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## Value and Nature: Rethinking Capitalist Exploitation and Expansion

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### ABSTRACT


Value is central to the political economy of capitalism, but Marxian value theory has generally been abandoned when it comes to including nature in the analysis. An important exception is the recent work of Jason Moore, and in this paper an effort is made to fill several lacunae in Moore's approach. I argue for a unified measure of labor-nature time and joint exploitation of surplus value, then explore the significance of that for capitalist growth via rising productivity and cheap inputs, as well as what these mean for geographic expansion in search of labor and resources. I finish on the classic note of the insatiable drive for capital accumulation and its implications for the fate of the earth.

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Marxism has begun to take seriously the relation of nature to capital, as in the "second contradiction of capital" (O'Connor 1998), "nature as an accumulation strategy" (Smith 2006) and the "metabolic rift" (Foster 2011). Still, few authors have expressly tackled the theory of value and nature directly (Burkett 1999; Robertson and Wainwright 2013), with the work of Jason Moore going the farthest in this direction (Moore 2015). Nevertheless, there are issues that remain to be sorted out regarding the relation of nature, labor, and capital in a Marxian value theory, to which I would like to offer my thoughts.

To start off, I argue for the joint production of value by labor and nature and the combined generation of surplus value. After that, I turn to the way exploitation demands rising productivity and what the implications of that are for capitalist growth. Then I tackle Moore's idea of the appropriation of the free work of non-capitalist labor and nature to argue that it operates according to the rules of value and surplus value. I wrap things up by insisting that capital accumulation drives the whole process of production and exploitation, and thus of devastation of the earth and its inhabitants.

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Why bother going back to value theory? When the classical political economists began to deploy a theory of value to understand the economy it was because the generalization of markets meant that commodity prices had come to be regulated by exchange. For the classicals, value was an objective foundation behind the vagaries of prices, and in a pre-industrial era of handicraft or “manufacture” labor time was the obvious standard determining values. At the same time, however, they were engaged in fierce debates with opposing views of economy, state, and society, for which the theory of value was mobilized as a weapon of social change, which is why it was part of something called *political economy* (Varney 2012).

Marx trod in the footsteps of his predecessors. The labor theory of value was the obvious starting point on a long analytic journey to uncover the workings of capital. For Marx, value was not just the basis of price determination, but the key to unlocking the source of profits, class struggle, and capital accumulation (Harvey 1982). Along the way, he made technical corrections to the classical theory of value to account for the greater complexity of the industrial economy of the 19th century, but, most of all, he made the discovery of how *surplus value* could arise in a system of equal exchange and how generalized value turned into *capitalist accumulation* (Marx 1967a).

After Marx, the neoclassical counter-revolution jettisoned value theory for equilibrium prices and “utility.” The neoclassicals argued that labor has no special standing, capital is productive, there is no exploitation and profit is zero at the margin. This is why mainstream economics cannot come to grips with class inequality, exploitation, and the capitalist thirst for surplus value. It has no idea of capital as a social relation replete with conflict, nor of the vortex of accumulation at the heart of modern growth. Hence, an essential step to recovering the lost spirit of political economy is to return to a Marxian concept of value. But to make it relevant for today’s politics and economics, we have to incorporate nature into the calculus and ask what it means for the fate of the earth.

### The Co-production of Value

The key to the reconciliation of value theory and the wealth of nature is to go back to the foundation of economic life, i.e., production. From the outset, Marx (1967a, ch. 1) makes the fatal error of saying that only labor can create (exchange) value, while nature contributes only use-values—a mistake that goes back to Adam Smith’s dismissal of the Physiocrats’ agrarian theory of value. Later, Marx says that human labor confronts nature as one of its own forces but falls short of a fully dialectic approach. Labor does not address an inert nature or simply work alongside natural forces, like a ploughman leading a horse. Natural forces, both visible and invisible, are at work in every labor process, whether yeast transforming grain into alcohol, crystal

lattices forming in metal alloys, or the metabolism keeping alive the ploughman and the horse. Natural forces have to be harnessed by humans, but they do their work independently of human volition.

If value is produced by a dialectical unity of labor-nature, how is it measured? Marx sensibly defined value as “socially necessary labor time,” an average that imposes itself on competing producers. By contrast, there is no easy way to measure nature’s wide array of contributions to any production process by reducing them to a single *numeraire* as elegant as labor time. This is a rock on which value theory has repeatedly stumbled. Moore (2015, 14) adopts the orthodox Marxist position, but that only works if labor time is understood as *unified labor-nature time*.

In short, the work performed by nature is already subsumed in the value calculus *because the average labor time includes the socially necessary amounts of natural inputs and natural forces*, i.e., the right materials, energy, chemical reactions, growing period, and so forth are present for labor to proceed in the normal (average) way. In a mine, the quality of ore is critical to the labor time involved in extracting it; in a steel mill the quality of the iron, alloys and furnaces help determine the labor time involved in making steel.

Environmentalists may object that in this solution nature seems to disappear into labor. But that’s not the case. Human beings are necessarily the initiating partners who put natural materials and forces to work in a pre-determined manner in a social process of production of commodities for human use. Nevertheless, labor cannot function without its natural “partners,” nor do people have absolute command over natural forces (whatever they may imagine!).

### Exploitation and the Search for Surplus Value

Surplus value is the crux of the matter. The theory of surplus value divides conventional economics, in which capital is a productive factor, from Marxist theory, in which capital exploits workers to generate a profit. Surplus value is simply the difference between the value of output and the value of the labor (power) required to produce it. The trick, for Marx, was to show that at equilibrium, where every commodity exchanges at its rightful value, surplus value is still realized by the capitalist.

The necessity of a surplus is clear: employers would not produce anything if the return were less than the cost. No exploitation, no profit. This applies equally to labor and nature. That ploughman’s horse had better produce more in grain than it consumes or it will be put out to pasture; and the same is true of the wage worker. The horse and the ploughman or the chemist and her polymers do more work than they cost, and the difference goes to the employer. Surplus value is a “free gift” of extra work time to the capitalist, who exploits both labor and nature.

In a labor-nature value theory, surplus value is a joint product of labor and nature working together. The surplus work is still measured by the difference between the value embodied in the output and the value of the inputs (costs of reproducing workers, materials, energy, etc.). Given this, I find it curious that Moore insists that nature is not *exploited* by capital directly, even though he agrees that nature is “central to the production of surplus value” (Moore 2015, 93n9). While there’s no separate accounting of the surplus extracted from nature, the free work it does is embodied in surplus labor time and hence surplus value.

Marx used surplus value as the key to unlock the mysteries of capital. Because surplus value is the basis for profits, capitalists have every interest in exploiting labor and nature to extract the maximum amount of surplus value. The simplest route to obtaining a higher rate of surplus value is “absolute” surplus value, or extending the working day without improving the methods of production. Absolute exploitation has been ruthlessly applied everywhere capitalism has taken root, and Marx was at his most caustic in denouncing the way industrialists worked people into an early grave. A second path to making more profit is what Marx called “relative” surplus value. In this case, the value of labor reproduction falls due to rising productivity in consumer goods sectors, which lowers the value of labor inputs. The same insight can be applied to all inputs, including materials and energy.

But why do individual capitalists introduce technical change with such a passion? The firm that innovates gains an extra measure of profit over its competitors (better sales or lower unit costs), and one that fails to adopt newer and better methods will be driven out of business over time. This drive for innovation lay at the root of the industrial revolution, as both Marx (1967a) and Schumpeter (1939) argued; the unrelenting search for better technologies is the reason why capitalism has been such a dynamic and expansionary system (Von Tunzelmann 1995).

### Capitalist Expansion Through Rising Productivity

The drive for increased productivity has vital implications for capital’s relation to nature, and it plays out geographically in the process of capitalist growth. Three of these effects are notable: increased resource throughput, the search for new resources, and greater waste output.

Rising productivity means that modern industry generates an ever-greater mass of commodities, which requires ever-larger quantity of inputs, whether of wood, fiber, metals, water, or energy. The absolute amount of throughput in modern industry has gone up steadily over time. There is a countervailing process of improving efficiency of use and technical substitution, but it has not reversed the rising absolute flow of materials and energy. It follows that capitalists must engage in an ever-widening pursuit of new sources of resource

and labor supply. This has driven capitalism’s global frontiers outward, making it also the most geographically dynamic system in history (Moore 2007, 2010).

At the same time, capitalists have steadily improved the *methods* of search, discovery, and extraction of natural resources over time, another kind of technical progress. This has added to their ability to extend resource extraction to new areas and new depths around the world. Ironically, this also creates a geographical counter-movement in which some of the most important frontiers of resource discovery and extraction have been within shouting distance of the centers of capital and industry, as in the case of the US oil industry in the 20th century and gas fracking in the 21st (Wright 1990). Unfortunately, the spatial dialectic of center and periphery is lost in Moore’s relentlessly outward-looking model.

A third effect of expanding throughput has been ever-larger quantities of waste products, both as byproducts along the production chain, such as carbon emissions and wastewater, and as consumption waste at the end of the line. Moreover, modern technology rests as much on chemicalization as on mechanization, which inevitably creates another dimension of the waste problem: new and exotic byproducts that are toxic to living things. The twisted genius of capital is revealed in the ability to turn waste—including deadly byproducts—into profitable commodities, assuring their diffusion far and wide, and endangering both people and global ecologies (Romero 2015).

### Capitalist Expansion Through Cheapening Inputs

There is another route to raising the rate of surplus value, which is to lower the cost of production by obtaining inputs at below their normal value (i.e. cost of (re)production within the formal economy) (Marx 1967b, 119). The easiest way to do this is to look outside the capitalist economy to obtain labor and resources without paying the full costs of their reproduction. Capitalists therefore seek out new sources of cheap inputs such as displaced farmers, unploughed soils, and virgin forests. Unfortunately, the search for cheap inputs has remained secondary in Marxian theory, relegated to a counter-tendency to the falling rate of profit. For Moore, by contrast, the search for “the Four Cheaps”—labor, energy, food and materials—is at the heart of capital’s historical expansion, an unrelenting push into new territory, marked by repeated waves of conquest and plunder (Moore 2007, 2010).

A serious error of Marxist political economy has been to buy into the fallacy that “the economy” stops at the boundaries of formal markets and capitalist production (Fraser 2014). Feminists have long balked at treating wage labor and industry as the sum total of economic life, asking why the unpaid work of women and households does not figure in the theory of

value and capital (Mies 1986; Dunaway 2014). Similarly, environmentalists have wondered what happened to all the natural inputs and forces that humans harness to help produce the commodities flowing into world markets (Cronon 1991). Moore's signal contribution to Marxism is to take on board the feminist and green critiques and incorporate them into the theory of value. In his model, capital benefits from all the work done by people and nature *outside* the realm of capitalist production because of the way they cheapen the cost of capitalist inputs and raise the rate of surplus value *within* capitalist production. Cheap inputs mobilized at "the commodity frontier" are the pivot of a unified theory of capitalist and extra-capitalist sources of surplus value (Moore 2015, 90–94, 143).

Yet Moore's approach raises a further set of questions. First, how do the products of people and natures working outside the capitalist system enter commodity circulation as cheap inputs? One way, which he calls "capitalization," is where capitalists set up mines, plantations, and mills and hire wage workers, but the land, minerals, and workers come cheap because the land has been seized from indigenous people, a pittance has been paid for an oil lease, or conquered people are dragooned into the workforce. A second path, which Moore notes implicitly by reference to the dispossession of millions of peasants over the course of capitalist history, is migration of displaced labor to capitalist cities. But Moore spends no time on this crucial link in the story of cheap labor. A third path that he misses altogether is where the means of production remain in the hands of small owners, whose households do the work of farming, mining, and processing, and their products become commercial commodities that feed into the maw of capitalist production.

A second question is how does the economy put a value on the resources and labor flowing into the commodity system? Here again Moore is a bit obscure. He says, "appropriation works through the extra-economic mobilization of work/energy streams" (2015, 111), but what is the value that markets put on these streams? I think the answer is straightforward. If direct capitalist production is involved, then the calculus of socially necessary labor time obtains, but the value of inputs are cheapened to the degree that the companies have not paid full cost for them; this will partly lower the value of the outputs and partly increase the rate of profit on-site. The case of small commodity producers is more extreme, because their labor and land have essentially no market value while their outputs come to be priced in national or global terms, which are devalued by excess supply and capitalist competition. Their products are normally valued far below the "socially necessary" average on the world scale.

A third puzzle is whether the peasants, women, and natures at the commodity frontier are "exploited" in the same way as capitalist workers. Moore avers that the free gifts of work done outside the capitalist system are not exploitation but "appropriation;" but why jettison a fine old term

that is central to Marxian theory? I would prefer to call it *indirect exploitation*. After all, the products of the externally sourced bodies, materials, and forces are converted into measurable values as commodities on the world market, where they are utilized in formal processes of capitalist production as wage labor or circulating capital. If we see production in terms of commodity chains rather than single workplaces, the dualism of inside/outside can be visualized more easily as a unified process of generating and extracting surplus value (cf. Mitchell, Marston, and Katz 2004).

### The Accumulation Vortex and the Value of the Earth

A key element of value theory is the accumulation of capital. One of Marx's greatest insights is how capitalism unleashed a limitless process of growth that catapulted humankind to an entirely new level of prosperity and exploitation (Marx and Engels [1848] 1952). Value is an abstraction hidden behind the workings of the markets and prices, but it congeals in the form of money for the keeping of accounts, making payments, and storing value. As Marx put it, generalized commodity exchange "sweats money from every pore," and as money piles up it starts to be used to turn the process of exchange on its head. Money-holders reenter the commodity markets in order to make more money, or as Marx expressed it in a simple but powerful formula, C-M-C becomes M-C-M', shifting to a wholly different logic. In the process, capital is born, and as capital grows, it turns general commodity circulation into generalized *capital* circulation (Harvey 1982, 157–166).

Capitalists, unlike all previous ruling classes, use money to make money and measure their wealth in monetary terms, which is why they are more than misers, money-lenders, or landed aristocrats, and ultimately more powerful than lords and emperors. For the money-makers, there is no limit to what they can accumulate and no limit to their thirst for more value (Marx 1967a, ch. 3). Accumulation of capital becomes the driver of the modern economy, an unlimited spiral of investment, profit and piling up of wealth by individuals, corporations, and banks.

Surplus value is the fuel of accumulation, and the more there is of it, the faster the vortex spins. Because free gifts of labor and nature can issue forth from factories and farms, mines and wells, rivers and forests, capital will search out every source it can get its hands on. This is a truly *general law of accumulation*: endless search, continual absorption, unrelenting exploitation, unlimited horizons, unprecedented productivity, and growth without limit. Hence, the general term for geographic expansion ought to be "the capitalist frontier" rather than Moore's commodity frontier.

The capitalist vortex is a maelstrom passing over the earth and sucking up everything in its path. In Moore's model a choke point is reached due to the rising cost of labor and resources, or what he calls, following Marx, an

"underproduction crisis" (i.e. the failure to generate sufficiently cheap inputs) (Moore 2015, 92). Such threats to accumulation generate responses by capital, such as the search for new fossil fuels, more intensive agriculture, and massive new water projects—which occur in epochal fashion to launch new eras of accumulation and geographical expansion (Moore 2011, 2015). Matters get dicier, however, when he claims that there is necessarily a long-term falling rate of "ecological surplus" (2015, 97–98), which brings us back to the problem of how such a thing might be measured outside of the workings of the market and value, and how to prove that the rate of appropriation (indirect exploitation) must always exceed that of direct exploitation (54, 102).

As Marx argued, capitalists will exploit labor and nature to the maximum until stopped by social protest or state controls. In fact, this has been a principle of capitalist development everywhere: the *over-exploitation* of all resources and labor with devastating rapidity, resulting in the undermining the reproduction of natural ecosystems and even whole societies (Moore 2015, 67). While all capitalist transformation of nature is not negative—it is vital to acknowledge what nature does FOR capitalism before moving to what capitalism does *to* nature (Moore 2015, 27)—nevertheless, the term "plunder" is not too harsh for what capitalism does to the earth (Foster 2011).

If capitalism cannot stop itself, who will stand up against the vortex of accumulation? Workers have fought back to put limits on being worked to death, but, all the same, the levels of exploitation of migrant, slave, and child labor around the world today are chilling (Seabrook 2015). Similarly, environmentalists have fought to limit the digging up, killing off and befouling of the natural world, but capital keeps leaping over and battering down such barriers to enter new terrains of destruction, from Indonesian forests to Canadian tar sands (Kovel 2007). These are not separate set of struggles, but, as a unified value theory indicates, one and the same, and the only solution will ultimately be to put the shackles on accumulation if we are to put a value on the earth other than that demanded by capital.

## Disclosure Statement

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## Critical Interventions

### The 2016 Local Government Elections in KwaZulu-Natal, South Africa: Is Jesus on His Way?

By Ashwin Desai 16

## Keywords: Value

### Introduction: Value in Capitalist Natures

By Miles Kenney-Lazar and Kelly Kay 33

### Value, Nature, and Labor: A Defense of Marx

By Matthew T. Huber 39

### Value and Nature: Rethinking Capitalist Exploitation and Expansion

By Richard Walker 53

### Valuing the Earth and Each Other

By Jody Emel 62

### Value is Simple. Valuation is Complex

By Patrick Bigger and Morgan Robertson 68

### Capitalist Natures in Five Orientations

By Rosemary-Claire Collard and Jessica Dempsey 78