

# Value Isn't Everything

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The rapid advances in Marxian ecology in the last two decades have given rise to extensive debates within the left, reflecting competing conceptions of theory and practice in an age of planetary ecological and social crisis. One key area of dispute is associated with the attempt by a growing number of radical environmental thinkers to deconstruct the labor theory of value in order to bring everything in existence within a single commodity logic, replicating in many ways the attempts of liberal environmentalists to promote the notion of “natural capital,” and to impute commodity prices to “ecosystem services.”<sup>1</sup> For many in Green circles, Karl Marx and a long tradition of Marxian theorists are to be faulted for not directly incorporating the expenditure of physical work/energy by extra-human nature into the theory of value.

Indeed, for a number of contemporary left environmental thinkers, like Giorgos Kallis, Dinesh Wadiwel, and Zehra Taşdemir Yaşın, not only human beings, but also nature/animals/energy produce economic value under capitalism.<sup>2</sup> For others adopting a more circuitous approach, like world-ecologist Jason W. Moore, the distinctive role of labor in the generation of value is formally acknowledged, but the “law of value in a capitalist society” is defined as “a law of Cheap Nature.” Labor’s contribution to the production of value is viewed as epiphenomenal, largely determined by the wider appropriation of “work” or energy, in the sense of physics, carried out by the web of life as a whole.<sup>3</sup>

In this “new law of value,” as explained in Moore’s 2015 book, *Capitalism in the Web of Life*, the ultimate basis of valorization is the capitalist appropriation of the “unpaid” work of both organic and inorganic actors, focusing in particular on the Four Cheaps (labor power, energy, food, and raw materials)—or what he referred to two years later, in A

*History of the World in Seven Cheap Things*, written with Raj Patel, as Seven Cheaps (adding nature, work, money, lives, and care work, while subtracting labor power and raw materials). The Four or Seven Cheaps, taken together, thus replace labor power as the real foundation of value. In this more “expansive” approach to value, the labor theory of value is relegated to a ghostlike existence, an ethereal substance, while the real basis of valorization now is the entire web of life—pointing to an *everything theory of value*. Is not the real question, Moore pointedly asks, “The Value of Everything?”<sup>4</sup>

To be sure, liberal environmental criticisms of Marxian value theory go back to the beginnings of contemporary Green theory. Such criticisms rest on the systematic conflation of two distinct meanings of value: intrinsic value (or the value that we attribute to things in themselves and to our relations) and commodity value. Writing in 1973 in *Small Is Beautiful*, E. F. Schumacher contended that there is a tendency in modern society “to treat as valueless everything that we have not made ourselves. Even the great Dr. Marx fell into this devastating error when he formulated the so-called ‘labour theory of value.’”<sup>5</sup>

Charges of this kind commit the fallacy of confusing Marx’s critique of capitalist commodity value with the question of intrinsic value or with wider transhistorical, cultural notions of value as worth. Crucial here is the recognition that Marx was the greatest *critic* of the capitalist value form. As Moishe Postone rightly observed in *Time, Labor, and Social Domination*, Marx was concerned primarily with “the abolition of value as the social form of wealth.”<sup>6</sup> Marx’s *Capital* thus sought to explain value relations under capitalism as part of a historical process of transcending them. He distinguished between real wealth consisting of use values, representing what he called the “natural form” within production, and value/exchange value, that is, the “value form” associated with specifically capitalist production.<sup>7</sup> Socialism has as its specific goal overcoming the narrow value form so as to allow for the development of a rich world of needs, while rationally regulating the metabolism between humanity and nature.

It is thus the failure to perceive Marx’s analysis as *critique*—far removed in that respect from liberal political economy whose concepts are designed to validate the existing order and are therefore presented as transhistorical ideals—that underlies the mistaken Green criticisms of Marxian value theory. Marx did not seek to defend or validate capitalist value relations, much less to universalize them by extending them to other realms of reality. Rather, in his perspective, the revolutionary goal was to abolish the system of commodity value altogether, and to replace it with a new system of sustainable human development controlled by the direct producers.

For Marx, the narrow pursuit of value-based accumulation, through the “robbery” of the earth itself, at the expense of “eternal natural necessity,” generated a metabolic rift in the relation between human society and the larger natural world of which it was an emergent part.<sup>8</sup> Coupled with the related class contradictions of capitalism, these conditions pointed to the need for the expropriation of the expropriators. Hence, the great advantage of the Marxian ecological critique over the standard Green theory

criticisms of capitalism is precisely that it focuses on the historical-materialist bases of contemporary ecological destruction, and points to the means of their transcendence. Rather than countering capitalism with a set of transhistorical values or ideals, its focus is on a critique of the existing mode of commodity production, accumulation, and valorization—a critique that extends to capitalism’s relentless undermining of the environmental conditions of existence and of the Earth System itself. In Marx’s theory, (commodity) value is *not* everything and is distinguished from real wealth (use values).<sup>9</sup>

But if such traditional Green criticisms of Marxian theory are easily answered, recent developments within posthumanist thought, which today are transforming the character of Green theory, have gone much further in the attempted demolition of classical historical materialism. This has occurred through the promotion of two closely connected arguments: (1) deconstruction of social labor as the basis of value, to be replaced by what is seen as a more “inclusive” physiological or energetic theory of value; and (2) subsumption of the entire web of life, in all of its aspects, under the law of value of the world commodity economy. The object of such analyses is the “destabilization of value as an ‘economic’ category,” on which the classical Marxian critique of capitalism, with its focus on the twofold alienation of labor and nature, ultimately depends.<sup>10</sup> In contrast, a coherent ecological critique of capitalism requires an understanding of the dialectical contradiction between the natural form and the value form inherent in the commodity economy.

## Posthumanist Ecological Critiques and Marx’s Concept of Social Labor

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Although Marxian economics has often been faulted by Green theorists of various kinds for not developing a physiological or energetic theory of value, and for tracing value exclusively to human labor, there is no extant economic theory—whether classical, neoclassical, Sraffian, or contemporary ecological economics—that sees nature as directly productive of economic value (or value added) in the contemporary capitalist economy. With minor exceptions, all economics from the classical period to the present has perceived what nature itself provides, independent of human labor/human services, as a “free gift” to the economy—an idea that goes back to the classical theorists Adam Smith, Thomas Malthus, David Ricardo, and Karl Marx, and is carried forward in contemporary neoclassical and Marxian economics. Nature, of course, provides the material basis of production and affects productivity, and rents are applied to everything from the soil to fossil fuels, and enter price determination in that way; yet commodity value in the most general sense is viewed in all schools of economics as a distinctly human product, reflecting the actual working of the capitalist economy.

For many environmental theorists, who confuse intrinsic value with economic value, to exclude animal labor or energy from a conception of value is simply anthropocentric. From a classical Marxist perspective, however, the critique of capitalist commodity production captures not only the inner logic of the accumulation process, but also the limitations and contradictions of the system, marked by the distinctions between, on the

one hand, the “natural form” (use value, concrete labor, and real wealth) and the “value form” (exchange value, abstract labor, and value).<sup>11</sup> Both the economic and ecological contradictions of capitalism have their source in the contradictions between the valorization process and the material bases of existence inherent in capitalist commodity production. To deny the historically specific character of abstract labor as a form of social labor under capitalism is to deny the extreme character of the valorization process under capitalism and the full extent of the expropriation of nature that it entails.

Nevertheless, we are seeing today numerous attempts to conceptualize commodity value as the product not just of human labor, but of animal labor in general and, beyond that, of energy in general. Wadiwel, criticizing Marx, argues that “animal labor” should be seen as directly analogous to human labor in its role in the economy and that there is a “lack of analysis of the specific value-role of animals, not merely as commodities but as producers of value (i.e., labourers).” There is thus a need for an “animal labour theory of value” to complement or even to replace the labor theory of value. In this view, “the body and its metabolism” are “sources of surplus” that can be examined by analyzing the animal labor time of factory animals. Hence, there is a common physiological and energetic basis to value production characterizing both humans and animals.<sup>12</sup>

Kallis writes in “Do Bees Produce Value?” (an exchange with Erik Swyngedouw) that: “the work done by nature should be integrated within the core of [the Marxian] theory of value production under capitalism, not delegated to the margins, with concepts like productivity or rent.” Like Moore, Kallis insists that value should be extended to work, in the sense of physics, where it measures the energy transferred when a force is applied to an object. “Isn’t it obvious,” he asks, “that the ‘socially necessary labour time’ for a jar of honey is not determined only by the labour of beekeepers, but also by the labour of bees?” In this view, “value is not produced only by humans but also by ecosystems and fossil fuels.” It follows that, “if the bees and fossil fuels do an extraordinary amount of labour, without which...the total value produced [would be] several times smaller,” then a value theory should be developed “that directly accounts for the work they do.” An extension of the labor theory of value, he suggests, could include as “value” whatever “is produced from whoever does work (human or non-human, paid or unpaid).”<sup>13</sup>

Yaşın, drawing on Moore and on various reflections in Stephen Bunker’s 1985 *Underdeveloping the Amazon*, criticizes Marx’s theory of metabolic rift as dualist for externalizing ecology and not incorporating it directly in Marxian value theory. She therefore proposes a “value theory of nature,” which would do exactly that. She justifies this by means of a startling misreading of Marx. Quoting Marx’s statement that “it is a tautology to say that labor is the only source of exchange value, and accordingly of wealth in so far as this consists of exchange value,” Yaşın oddly concludes from this that Marx is denying that “labor is the only source of value, as is often assumed.”<sup>14</sup> However, Marx is merely pointing to a logical tautology, nothing more. There is no question that for Marx abstract labor is the only source of commodity value in a capitalist economy, something he reiterates over and over. In contrast, real wealth, as distinct from value, is the product of *both nature and labor*.<sup>15</sup>

Nevertheless, Yaşın offers as a solution a *value theory of nature*—one which “internalizes nature” within the capitalist world-ecology, in line with Moore.<sup>16</sup> Here she draws on Bunker’s criticisms of the labor theory of value and the notion that extractive resources create value independently of labor (and rent).<sup>17</sup> For Yaşın, this provides “a conceptual lens of nature as value-forming as well.”<sup>18</sup> In this conception, nature is no longer outside capitalism in any sense, even in the sense of the externalization of nature by capital. In this way, the so-called epistemological rift between capitalism and nature embodied in Marx’s theory of metabolic rift is dissolved.<sup>19</sup> According to Yaşın, “the value theory of nature” is a perspective that incorporates “ecological energy” in the conception of economic-value creation. How this actually works in economic terms is not explained.<sup>20</sup>

None of these ideas are new or clearly thought out. Although viewed as twenty-first-century criticisms of Marx, these same outlooks were in fact countered by him in his day, since they are, in Jean-Paul Sartre’s words, little more than a “rejuvenation of...pre-Marxist [ideas]...a so-called ‘going beyond’ Marxism” that is “only a return to pre-Marxism.”<sup>21</sup> This can be seen in terms of Marx’s (and Frederick Engels’s) responses to the physiocrats, and to thinkers in their own day such as Karl Rössler and Sergei Podolinsky. The French physiocrats, writing for a largely agricultural society, saw land as the unique source of wealth.<sup>22</sup> However, while correct in their emphasis on the material basis of production, they failed to recognize the social bases of capitalist valorization in labor, the analysis of which was to characterize British political economy. In Marx’s terms, the physiocratic doctrine was based on a “confusion of value with material substance,” that is, between use value (natural form) and exchange value (value form).<sup>23</sup> Nevertheless, the physiocratic way of thinking stands as a constant reminder of the importance of the natural form of the commodity, and of the contradiction between real wealth (in terms of natural-material use values) and value.

One of Marx’s earliest and most gifted Russian followers was the economist Nikolai Sieber.<sup>24</sup> In the early 1870s, Sieber began to publish a series of articles in the journal *Znanie (Knowledge)*.<sup>25</sup> In the first of these, he replied to a German review of Marx’s *Capital* by Rössler, who had rhetorically asked why “the food in the stomach of a worker should be the source of surplus value, whereas the food eaten by a horse or an ox should not.”<sup>26</sup> Sieber replied that Marx’s *Capital* was concerned with human society and not domesticated animals and thus was directed only at the surplus value created by human beings. As Marx indicated in his notes:

The answer, which Sieber does not find, is that because in the one case the food produces human labour power (people), and in the other—not. The value of things is nothing other than the relation in which people are [socially] to each other, one which they have as the expression of expended human labour power. Mr. Rössler obviously thinks: if a horse works longer than is necessary for the production of its (labour power) horse power, then it creates value just as a worker who worked 12 hours instead of 6 hours. The same could be said of any machine.<sup>27</sup>

Here, Marx points to the basis of value in social labor, adding that in capitalist value accounting, animals are viewed as machines and their contribution to production treated in exactly the same way.

If Sieber himself did not grasp the essential point at first, he did subsequently, perhaps as a result of correspondence with Marx. In 1877, Yu G. Zhukovskii, a follower of Ricardo, criticized Marx for arguing that only human labor created surplus value. Zhukovskii argued, as explained by James D. White, that “anything which bore fruit, be it a tree, livestock or the earth, all were capable of providing exchange value. For Zhukovskii one of the main sources of value was Nature.”<sup>28</sup> In response to Zhukovskii, Sieber said that a good Ricardian ought to be able to grasp that human labor was the sole source of value, which reflected the division of labor and the fragmentation of society. In the following year, the classical liberal political economist Boris Chicherin presented essentially the same argument as Zhukovskii.<sup>29</sup> Here, Sieber’s response was unequivocal, cutting into the commodity fetishism basic to the classical liberal view:

But to people it *appears* as though things exchange themselves one for another, that things themselves have exchange value, etc. and that the labour embodied in the thing given is reflected in the thing received. Here lies the whole groundlessness of the refutations of Mr. Chicherin, and before him of Zhukovskii, that neither the one nor the other could understand, or wanted to understand...that Marx presents to the reader the whole doctrine of value and its forms not on his own behalf, but as the peculiar way people at a given stage of social development necessarily understand their mutual relations based on the social division of labour. In fact, every exchange value, every reflection or expression of it, etc. represents nothing but a myth, while what exists is only socially-divided labour, which by the force of the unity of human nature, seeks for itself unification and finds it in the strange and monstrous form of commodities and money.<sup>30</sup>

There is no transhistorical rationality to the capitalist valorization process, nor should this be attributed to it. Rather, it is based on a “strange and monstrous” alienation of labor, along with the alienation and externalization of nature itself. Here it is important to understand that, in Marx’s theory, *concrete labor*, that is, physiological labor—labor directly involved in the production/transformation of natural-material use values, the labor of individual human beings relying on brain, blood, and muscles—is in dialectical opposition to that *abstract labor* upon which capitalist valorization is based.<sup>31</sup>

Concrete labor is defined by Marx as “a condition of existence...an eternal natural necessity which mediates the metabolism between man and nature, and therefore of human life itself.”<sup>32</sup> Abstract labor, in contrast, is a specifically capitalist social construct in which labor is homogeneous and removed from all its concrete, physical aspects, including the metabolism of human labor itself. Value is then a kind of “reified’...labor” reflecting social equalizations of an abstractly “homogeneous human labor.”<sup>33</sup> Marx argued that it is abstract labor in this sense, reflecting a definite social relation between human beings, that is the basis of value, not concrete, physiological labor. For this reason, “not an atom of matter enters into the objectivity of commodities as values.”<sup>34</sup> As

Isaak Rubin noted in his celebrated *Essays on Marx's Theory of Value*: “the expenditure of physiological energy as such is not abstract labor and does not create value.”<sup>35</sup> For Marx, then, value, as opposed to use value, is not some universal, physical quality inherent in production throughout history. Rather, it is the crystallization of capitalist relations of production and accumulation. To refer to an animal, physiological, or energy theory of value is to miss the point of the specifically reified character of value in capitalist society, the source of its increasingly distorted “creative destruction” of the world at large.

Even in Marx's day, attempts were made to transform the labor theory of value into a general energy theory of value. However, such attempts inevitably failed to comprehend the specific, social basis of abstract labor and of value under capitalism, seeing this as a mere physical process. The notion of an energy theory of value was raised by one of Marx's early followers, Sergei Podolinsky, often considered the main nineteenth-century precursor of contemporary ecological economics.<sup>36</sup> Podolinsky attempted to integrate thermodynamics into the analysis of the economy and raised the question of the transformation of the labor theory of value into an energetic theory of value. Marx studied Podolinsky's work closely, taking extensive notes on the latter's work, and commenting on it in letters to Podolinsky that have been lost. However, it was Engels who provided a detailed assessment of Podolinsky's analysis in two letters to Marx.<sup>37</sup> Engels praised Podolinsky's argument for its integration of thermodynamics with the theory of production, but criticized Podolinsky for his crude calculations of energy transfers from agricultural labor, which excluded such factors as the energy contained in the fertilizer and the coal used in production. Engels also noted Podolinsky's failure to comprehend the enormous complexities of calculating all the quantitative and qualitative inputs of energy entering both into the human metabolism in the process of human labor and the reproduction of labor power. There is little doubt that Marx and Engels would have strongly rejected Podolinsky's notion of human beings as Sadi Carnot's “perfect thermodynamic machine.”<sup>38</sup>

Engels elsewhere criticized attempts to calculate the energy going into even the simplest products in order to generate an energy theory of value, emphasizing that such calculations were virtually impossible given the nature of joint production.<sup>39</sup> Beyond this, of course, proponents of an energy theory of value failed to understand, as Marx stressed, that economic value was a social relation specific to capitalist society, rooted in class and the division of labor—not a universal, physical reality. Nicholas Georgescu-Roegen, the founder of modern twentieth-century ecological economics, sided with Engels against Podolinsky, insisting on the irrationality of an energy theory of value, which could not begin to understand the social basis of value in a capitalist economy.<sup>40</sup> All existing comprehensive conceptions of economic valuation, though differing amongst themselves, necessarily focus on the social basis of economic value. For critical ecological economists, the contradictions of the narrow capitalist value form create ecological (as well as economic) rifts that are inherent in the nature of the system. Indeed, for Georgescu-Roegen it was this that led to the ecological destructiveness of the prevailing economic order, and the creation of massive environmental problems resulting from its distorted conception of growth.<sup>41</sup>

An idealistic approach to value that looks for transhistorical bases of economic valuation, even if these are based on physical properties, fails to comprehend the integrative, dialectical levels that constitute emergent reality. The economic relations of society can no more be explained by energetics than they can be explained by “selfish genes.”<sup>42</sup> Both are forms of reductionism that neglect the distinctive nature of historical reality. Attempts to generate a more harmonious view of reality by incorporating all of nature into the system of economic valuation fail to perceive that the existing system of production is not a harmonious, but rather an alienated, one.

## Expansive Value Theory and the Decentering of Labor Value

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The most ambitious attempt to deconstruct the labor theory of value from a posthumanist left-ecological standpoint is to be found in the work of Moore, particularly in his *Capitalism in the Web of Life*. Moore’s analysis was to impact Kallis, Wadiwel, and Yaşın in their criticisms of Marxian value theory and in their calls for a more general physiological or energy theory of value.<sup>43</sup>

Moore takes as a central epistemological basis of his work the elimination of “Cartesian dualisms,” which he perceives everywhere, including in the distinction between society and nature.<sup>44</sup> The goal is a social-monist analysis—or what he calls a “monist and relational view”—in which everything in the web of life consists of “bundles of human and extra-human natures.”<sup>45</sup> The object here is to dissolve, in the manner of Bruno Latour, all objective distinctions.<sup>46</sup> Accompanying this approach is a conflating of various meanings of concepts. Recognizing that there are two classic meanings of value, viewed as intrinsic worth and economic (commodity) value, Moore proposes to meld them together into a single, monist analysis. Opposed to the views of “Marxists,” who “since Marx have defended...the law of value as an economic process,” he proposes to unite within one single framework both economic value and the broad analysis of “those objects and relations that capitalist civilization deems *valuable*.”<sup>47</sup>

This conflation of Marx’s value critique with the notion of value as a broad, normative, cultural pattern, characteristic of civilizations in general, is accomplished in Moore’s analysis via a metamorphosis of Marx’s historical notion of the law of value into a transhistorical category. Marx and all subsequent Marxian economists have viewed the law of value as standing for the laws of motion of capitalism, the system’s equilibrating characteristics based on the process of equal exchange, and the distribution of class-based income forms.<sup>48</sup> As the U.S. Marxian economist Paul Baran succinctly explained, in Marx:



The law of value [can be seen] as a set of propositions describing the characteristic features of the economic and social organization of a particular epoch of history called capitalism. This organization is characterized by the prevalence of the principle of quid pro quo in economic (and not only economic) relations among members of society; by the production (and distribution) of goods and services as commodities; by their production and distribution on the part of the independent producers with the help of hired labor for an anonymous market with the view to making profit.<sup>49</sup>

In contrast to Marx's notion of the law of value, as depicted here, for Moore, "all civilizations have laws of value—broadly patterned priorities for what is valuable and what is not."<sup>50</sup> Although "law of value" is often employed in Moore's work in ways that suggest its affinity to the Marxian critique, in his world-ecology theory it metamorphosizes into a suprahistorical category—one of such vagueness that it embraces not only all activity of civilizations, but also the work/energy of the entire Earth System over hundreds of millions of years insofar as it impacts human production.

Related to this, Moore systematically conflates the concept of work as in physics, where it is identified with the expenditure of energy, with the labor of human beings within society. In this way, he develops a universal concept of appropriated "unpaid work," encompassing everything from a lump of coal to household labor. Both the lump of coal and a woman engaged in social reproduction in the household are said to have their work appropriated without pay.<sup>51</sup> In fact, most work in the world, we are told, is unpaid. This, of course, follows logically—quite apart from the issue of unpaid subsistence work and household labor—from a framework in which a waterfall, a living tree, and the ocean tides, indeed nearly all of what we call organic and inorganic existence insofar as it bears upon production, are to be regarded as "unpaid."<sup>52</sup> It is the appropriation of such unpaid material existence that Moore sees as the main basis of the capitalist system, the source of its dynamism, and which is summed up by the law of value. This is operationalized in his notion of Cheap Nature. In his original conception of the Four Cheaps, labor power is seen as just one "cheap" alongside others—in a single flat ontology that also encompasses food, energy, and raw materials. In his later conception of Seven Cheaps, with Patel, labor power disappears altogether to be subsumed under the more general category of "work," which encompasses all energetic flows and all potential energy from whatever source, organic or inorganic—the activity of the universe.<sup>53</sup>

Similarly, in the name of combatting dualism, Moore strives to conflate nature and society, subsuming the former within the latter. Any concept of nature as a larger environment of which human beings are only a part, and which is therefore partly external to them, is downgraded, as is natural science itself. In its place we are given conflated Latourian conceptions of "bundles of human and extra-human natures," and such capacious categories as the web of life, world-ecology, *oikeios* (a classical Greek word associated with Theophrastus, meaning a plant's suitable place or location, appropriated by Moore as a way of avoiding such terms as nature and ecology), and the Capitalocene.<sup>54</sup> On top of this, there are constant references to hyphenated couplets such as capitalism-in-nature/nature-in-capitalism.<sup>55</sup> In all of this, the goal is to subsume

nature within capitalist society—or at the very least to reduce everything to bundles, webs, and imbroglios.<sup>56</sup> Such views rely, in Latourian fashion, on a “flat ontology” of human and non-human actors where everything is seen as existing on a single plane, and constantly intermixed and conflated—mere networks or webs without clear demarcations—as opposed to a dialectical critical realism that emphasizes complexity, mediation, and integrated levels, in a changing, evolving universe.<sup>57</sup>

Just as there cannot be any opposition of society or capitalism to nature—as this is alleged to be a dualistic perspective—so there cannot be, in Moore’s general conflationist method, any ecological crisis distinguished from economic crisis.<sup>58</sup> The ecological problem can only be seen through the lens of the accumulation of capital, not outside of it. It is to be viewed in terms of market criteria and not in terms of the effects on ecosystems and the climate, much less the struggle for sustainable human development. Marx’s concept of the metabolic rift addressing the contradictions between capitalism and nature is rejected as rooted in a “dualistic” (not dialectical) understanding.

Proceeding on the basis of such questionable logical and methodological principles, Moore’s world-ecology takes as its main object “a certain destabilization of value as an ‘economic category.’”<sup>59</sup> This is accomplished by seeing value as the product of work in the sense of physics, that is, as energy. In his new, expansive law of value, as he frequently explains, “value does not *work* unless most work is not valued.”<sup>60</sup> This, however, is a truism insofar as “most work” here refers to the work/energy of the entire Earth System and indeed the universe as a whole—the ancient solar energy embodied in fossil fuels, the work of a river, the growth of ecosystems—all of which are to be regarded as “unpaid” work or potential work. Given that work in terms of physics encompasses the entire physical realm, it is obvious that it is of greater quantitative significance than the mere exercise of labor power (however measured). Labor’s energy is dwarfed by fossil fuel energy. “Coal and oil,” Moore tells us, “are dramatic examples of this process of appropriating unpaid work,” constituting the real, hidden foundation of the law of value.<sup>61</sup>

But what is it exactly that is *unpaid* in relation to coal and oil? In economics, the “free gift” that coal and oil provide is the result of ancient sunlight, going back millions of years, which formed coal, oil, and natural gas as low-entropy energy sources. It is this that gives fossil fuels their use value. At the base of the value edifice, for Moore, is the “*accumulated* unpaid work” that occurs “in the form of fossil fuels produced through the earth’s biogeological processes” over hundreds of millions of years.<sup>62</sup>

In Marxian political economy, the pricing of such resources is determined by monopoly rents. Such resources, which represent crucial use values for production, capable of enhancing labor productivity, acquire (but do not create) value via rents based on scarcity that are deductions from the surplus value generated in the economy.<sup>63</sup> At the same time, the extraction, refining, distribution, transport, and storage of these resources in the commodity economy involve value added from the employment of human labor. Yet, none of this is considered in Moore’s analysis. The entire theory of

rent is excluded. Marx's complex distinction between natural-material use value and exchange value/value is replaced with one singular law of value. The work of a barrel of oil or a waterfall or a turnip or a cow is "unpaid," which then is presented as the hidden ecological source of value, lying behind labor power itself.

"For good reason," Moore writes, "[Jason] Hribal asks, 'Are animals part of the working class?'"—given all the unpaid work they perform.<sup>64</sup> "The capital relation," Moore goes on to tell us, "transforms the work/energy of *all* natures into...value." Or, as we learn at another point, the law of value is all about "the transforming [of] nature's *work* into the bourgeoisie's *value*."<sup>65</sup> In Moore's Green arithmetic, unpaid work in the form of the earth's biogeological processes plus unpaid subsistence labor constitute the greater part of what underlies the law of value while the exploitation of labor power within production dwindles into insignificance in comparison.

It would be wrong, though, to attribute all of this simply to posthumanist ecology. Rather, Moore's decentering of the Marxian labor theory of value and his notion that nature's work should be treated as the hidden source of value grows largely out of various tendencies in liberal environmental thought. A key basis for his analysis is Richard White's historical treatment of the Columbia River, *The Organic Machine*. White arranges his history rather spaciously around what he says are "qualities that humans and the Columbia River share: energy and work"—though, in contrast to Moore, White points out that there are "huge differences between human work and the work of nature." Still, White, in an analogy that guides his analysis, writes: "Like us, rivers work. They absorb and emit energy, they rearrange the world."<sup>66</sup>

Of greater importance is Moore's strong adherence to the notion of unpaid ecosystem services, as developed by liberal neoclassical economists, notably Robert Costanza. Costanza is famous for trying to promote an energy theory of economic value within a liberal neoclassical economic perspective, in effect, a cost of production theory ultimately rooted in solar energy. This led Paul Burkett, in his *Marxism and Ecological Economics*, to refer to the extreme "reductionism," as well as historical irrationality, of Costanza's approach.<sup>67</sup> Costanza's attempt to promote a notion of nature as economic value resulted, in the 1990s, in a major split in the journal *Ecological Economics*, of which he was the chief editor. The more radical theorists, associated with the great, pioneering systems-ecologist Howard Odum, argued, in effect, for an approach that distinguished between use value/real wealth and exchange value/value, that is, between the natural form and the value form, along lines similar to Marx (utilizing Odum's notion of *emergy* or embodied energy as a natural-material or use value category counterposed to economic value). Odum later sought to synthesize his systems ecology with Marxian theory in this regard, and developed a theory of unequal ecological exchange on this basis.<sup>68</sup>

Odum's radical ecological approach ran directly against the liberal tendencies of Costanza (Odum's former student). This led to a growing conflict between the radical ecological economists and natural scientists associated with Odum, on the one hand, and the liberal, neoclassical-oriented theorists around Costanza, on the other. Alf

Hornborg, a cultural anthropologist with connections to Marxian theory, played a key polemical role as a critic of Odum's approach within the journal, attacking both Odum and Marx and siding with Costanza.<sup>69</sup> In the end, Odum and his radical associates on the editorial board were virtually banned from the journal.<sup>70</sup>

Moore, who was a younger colleague of Hornborg, as a research fellow at Lund University in Sweden in 2008–10, subsequently incorporated Costanza-like ecosystem-services and energy-value approaches into his analysis.<sup>71</sup> Moore's work thus took the form of a Marxified version of the mainstream ecosystem-services argument, associated with Costanza's estimates of the tens of trillions of dollars that ecosystems provide unpaid each year to the world economy—calculated on the basis of the imputation of commodity values to natural processes.<sup>72</sup> Rather than addressing the ecological contradictions of the capitalist system, and the inherent opposition between natural-material use values and exchange value, as did radical and Marxian ecological economists, Costanza and his team of liberal ecological economists wrote of the need to embrace the notion of natural capital. Solutions to environmental contradictions were seen as requiring the internalization of nature within the commodity economy. The ecological problem was thus reduced to the presumption that everything in nature, insofar as it could be seen as aiding the economy (directly or indirectly), had value and needed to be given a price—a view underpinned by the concept of natural capital.<sup>73</sup>

Moore's main concrete innovation in *Capitalism and the Web of Life* and other works was to seek to turn Costanza's perspective on its head, arguing that capitalism throughout its history is rooted in the fact that extra-human work (as well as much human work) is appropriated without pay. Nevertheless, from a classical-Marxian perspective, the severe weaknesses of an analysis that largely rejects the labor theory of value—along with the distinctions between use value, exchange value, and rent theory—while idealistically seeking to expand the notion of value production to all work/energy in nature, are all too apparent.

## The Natural Form and the Value Form

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The substance of value in a capitalist economy is, in Marx's conception, abstract labor. The "value form" (or exchange value) is thus to be distinguished from the "natural form" (or use value). The *natural form* stands for the "tangible, sensible form of existence," involving natural-material and technical properties and constituting real wealth. The *value form* of the commodity is its "social form," which points to the general concept of *value* as a crystallization of abstract labor.<sup>74</sup> It is the opposition between the natural form and the value form, inherent to capitalist production, that generates the economic and ecological contradictions associated with capitalist development. By the very fact that capitalism is a system of accumulation, the value form comes to dominate completely over the natural form in commodity production. "As useful activity directed to the appropriation of natural factors, in one form or another," Marx writes, "labour is a natural condition of human existence, a condition of material interchange [metabolism] between man and nature." However, every commodity obtains its exchange value, its

value form, precisely “through the alienation of its use-value,” often leading to the destruction of the metabolism between human beings and nature.<sup>75</sup> Out of this arises Marx’s general conception of the metabolic rift, or the “irreparable rift in the interdependent process of social metabolism, a metabolism prescribed by the natural laws of life itself.”<sup>76</sup>

The logic of capitalism, associated with the law of value, is a formally rational one, which is at the same time substantively irrational, with the irrational aspects gradually taking on ever greater importance. Indeed, capitalism is based at the outset (via “so-called primitive accumulation”) on the externalization of natural properties. Such organic properties, though incorporated in production as use values and representing the natural form of the commodity, are alienated in their value form and excluded from value, based on abstract human labor.<sup>77</sup> Natural properties, including human-natural properties, that is, human corporeal existence, are thus approached one-sidedly only insofar as they facilitate the production of value. A further level of externalization occurs through the imposition of many of the costs of production on nature (including human corporeal existence, which is outside the circuit of value) *as externalities*, with the negative effects falling not only on the environment, but also on human beings. The result is that capitalism promotes the creative destruction of life itself, extending eventually to the entire Earth System.

Ahistorical, idealistic attempts to envision the internalization and integration of social and environmental costs within the market system, or to see nature as the true source of value, only play down the social (including class and other forms of oppression) and ecological contradictions of the capitalist system. The goal of that system is the accumulation of capital. To put a price on a forest, so that its work/energy is no longer “unpaid,” that is, to commodify it—to turn it into so many millions of board feet of standing timber—is no more likely to save the forest, than the lack of a price. This is because the real issue is not the so-called tragedy of the commons, but the system of capital accumulation itself. Songbirds are dying off because their habitats are being destroyed by the historical expansion of the system—not simply because they are considered “valueless” from the standpoint of the market. Whales are killed to be sold directly as a market commodity, while they are also being annihilated as a side effect of the expansion of the system through the destruction of their ecosystems. All of this suggests that sustainable human development requires not the incorporation of nature into the system of value, but the abolition of commodity value itself.

Any form of analysis that seeks to eliminate the deep-seated dialectical contradictions between the natural form and the value form, between the capitalist economy and the larger socioecological metabolism, in order to imagine a more harmonious integration, is inherently caught in a narrow, monistic view—one that fails to comprehend the complex, interdependent dialectics of nature and humanity in an attempt to reduce all the levels of existence to a “singular metabolism.”<sup>78</sup> Such a false harmony can only be, in Marx’s words, “the *flat*, stilted product of a thin, drawn, antithetical reflection” that seeks to redraw “boundaries” rather than to eliminate the system that—through its

externalization and alienation—has generated these rifts in material existence.<sup>79</sup> What is called for today is not a radical *revaluation* of nature, but a revolutionary ecological and social transformation—a new realm of *freedom as necessity*, directed at the rational regulation of the metabolism of nature and society by the associated producers.<sup>80</sup> Here is Rhodes, jump here!<sup>81</sup>

## Notes

1. ↵ Jason W. Moore, "The Value of Everything? Work, Capital, and Historical Nature in the Capitalist World-Ecology," *Review* 37, no. 3–4 (2014): 245, 261, 280. On natural capital see Paul Hawken, Amory Lovins, and L. Hunter Lovins, *Natural Capitalism: Creating the Next Industrial Revolution* (Boston: Little, Brown, 1999). For a critique see John Bellamy Foster, *Ecology Against Capitalism* (New York: Monthly Review Press, 2002), 26–43. On ecosystem services see Jason W. Moore, *Capitalism in the Web of Life* (Brooklyn: Verso, 2015), 64; Moore, "The Value of Everything?" 261; Robert Costanza et al., "The Value of the World's Ecosystem Services and Natural Capital," *Nature* 387 (1997): 253–60; Robert Costanza et al., "Changes in the Global Value of Ecosystem Services," *Global Environmental Change* 26 (2014): 152–58.
2. ↵ Zehra Taşdemir Yaşın, "The Adventure of Capital with Nature: From the Metabolic Rift to the Value Theory of Nature," *Journal of Peasant Studies* 44, no. 2 (2017): 377–401; Giorgos Kallis and Erik Swyngedouw, "Do Bees Produce Value? A Conversation Between an Ecological Economist and a Marxist Geographer," *Capitalism Nature Socialism* 29, no. 3 (2018): 36–50; Dinesh Wadiwel, "Chicken Harvesting Machine: Animal Labor, Resistance, and the Time of Production," *South Atlantic Quarterly* 117, no. 3 (2018): 527–49; and Dinesh Wadiwel, "On the Labour of Animals," Progress in Political Economy blog, 28 August, 2018, <http://ppesydne.net>. For an older argument on this line, see Stephen Bunker, *Underdeveloping the Amazon: Extraction, Unequal Exchange, and the Failure of the Modern State* (Champaign, IL: University of Illinois Press, 1985).
3. ↵ Moore, "The Value of Everything?" 250, 280. For a criticism of Moore's views in this respect see Jean Parker, "Ecology and Value Theory," *International Socialism* 153 (2017).
4. ↵ Moore, *Capitalism in the Web of Life*, 70; Moore, "The Value of Everything?" 245, 267; Jason W. Moore, "Value in the Web of Life, or, Why World History Matters to Geography," *Dialogues in Human Geography* 7, no. 3 (2017), 327–28; Jason W. Moore and Raj Patel, *A History of the World in Seven Cheap Things: A Guide to Capitalism, Nature, and the Future of the Planet* (Oakland: University of California Press, 2017).
5. ↵ Ernst F. Schumacher, *Small Is Beautiful: A Study of Economics as if People Mattered* (London: Blond & Briggs, 1973), 15.
6. ↵ Moishe Postone, *Time, Labor, and Social Domination: A Reinterpretation of Marx's Critical Theory* (Cambridge: Cambridge University Press, 1993), 27.
7. ↵ Karl Marx, "The Value-Form," *Capital & Class* no. 4 (1978): 134.
8. ↵ Karl Marx, *Capital*, vol. 1, (1867; repr. London: Penguin, 1976), 133.
9. ↵ Karl Marx, *Critique of the Gotha Programme*, 1875, available at <http://marxists.org>.

10. ↵ Jason W. Moore, "The Capitalocene, Part II: Abstract Social Nature and the Limits to Capital," Research Gate (June 2014): 29, <http://researchgate.net>.
11. ↵ Marx, "The Value-Form," 134; Karl Marx, *A Contribution to the Critique of Political Economy*, 1859, available at <http://marxists.org>; Isaak Illich Rubin, *Essays on Marx's Theory of Value*, (1928; repr. Detroit: Black and Red, 1972), 131–58.
12. ↵ Wadiwel, "Chicken Harvesting Machine," and Wadiwel, "On the Labour of Animals."
13. ↵ Kallis in Kallis and Swyngedouw, "Do Bees Produce Value?" 36, 39, 44, 47, 49. Kallis was influenced by Moore in developing his argument that fossil fuels and energy in general create value. See Giorgos Kallis, "Socialism Without Growth," *Capitalism Nature Socialism* (2017).
14. ↵ Yaşın, "The Adventure of Capital with Nature," 378, 394; Marx, *A Contribution to the Critique of Political Economy*, 36.
15. ↵ Marx, *A Contribution to the Critique of Political Economy*, 35–36.
16. ↵ Yaşın, "The Adventure of Capital with Nature," 378, 389.
17. ↵ Yaşın, "The Adventure of Capital with Nature," 389–92; Bunker, *Underdeveloping the Amazon*, 20–47.
18. ↵ Yaşın, "The Adventure of Capital with Nature," 387, 392.
19. ↵ Yaşın, "The Adventure of Capital with Nature," 378.
20. ↵ Yaşın, "The Adventure of Capital with Nature," 397–398.
21. ↵ Jean-Paul Sartre, *Search for a Method* (New York: Knopf, 1963), 7.
22. ↵ Paul Burkett, *Marxism and Ecological Economics: Toward a Red and Green Political Economy* (Leiden: Brill, 2006), 23–37.
23. ↵ Karl Marx, *Theories of Surplus-Value*, part 1, (1863; repr. Moscow: Progress, 1969), 60.
24. ↵ The following discussion of Sieber draws on John Bellamy Foster and Paul Burkett, *Marx and the Earth: An Anti-Critique* (Leiden: Brill, 2016), 107–10.
25. ↵ On Sieber's Marxian economics and his critique of Ricardian theory see Nikolai Sieber, "Marx's Theory of Value and Money," 1871, repr. *Research in Political Economy* 19 (2001).
26. ↵ Karl Rössler quoted in James D. White, "Nikolai Sieber and Karl Marx," *Research in Political Economy* 19 (2001), 5–6.
27. ↵ Karl Marx, "Iz chernovoi tetradi K. Marks," *Letopisi Marksizma* 4 (1927): 61, quoted in White, "Nikolai Sieber and Karl Marx," 6.
28. ↵ White, "Nikolai Sieber and Karl Marx," 6–7.
29. ↵ Boris N. Chicherin, *Liberty, Equality, and the Market* (New Haven: Yale University Press, 1998), 325.
30. ↵ Sieber as quoted in White, "Nikolai Sieber and Karl Marx," 8.
31. ↵ Rubin, *Essays on Marx's Theory of Value*, 131–58. The very possibility of abstract labor requires, of course, that physiological labor first be given a social expression of equalization or quid pro quo. Abstract labor and value itself, however, are divorced from any physiological elements. As Roman Rosdolsky writes in *The Making of Marx's "Capital"*: "Physiological labour is not yet economic labour" (London: Pluto, 1977), 513.

32. ↵ Marx, *Capital*, vol. 1, 133
33. ↵ Rubin, *Essays on Marx's Theory of Value*, 153; Marx quoted on "homogenous human labor" in Rubin, *Essays on Marx's Theory of Value*, 148 (quote from original German edition of *Capital*, vol. 1).
34. ↵ Marx, *Capital*, vol. 1, 138.
35. ↵ Rubin, *Essays on Marx's Theory of Value*, 136–37.
36. ↵ For a full discussion of the Marx-Podolinsky relation, on which the treatment here is based, see Foster and Burkett, *Marx and the Earth*, 89–136.
37. ↵ Karl Marx and Fredrick Engels, *Collected Works*, vol. 46 (New York: International, 1993), 410–11.
38. ↵ Sergei Podolinsky, "Human Labour and the Unity of Force," appendix to Foster and Burkett, *Marx and the Earth*, 281–82; Foster and Burkett, *Marx and the Earth*, 110–17.
39. ↵ Karl Marx and Fredrick Engels, *Collected Works*, vol. 25 (New York: International, 1987), 586–87.
40. ↵ Nicholas Georgescu-Roegen, "The Entropy Law and the Economic Process in Retrospect," *Eastern Economic Journal* 12, no. 1 (1986): 8–9; Nicholas Georgescu-Roegen, *The Entropy Law and the Economic Process* (Cambridge: Harvard University Press, 1971), 277; Joan Martinez-Alier, "Some Issues in Agrarian and Ecological Economics, in Memory of Georgescu-Roegen," *Ecological Economics* 22, no. 3 (1997): 231; Foster and Burkett, *Marx and the Earth*, 135–36.
41. ↵ Nicholas Georgescu-Roegen, *Energy and Economic Myths: Institutional and Analytical Economic Essays* (Elmsford, NY: Pergamon, 1976), 33–35.
42. ↵ Richard Levins and Richard Lewontin, *The Dialectical Biologist* (Cambridge: Harvard University Press, 1987), 288; Stephen Jay Gould in *A Glorious Accident: Understanding Our Place in the Cosmic Puzzle*, ed. Wim Kayzer (New York: W. H. Freeman, 1997), 91; Roy Bhaskar, *Dialectic: The Pulse of Freedom* (London: Verso, 1993), 49–56.
43. ↵ Kallis, "Socialism Without Growth"; Wadiwel, "Chicken Harvesting Machine"; Wadiwel, "On the Labour of Animals," 544; Yaşın, "The Adventure of Capital with Nature."
44. ↵ Jason W. Moore, "The Capitalocene, Part I: On the Nature and Origins of Our Ecological Crisis," *Journal of Peasant Studies* 44, no. 3 (2017), 606; Moore, *Capitalism in the Web of Life*, 1–7, 19–20, 37; Yaşın, "The Adventure of Capital with Nature," 389.
45. ↵ Moore, *Capitalism in the Web of Life*, 80, 85–86. The notion of "bundled" human and extra-human nature on which Moore relies is a Latourian formulation. See Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2007), 17, 134, 139.
46. ↵ On the Latourian character of Moore's thought see Andreas Malm, *Progress of this Storm: Nature and Society in a Warming World* (Brooklyn: Verso, 2018), 177–96; John Bellamy Foster, "Marxism in the Anthropocene: Dialectical Rifts on the Left," *International Critical Thought* 6, no. 3 (2016): 393–421.
47. ↵ Moore, "The Value of Everything?" 280.
48. ↵ Moore, "The Capitalocene, Part I," 610; Moore, *Capitalism in the Web of Life*, 51–58.



49. ↵ Although neither natural processes nor household/subsistence labor (mainly carried out by women) contribute directly to the creation of value in capitalist accounting, the two should obviously not be confused with each other. See Marilyn Waring, *Counting for Nothing: What Men Value and What Women Are Worth* (Toronto: University of Toronto Press, 1999) for a powerful critique that avoids such conflation. On Marx, social reproduction, and the expropriation of women's household labor see John Bellamy Foster and Brett Clark, "Women, Nature, and Capital in the Industrial Revolution," *Monthly Review* 69, no. 8 (January 2018): 1–24.
50. ↵ Moore, *Capitalism in the Web of Life*, 54, 71.
51. ↵ Moore and Patel, *A History of the World in Seven Cheap Things*, 24–25.
52. ↵ Moore, *Capitalism in the Web of Life*, 35–36, 85.
53. ↵ Malm, *Progress of this Storm*, 179.
54. ↵ For the wider tradition in left theory in this respect see John Bellamy Foster and Brett Clark, "Marx's Ecology and the Left," *Monthly Review* 68, no. 2 (June 2016); Malm, *Progress of this Storm*, 2018, 23–40.
55. ↵ Graham Harman, *Bruno Latour: Reassembling the Political* (London: Pluto, 2014), 14, 18, 81.
56. ↵ Moore, *Capitalism in the Web of Life*, 2, 40–41.
57. ↵ Moore, "The Capitalocene, Part II," 29.
58. ↵ Moore, *Capitalism in the Web of Life*, 54.
59. ↵ Moore, *Capitalism in the Web of Life*, 71.
60. ↵ Moore, "The Value of Everything?" 261.
61. ↵ For a discussion of Marxian rent theory and ecology see Paul Burkett, *Marx and Nature: A Red and Green Perspective* (Chicago: Haymarket, 2014), 94–103.
62. ↵ Moore, "The Value of Everything?" 262; Jason Hribal, "'Animals Are Part of the Working Class': A Challenge to Labor History," *Labor History* 44, no. 4 (2003).
63. ↵ Jason W. Moore, "The Rise of Cheap Nature," in *Anthropocene Or Capitalocene? Nature, History, and the Crisis of Capitalism*, ed. Jason W. Moore (Oakland: PM, 2016), 89; Moore, *Capitalism in the Web of Life*, 71.
64. ↵ Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995), 3, 6, 108; Moore, *Capitalism in the Web of Life*, 14–15.
65. ↵ Stephen C. Farber, Robert Costanza, and Matthew A. Wilson, "Economic and Ecological Concepts for Valuing Ecosystem Services," *Ecological Economics* 41, no. 3 (2002): 382–83; Robert Costanza, "Embodied Energy and Economic Valuation," *Science* 210, no. 4475 (1980): 1219–1224; Burkett, *Marxism and Ecological Economics*, 18–19, 38, 93.
66. ↵ John Bellamy Foster and Hannah Holleman, "A Theory of Unequal Ecological Exchange: A Marx-Odum Dialectic," *Journal of Peasant Studies* 41, no. 2 (2014), 223–27.
67. ↵ Alf Hornborg, "Towards an Ecological Theory of Unequal Exchange: Articulating World System Theory and Ecological Economics," *Ecological Economics* 25, no. 1 (1998): 130–32; Alf Hornborg, *The Power of the Machine: Global Inequalities of Economy, Technology, and Environment* (Lanham, MD: AltaMira, 2001), 40–43; Alf Hornborg, *Global Ecology and Unequal Exchange: Fetishism in a Zero-Sum World* (New

York: Routledge, 2011), 17, 104.

68. ↵ Howard T. Odum, interview by Cynthia Barnett, 2001, transcript, Howard T. Odum Center for Wetlands Publications, Gainesville, FL, <http://ufdc.ufl.edu>, 37–39.
69. ↵ Hornborg has recently criticized Moore both for his posthumanism and for his residual Marxism. See Alf Hornborg, “Dithering While the Planet Burns,” *Reviews in Anthropology* 46, no. 1 (July 2017): 1–17.
70. ↵ On Moore’s frequent references to Costanza see, for example, Moore, “The Value of Everything?” 261; Moore, *Capitalism in the Web of Life*, 64; Moore, “The Rise of Cheap Nature,” 8—including references to Costanza et al., “The Value of the World’s Ecosystem Services and Natural Capital”; Robert Costanza et al., “Sustainability or Collapse: What Can We Learn from Integrating the History of Humans and the Rest of Nature?” *Ambio* 36, no. 7 (2007): 522–27; Costanza et al., “Changes in the Global Value of Ecosystem Services.”
71. ↵ Hawken, Lovins, and Lovins, *Natural Capitalism*.
72. ↵ Marx, “The Value-Form,” 134; Karl Marx, *Texts on Method*, (Hoboken, NJ: Blackwell, 1975), 212.
73. ↵ Marx, *A Contribution to the Critique of Political Economy*, 36, 45–46.
74. ↵ Karl Marx, *Capital*, vol. 3, (1894; repr. London: Penguin, 1981), 949.
75. ↵ Marx, *Capital*, vol. 1, 871.
76. ↵ Moore, *Capitalism in the Web of Life*, 86.
77. ↵ Karl Marx, *Grundrisse: Foundations of the Critique of Political Economy* (1939; repr., London: Penguin, 1973), 887.
78. ↵ Marx, *Capital*, vol. 3, 959; Marx and Engels, *Collected Works*, vol. 25, 105—6.