tCO ₂ -eq/year) |
| Omnivorous diet | 3.8 |
| Mostly vegetarian diet | 3.0 |
| Vegetarian diet | 2.7 |
| Vegan diet | 2.0 |

Source: http://www.conservation.org/act/live_green/carboncalc/pages/methodology.aspx

Table 1⁴⁶

years (Baer: 18). The not so good news is that according to current dietary trends CH₄ and N₂O emissions will “more than double by 2055 from 1995 levels” (Bailey, et al.: 6). For this reason, anthropologist Hans Baer writes that “one important climate change mitigation would be a strong shift in food production away from a heavy reliance on meat, particularly livestock, to organic farming, vegetarianism, and even veganism” (240).

Given the evidence, it is not clear why Klein, along with most mainstream environmental groups, would be silent on this issue as if it is easier to imagine the end of capitalism than the end of the consumption of animals.⁴⁷ After all, a drastic and immediate demand-driven reduction of livestock consumption would give us precious time to continue to address the structural foundations of the fossil fuel economy while meeting some of the short term cuts in emissions demanded by science.⁴⁸ Furthermore, the clear benefits of reducing GHG (see table 1 above) – particularly given CH₄’s short removal time compared to that of CO₂ – promoting veganism would go a long way towards articulating the “alternative worldview” of interdependence, reciprocity and cooperation that in Klein’s view is essential to countering neoliberal extractivist discourses. In this regard, sociologist David Nibert writes that “the exploitation of other animals and the justification of their mistreatment not only closely resemble human oppression but are inextricably tied to it.” “Such oppression,” he continues, “is motivated primarily by economic interests and ... it is profoundly and permanently entwined with human oppression of other humans” (3). In sum, the “unfinished

business of liberation” that Klein and all of us aspire to (458-9) will not be finished until not only humans but all sentient beings are set free.

Notes

¹ This paper was primarily inspired by attending a series of panels sponsored by Monthly Review and the International Socialist Organization at the Global Climate Convergence at St. John's University in New York City on September 22, 2014 and thus would not have been possible without the important work of John Bellamy Foster, Fred Magdoff, Ashley Smith, Michael Schwartz, Martin Vilela and Chris Williams.

² Bush, George W., "State of the Union Address by the President," United States Capitol, Washington, D.C., January 31, 2006 (<http://georgewbush-whitehouse.archives.gov/stateoftheunion/2006/>).

³ Obama, Barack, "Remarks by President Obama in Address to the United Nations General Assembly," United Nations, New York, New York, September 24, 2014 (<http://www.whitehouse.gov/photos-and-video/video/2013/09/24/president-obama-addresses-united-nations-general-assembly#transcript>).

⁴ Maugeri 2008, *xi*.

⁵ Maugeri tells us how "petroleum derivatives have been exploited since the emergence of human civilization particularly in ancient Mesopotamia, and elsewhere in the Middle East, where a primitive but significant oil industry supplied asphalt for building roads, mastic for waterproofing ships, architecture, and hydraulics, as well as essential components for many medicines and treatments" (3).

⁶ *Noam Chomsky on Technology & Learning* (<http://learning-reimagined.com/noam-chomsky-on-technology-learning>).

⁷ Capitalism's current incarnation in the richest and most powerful nation on the planet is the de facto world economic system notwithstanding its many localized flavors.

⁸ I tend to prefer this definition to the more common Great Recession because while the economic recession of 2007 has ended in technical terms in 2009, at least officially, the depression resulting from it has not (DeLong). The fact that GDII is not as severe as GDI is primarily to be attributed to the much greater share of the economy occupied by the U.S. government, roughly three times what it was in 1929 (Alperovitz: 119).

⁹ The inner logic of capital was uncovered by Marx and expressed in the M-C-M' formula where M' is M+ΔM. The ΔM is capital's growth factor which is what sets and keeps the system in motion.

¹⁰ Cultural anthropologist Margaret Mead has been cited saying something to this extent.

¹¹ Source: <http://www.economist.com/blogs/graphicdetail/2012/06/mis-charting-economic-history>.

¹² Charts 2 and 3: <http://ourfiniteworld.com/2012/03/12/world-energy-consumption-since-1820-in-charts>.

¹³ Charts 4 and 5: <http://ourfiniteworld.com/2012/10/25/an-economic-theory-of-limited-oil-supply/comment-page-2>.

¹⁴ Foster tells us that as early as 1661 John Evelyn (1620-1706), one of the founders of the Royal Society in England and the preeminent conservationist in 17th century England, authored the work *Fumifugium: Or, the Inconvenience of the Aer and Smoake of London Dissipated* (1661), which he presented to Charles II, decrying London's pollution from charcoal fumes.

¹⁵ To put it in perspective 1 barrel of oil (159.9 L) equates to roughly 25,000 hours of human labor. At the current price of \$63 a barrel it equate \$0.0025 per hour of labor.

¹⁶ Capital's dependency on technological innovation is nicely summarized by Rifkin when he writes that "the coming together of coal-powered steam technology and the printing press gave birth to the first industrial revolution. It would have been impossible to organize the dramatic increase in the pace, speed, flow, density, and connectivity of economic activity made possible by the coal-fired steam engine using the older codex and oral forms of communication" (xxx).

¹⁷ *President Putin Pledges to Increase Trade with China and Asia to Rebuke Sanctions*, The Real News Network, November 14, 2014 (http://therealnews.com/t2/index.php?option=com_content&task=view&id=31&Itemid=74&jumival=12648).

¹⁸ I discovered this quote in Klein (176).

¹⁹ Karl Marx, *Capital*, Vol. 3, as cited in Foster (2000: 155) and Klein (177).

²⁰ In *Marx's Ecology* Foster shows how Marx was very much aware and concerned of the environmental consequences of soil depletion.

²¹ The corporate appropriation of environmentalism without an attendant set of sustainable practices or environmental objectives (Benson: 157).

²² Source: http://en.wikipedia.org/wiki/1973_oil_crisis.

²³ Source: <http://www.forbes.com/sites/quora/2013/04/03/what-are-the-top-five-facts-everyone-should-know-about-oil-exploration>.

²⁴ In this regard Klein painstakingly shows how many of the claims and financial pledges by the likes of Richard Branson towards the development of clean fuels are for the most part publicity stunts (230-55).

²⁵ BP reached a settlement of \$4.5 billion with the U.S. government in 2012. After factoring in the penalty the company's profit for 2013 was still \$11.6 billion (BP, Annual Report and Form 20-F 2012, 25, http://www.bp.com/content/dam/bp/pdf/investors/BP_Annual_Report_and_Form_20F_2012.pdf). Thus the penalty amounted to slightly more than a mere quarterly profit for that year. More of an incentive to take on further risks than a deterrent.

²⁶ Which goes to show how the fetishization of theoretical models can get bastardized in absence of a reality check.

²⁷ Source: <http://peoplesclimate.org>. Other marches were held in Berlin, Bogotá, Istanbul, Johannesburg, Lagos, London, Melbourne, New Delhi, Paris, Rio de Janeiro and Vienna

²⁸ While praising the book Nixon quibbles with its subtitle “Capitalism vs. the Climate” writing that it “sounds like a P.R. person’s idea of a marquee cage fight, but it belies the sophistication and hopefulness of Klein’s argument” given that “it is easier to imagine the end of the world than to imagine the end of capitalism.” “Klein’s adversary is neoliberalism — the extreme capitalism that has birthed our era of extreme extraction,” Nixon intones, and “Klein is smart and pragmatic enough to shun the never-never land of capitalism’s global overthrow.” It is not clear which book Nixon read given the following: “I have also come to understand ... that the shift will require rethinking the very nature of humanity’s power — our right to extract ever more without facing consequences, our capacity to bend complex natural systems to our will. This is a shift that challenges not only capitalism, but also the building blocks of materialism that preceded modern capitalism” (Klein: 25); “the climate crisis challenges not only capitalism but the underlying civilizational narratives about endless growth and progress” (Klein: 170).

²⁹ Sometimes Klein refers to think tanks as “people paid to think by the makers of tanks” (Franklin Foer and Naomi Klein, “After Words with Naomi Klein,” C-SPAN, September 19, 2007. The quote can be heard at 45’30”. <http://www.c-span.org/video/?200999-1/words-naomi-klein>).

³⁰ The Chicago-based Heartland Institute, for example, is “the world’s most prominent think-tank promoting skepticism about man-made climate change” according to the Economist (“Toxic shock, A Climate-Change Skeptic Is Melting,” *The Economist*, May 26, 2012, <http://www.economist.com/node/21555894>). Other think tanks include the Cato Institute and the Heritage Foundation (Klein, 39).

³¹ Also known as “warmists” in climate change denialist circles (Klein: 41-3).

³² See the Great Transition Initiative at <http://www.greattransition.org>.

³³ See <http://www.gdrights.org>.

³⁴ It was Louis Althusser who — following Gramsci (12) — advanced the concept of Repressive State Apparatus (RSA) within his Marxist theory of the class State (138-52) as separate from the Ideological State Apparatuses (ISAs). Within a globalized framework, it may worth developing extending Althusser’s conception to the global village in terms of Repressive Global Apparatus (RGA) and Ideological Global Apparatuses (IGAs). So far, a quick internet search turned only two references to the concept of RGA. One by Michael Parenti in his 1974 *Democracy for the Few* (Boston: Thomson-Wadsworth, 2010, 133) and the other by Bonnie Minkus in her doctoral dissertation (*The Case of EFA In Sub-Saharan West Africa*, PhD diss., University of New Mexico, 2010, 56-7, <http://hdl.handle.net/1928/10891>). Out of the two, Minkus is the only one who addresses the concept at by writing that “current research does not include a concept like a repressive global apparatus (RGA) and an ideological global apparatus (IGA).” Nevertheless, within such conceptualization, we must be careful not to internalize the totalizing nature of hegemonic discourses (Ho: 349n4).

³⁵ Yet, Harvey is also careful to point out that today’s financialization of the economy is unlike any other insofar that it has been the “outcome of the search for financial solutions to the crisis-tendencies of capitalism, rather than the other way round” (194).

³⁶ See n34.

³⁷ In 2008 the U.S. National Cancer Institute has found that “depictions of smoking are pervasive in movies, occurring in three-quarters or more of contemporary box-office hits” (16) and that “a causal relationship between exposure to depictions of smoking in movies and youth smoking initiation” (*The Role of the Media in Promoting and Reducing Tobacco Use: Executive Summary*, 9, <<http://cancercontrol.cancer.gov/brp/tcrb/monographs/19/index.html>>). In *Golden Holocaust* Robert Proctor writes that “six trillion cigarettes are currently produced every year worldwide, a thousand for every man, woman, and child on the planet” (38). Finally, a recent study the Institute for Health Metrics and Evaluation at the University of Washington, Seattle found that “despite progress in reducing prevalence of daily smoking since 1980, the number of smokers has increased steadily world-wide (191) (Marie Ng et. al., “Smoking Prevalence and Cigarette Consumption in 187 Countries, 1980-2012,” *JAMA*, 2014; 311(2): 183-192, <http://jama.jamanetwork.com/article.aspx?articleid=1812960>).

³⁸ After studying 1,779 policy cases between 1981 to 2002 Gilens and Page concluded that U.S. “policymaking is dominated by powerful business organizations and a small number of affluent Americans” (577).

³⁹ One could say, given the underlying capitalist relations, that they are traded as commodified assets. In this regard, Fred McChesney has argued that similarly to an organized crime racket, it is politicians who extort money from business by threatening to harm their interests if they do not comply (Gilens and Page, 568).

⁴⁰ In this regard, OPEC’s recent decision not to slow down production in the face of the close to 40 percent drop in oil price since the summer — itself an expression of global deflationary pressures and a Black Swan in its own right (on this latter point see Charles H. Smith, “The Oil-Drenched Black Swan,” <http://www.oftwominds.com/blogdec14/oil-black-swan12-14.html>) — can perhaps be seen as an attempt to price the development of alternative energy sources and the more energy intensive extraction of shale oil and tar sands out of the market.

⁴¹ Hayes writes that “there is absolutely no conceivable moral comparison between the enslavement of Africans and African-Americans and the burning of carbon to power our devices” while Klein is more nuanced when she writes that “burning fossil fuels is of course not the moral equivalent of owning slaves or occupying countries. (Though heading an oil company that actively sabotages climate science, lobbies aggressively against emission controls while laying claim to enough interred carbon to drown populous nations like Bangladesh and boil sub-Saharan Africa is indeed a heinous moral crime.)” (456).

⁴² Disclosure: I have been mostly vegan since February 2014.

⁴³ In fact, over the 500 plus pages the term “vegetarian” is nowhere to be found while “vegan” appears once when she writes that “vegan activists ... think meat is murder” (302). I will let the reader ponder the implications of Klein’s grammatical construction.

⁴⁴ “For a vegetarian diet about 80% less land is required to feed one person than for a meat based diet” (Metz: 46).

⁴⁵ “Whereas producing 1 kilogram of wheat requires 1,000 liters of water, 1 kilogram of beef requires 100,000 liters of water” (Baer: 241).

⁴⁶ Source: Metz, 246.

⁴⁷ When asked about this silence, Kip Andersen, co-producer and director of the 2004 documentary “Cowspiracy: The Sustainability Secret” (<http://www.cowspiracy.com/>) answered: “Well, one of them is that it’s just not talked about. The major media sources, it’s not talked about. But for the heads of these organizations, that’s not really an excuse. A simple Google search can discover most of these facts that you see in the film. A big reason of it is that they just don’t see sharing this information with the public as a quote-unquote win campaign. They don’t see it as generating more money for them, more donors for them. So they just would rather, as we call it, profits over planet. And another reason for it is their own habits, their own habits among the highest of these groups, what their eating habits are. You know, they are eating animal products. And another one is the fear of ramifications from the government and laws that have been put in order to silence all of us to telling the truth of what’s happening with this huge, very, very powerful industry. So it’s a combination of all of these things” (“Animal Agriculture: A Neglected Agent of Global Warming?” *The Real News*, November 20, 2014,

http://therealnews.com/t2/index.php?option=com_content&task=view&id=31&Itemid=74&jumival=12659).

⁴⁸ I understand that this can be seen as a controversial stance given that it is difficult to affect structural problems with individual consumer choices. Yet, if the only true and lasting solution to the climate crisis resides in overcoming the capitalist mode of production it is indeed at the level of production that the change must initiate. Richard Wolff, for example, argues for such a bottom-up approach by advocating “worker self-directed enterprises” (115-80). In my opinion a similar argument can be made vis-à-vis the industrial production and consumption of animal products.

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