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To cite this article: John Bellamy Foster, Brian M. Napoletano, Brett Clark & Pedro S. Urquijo (2020) Henri Lefebvre's Marxian ecological critique: recovering a foundational contribution to environmental sociology, *Environmental Sociology*, 6:1, 31-41, DOI: [10.1080/23251042.2019.1670892](https://doi.org/10.1080/23251042.2019.1670892)

To link to this article: <https://doi.org/10.1080/23251042.2019.1670892>



Published online: 12 Nov 2019.



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ARTICLE



Henri Lefebvre's Marxian ecological critique: recovering a foundational contribution to environmental sociology

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ABSTRACT

French Marxist sociologist, Henri Lefebvre, was one of the foremost social theorists of the twentieth century, celebrated for his critiques of everyday life, urban revolution, and the production of space. We argue here that his mature work also encompassed a theory of ecological crisis, drawing directly on Marx's theory of metabolic rift. In this conception, the dialectics of nature and society were subject to alienated capitalist accumulation, giving rise to metabolic rifts, epochal crises, and new historical moments of revolutionary praxis aimed at the metamorphosis of everyday life. Lefebvre thus ranks as one of the foundational contributors to environmental sociology, whose rich theoretical analysis offers the possibility of a wider social and ecological synthesis.

ARTICLE HISTORY

Received 1 August 2019

Accepted 19 September 2019

KEYWORDS

Henri Lefebvre; Karl Marx; dialectics of nature; metabolic rift; ecological crisis; critique of everyday life; Western Marxism

Henri Lefebvre is widely recognized today as one of the world's leading sociologists, philosophers, and geographers of the post-Second World War period. In France, his reputation as one of the foremost contributors to Marxist thought places him next to such luminaries as Jean-Paul Sartre and Louis Althusser. Lefebvre was also one of the great environmental sociologists of the late twentieth century, whose work in this respect, and its integration with what he called 'the critique of everyday life' (Lefebvre 2014a) and 'the production of space' (Lefebvre [1974] 1991), is critical to the understanding of the nature-society dialectic in our time. Up to now, however, this aspect of Lefebvre's thought, which is a feature of all his mature works, has been largely neglected.¹

Lefebvre received his *Diplôme d'études supérieures* in philosophy at the Sorbonne in 1919, at age eighteen (Shields 1999, 11). He joined the French Communist Party (PCF) in 1929 and participated in the French Resistance during the Second World War. On the brink of the war, he published his still highly respected, *Dialectical Materialism* (Lefebvre [1939] 1968a), which challenged the rigid, mechanistic interpretations of dialectical materialism then constituting the official Soviet doctrine. As Anderson (1976a, 51) put it, Lefebvre's *Dialectical Materialism* was 'the first major theoretical work to advance a new reconstruction of Marx's work as a whole in light of the 1844 *Manuscripts*.' In 1957–1958, Lefebvre was suspended and then expelled (or resigned; see Kolakowski and Lefebvre 1974, 209–211) from the PCF in the conflict over Stalinism (Elden 2016, xii; Shields 1999, 87). He remained, however, a dedicated Marxist intellectual.

In 1947, he published the first volume, and, in 1962, the second volume (the third appeared in 1981) of his massive *Critique of Everyday Life* (Lefebvre 2014a). This work helped to inaugurate cultural studies and was at the core of Lefebvre's overall vision (Elden 2004, 110–120). He attained the position of professor of sociology at the University of Strasbourg in 1961 and was appointed professor at the newly created University of Nanterre in Paris in 1965, where he served as chair of the sociology department. It was while at Nanterre that Lefebvre (1968c) emerged as one of the most formidable French Marxist intellectuals at the center of the events of May 1968.

Eschewing both Althusser's structuralism and Sartre's existentialism, and critical of the Frankfurt School, including Max Horkheimer, Theodor Adorno, and Herbert Marcuse, Lefebvre ([1965] 2016a) generated a highly original 'metaphilosophy' rooted in G.W. F. Hegel, Karl Marx, and Friedrich Nietzsche (Lefebvre 2003a, 31–36). His later work was directed especially toward developing an analysis of the larger spatial-temporal fields for his critique of everyday life, by analyzing 'the production of space' (Lefebvre [1974] 1991), 'rhythmanalysis' (or the temporality of space [Lefebvre 2013]), 'the urban revolution' (Lefebvre [1970] 2003b), and the tendency toward 'planetary urbanism' (Lefebvre 2014b).

Lefebvre retained a clear conception of the contradictory interpenetration of nature and society, incorporating a deep understanding of Marx's theory of metabolic rift, which he employed as a philosophical trope in his later writings. It is Lefebvre's 'disciplinary promiscuity,' his concern with both 'spatial and temporal scales,' and his

insistence that society has not fully ‘transcended its ecological roots’ (Lockie 2015), coupled with his open, dialectical, and revolutionary Marxism, which makes his work so important, we will argue, for the development of environmental sociology today.

Dialectics and nature: Lefebvre’s swerve

A little more than a quarter-century ago, Marxist geographer Peet (1991, 178) wrote that ‘Marxism has little to say about relations with nature.’ Today, such a declaration with regard to the history of Marxist thought on the environment, though common enough in its day, would be barely comprehensible. This is because we now know a great deal more about Marx and Frederick Engels’s own detailed discussions of nature and ecology – most notably Marx’s theory of metabolic rift (Burkett 2014; Foster 2000, Malm 2016; Saito 2017; Slater 2019; Weston 2015). With the recent publication of Marx and Engels’s massive ecological/agricultural notebooks (Marx and Engels 2019; Saito 2017), the deep critical nature of their research into the dialectic of nature and society is now available to everyone.

Today we also know more, due to recent critical investigations (e.g. Foster and Burkett 2016; Foster, Clark, and York 2010; Longo, Clausen, and Clark 2015; MacDonald 2004; Wallace 2016; York and Clark 2011), about the ecological contributions of socialist thinkers, from Morris ([1890] 2003), Bernal (1949), and Haldane (1939) to Gould (1977), Williams (1980), and Levins and Lewontin (1985). Schmidt’s ([1962] 1971) *The Concept of Nature in Marx* was written the very same year as Rachel Carson’s *Silent Spring*. Neo-Marxian thinkers Anderson (1976b) and Schnaiberg (1980) crucially helped lay the foundations for environmental sociology as a discipline. *New Left Review* published pioneering writings on ecosocialism in the 1980s by Benton (1996) and Grundmann (1991). Contrary to Peet, it is clear today that Marxism has always had a great deal to say about relations with nature.

Nevertheless, there is a sense in which Peet’s statement is perfectly understandable when viewed in its own historical and theoretical context. Ever since Lukács’s ([1922] 1971, 24) famous footnote on Engels in *History and Class Consciousness*, the rejection of the dialectics of nature has been a defining proposition of what came to be known as ‘Western Marxism,’ understood as a specific philosophical tradition (Bhaskar 2011, 122–24; Jacoby 1981, 1983; Jameson 2009, 6–7; Jay 1973, 267–73). Thus, the neo-Kantian chasm between nature and society – justifying a chasm within thought itself – was replicated within Western Marxism, such that dialectical reasoning was seen as restricted to society and human sciences (the realm of the hermeneutic circle), while the natural sciences were often perceived as unavoidably mechanistic/positivistic (see Ilyenkov 2008, 289–319). This conception, characteristic of

Western Marxism as a definite philosophical tradition, represented a break with most Marxist thought, not only that of the Third International, but also the First and Second Internationals (Bhaskar 2011, 122–24; Sheehan 1985; Stanley 2002).²

In the Soviet Union, an official version of dialectical materialism arose beginning in the mid-1930s under Joseph Stalin, which was reduced to a variant of mechanical materialism or positivism. Many of the pioneering ecological thinkers in the USSR, including Nikolai Bukharin, N.I. Vavilov, Boris Hessen, and B. Zavadovsky, fell prey to Stalin’s purges (Foster 2015).

Influenced by the growth of neo-Kantianism and reacting negatively to official Marxism, ‘Western Marxist’ philosophers thus rejected the dialectics of nature as propounded by Engels and others.³ The idea of Marxism bearing any relation to the natural sciences was often simply denied, even to the point of effectively erasing these elements within the classical historical materialism of Marx and Engels themselves. Anderson (1983, 83) went so far as to claim in his *In the Tracks of Historical Materialism* – despite the massive evidence to the contrary – that ‘problems of the interaction of the human species with its terrestrial environment [were] essentially absent from classical Marxism.’

World-famous natural scientists, who had adopted a dialectical materialist outlook, such as Bernal and Haldane, were summarily dismissed by ‘Western Marxists’ as ‘Stalinists,’ to the point that some of the most influential contributions to Marxian thought (and to materialist science) in the 1930s and 1940s were set aside and forgotten. Even the intense debates in France between the existentialist Marxism of Sartre and the structuralist Marxism of Althusser seldom touched on the dialectics of nature, which was downplayed on both sides (Anderson 1976a, 60).

Frankfurt School theorists had long questioned the notion of ‘the domination of nature,’ as the central trope of science arising out of the Enlightenment. From this standpoint, the repressive character of science and technology was seen as the key to repressive social relations more generally (Marcuse 1964). Schmidt’s *The Concept of Nature in Marx*, following Horkheimer and Adorno ([1944] 1972), rejected both the domination of nature concept of the Enlightenment and the dialectic of nature concept of orthodox Marxism. In Schmidt’s vision, Horkheimer and Adorno’s pessimistic vision triumphed over that of Marx. ‘We should ask,’ Schmidt ([1962] 1971, 156; see also Jay 1973, 259, 347) rhetorically stated

whether the future society [socialism] will not be a mammoth machine, whether the prophesy of *Dialektik der Aufklärung* [Horkheimer and Adorno’s *Dialectic of Enlightenment*] will not be fulfilled rather than the young Marx’s dream of a humanization of nature, which would at the same time include the naturalization of man.⁴

According to Lefebvre (1976a, 114–15), Marcuse's (1964) *One Dimensional Man* was an example of the technological fatalism that characterized the Frankfurt School as a whole, sharing some of the same deficiencies – if in inverse form – that had plagued official Marxism. It was by swerving away from these various untenable one-sided positions, and returning to Marx and Engels's own materialist dialectics, that Lefebvre sought to construct a different approach, one fully open to the ecological critique emerging in the late twentieth century. Thus, in *Dialectical Materialism*, he argued – in opposition to the paradigm of 'Western Marxism,' on the one hand, and official Soviet Marxism, on the other – that,

It is perfectly possible to accept and uphold the thesis of the dialectic in Nature; what is inadmissible is to accord it such enormous importance [as was then the case in Soviet doctrine] and make it the criterion and foundation of dialectical thought. (Lefebvre [1939] 1968a, 16)

Likewise, in his *Metaphilosophy*, Lefebvre ([1965] 2016a, 77) sharply criticized Sartre, arguing that,

Because Sartre wants to avoid a systematized philosophy of nature (dialectics of nature), yet still thinks in terms of philosophical systematization, he ends up purely and simply effacing the existence of nature. It has no place in his philosophy... Nature manifests itself, according to his dialectical reason, as the ontological sector of the anti-dialectic: the inert, the practico-inert.

Lefebvre ([1939] 1968a, 116) was to follow the early Marx ([1844] 1974, 390) in insisting that human beings were objective beings who found the basis of their existence outside themselves. He explicitly opposed those who saw human beings as exempt from nature and those who subsumed nature's laws to those of society. Nature stood for 'an immense sector outside of man's control ... The uncontrolled sector still includes, alas, almost the whole of Man's natural and biological life, almost the whole of his psychological and social life' (Lefebvre [1939] 1968a, 137).

What human beings, however, had created through their production was a new *emergent* realm, relatively independent from nature, operating under its own social laws that were not reducible to *physis* or first nature. 'Need,' Lefebvre ([1966] 1968b, 41) wrote in *The Sociology of Marx*,

is at once an act or activity and a complex relationship with nature, with other human beings, and with objects. Through his own work man controls nature and appropriates it in part. Work is not a natural activity; it is even 'anti-natural' in two senses: as toil it requires effort and discipline, and it modifies nature both externally and internally. Work becomes a need. The senses develop and are refined in and through work. Needs change and become more sophisticated, as work modifies them by producing new goods or possessions. Thus man emerges from nature and yet remains unable to break away from it.⁵

Relying explicitly on the dialectical analysis of emergence, provided by the Scottish Marxist mathematician and scientist Hyman Levy (1938) in his *A Philosophy for a Modern Man*, Lefebvre ([1939] 1968a, 142) insisted that,

Man's world thus appears as made of emergences, of forms (in the plastic sense of the word) and of rhythms which are born in Nature and consolidated there relatively, even as they presuppose the Becoming in Nature. There is a human space, and a human time, one side of which is in Nature and the other side independent of it.

It was this complex, materialist, dialectical view of nature, incorporating the concept of emergence, and in line with modern science, as well as Marx's own materialist philosophy, that was to ground Lefebvre's later explorations of space, time, ecological disruption, and his critique of everyday life. It also makes Lefebvre's analysis compatible with critical dialectical ecology within natural science (e.g. Levins and Lewontin 1985). Neither rejecting the dialectics of nature nor reducing society to it, but rather insisting on a dynamic interdependent coevolution of nature-society, complete with emergent levels, Lefebvre developed an analytical framework that allowed him to address modern ecological dilemmas as they arose, based on an understanding of Marx and Engels's classical critique. It also gave his environmental thought a concrete relation to critical natural science, which had become increasingly dialectical itself in confronting integrative issues of ecology and Earth System science. This was a relation to natural science that was lacking in much of Western Marxism, which deliberately confined the Marxian dialectic to the social sciences and humanities – the realm of the identical subject-object.

For Lefebvre ([1962] 2011, 138, 143), nature, beyond the emergent human realm, was defined in dialectical terms as an 'absence' (see also Bhaskar 1993, 152, 393), or as *physis* (utilizing the ancient Greek term), standing for elemental power, which could never be fully superseded. This *absence* meant that nature, in the sense of *physis* (the intransitive realm [Bhaskar 1993, 399–400]) could only be known, epistemologically, indirectly through *signs* (Lefebvre [1962] 2011, 139) in the context of human praxis. Humanity was thus faced with a permanent dialectic of first and second nature, mediated by praxis:

Throughout his [Marx's] work, labour, industry, and technology act as mediators between man as he is framed by himself and the nature he controls. These mediations begin to create a 'human world' and a 'human nature' that is humanized, subordinated, and integrated within the human – in a word *appropriated*. (Lefebvre [1962] 2011, 142)

Nevertheless, Lefebvre maintained that real, material contradictions between society and *physis* remained. Western science and society had emerged with the

concept of the mastery of nature as its premise. No thinkers had been more critical than Engels ([1874-80] 1940, 291–295) and Marx of the illusion of the ‘conquest over nature,’ and aware of the need to overcome the alienation of nature. ‘Marx was alone,’ Lefebvre ([1965] 2016a, 293) stressed, ‘in proclaiming a reconciliation between man and nature.’ With the accomplishments of the industrial age, human society had the potential of forging a ‘relationship with nature [that] would turn out to be not instrumental, but one of co-substantiality and co-belonging.’ Such a reconciliation was necessary because of the ‘rupture’ that capitalism created within nature (physis), destructively undermining the material basis of society itself.

Lefebvre’s ecological critique first arose in the context of the struggles led by scientists in the 1950s and 1960s against nuclear radiation and the threat of nuclear destruction of the earth (Lefebvre [1968] 1996, 149). Nevertheless, the notion of planetary destruction in his analysis gradually extended to encompass the effects of global pollution and the destruction of the natural environment more generally. Already in the 1960s and early 1970s, he was raising the issue of development versus growth (Lefebvre 1976a, 102–119). In the second volume of *The Critique of Everyday Life*, Lefebvre (2014a, 622) distinguished between ‘accumulative (Promethean)’ and non-accumulative societies. He saw Marx as siding with the latter, but on a higher level, transcending accumulation, in order to achieve a reconciliation with the earth. Astonishingly, Lefebvre ([1970] 2003b, 26) wrote around a half-century ago in *The Urban Revolution*:

Industrialization and urbanization, together or in competition, ravage nature. Water, earth, air, fire – the elements – are threatened with destruction. By the year 2000, whether or not there has been nuclear war, our water and air will be so polluted that life on earth will be difficult to maintain.

Here Lefebvre was clearly prescient. It was in 1992, not long after his death, that the first Earth Summit took place, focusing on the threat that global warming from anthropogenic carbon emissions and the crossing of other planetary boundaries posed to the earth as a place of human habitation. That year was also marked by the introduction of the Kyoto Protocol. Nevertheless, 10 years later, in 2002, at the time of the second Earth Summit, or the World Summit on Sustainable Development, it was already becoming clear that the wealthy capitalist nations were backing off from any strong commitment to address climate change and other global ecological perils (Foster 1994, 2002, 9–25, 2009, 129–140). The result was that the world entered the new millennium with a sword of Damocles hanging over its head. Less than two decades into the twenty-first century, the world scientific

consensus is that *under business as usual* humanity is headed toward nearly unimaginable planetary ecological disaster, including the greatest mass extinction of species in 65 million years (Ceballos, Ehrlich, and Dirzo 2017; Intergovernmental Panel on Climate Change 2018).

Yet, if the overarching dialectical nature of Lefebvre’s treatment of nature-society is evident throughout his thought, it was only with the adoption of elements of Marx’s theory of metabolic rift that he was able fully to integrate his ecological critique with his critique of everyday life.

Lefebvre and the metabolic rift

Following the publication of the Club of Rome’s *Limits to Growth* (Meadows et al. 1972), the ecological problem emerged as a prominent concern within Lefebvre’s work. That year he wrote *Marxist Thought and the City* (Lefebvre [1972] 2016b), which represented a significant leap forward in his ecological critique. In this work, Lefebvre focused on Marx and Engels’s classic writings on the city, beginning with Engels’s ([1845] 1993) *Condition of the Working Class in England*, continuing with Engels’s ([1872] 1975) *The Housing Question*, and ending with Marx’s ([1867] 1976) *Capital*. In the chapter on *The Housing Question*, Lefebvre ([1972] 2016b, 98) drew on Engels’s discussion of Justus von Liebig’s analysis of the effects of the town-country opposition on nutrient cycling. He wrote that Engels ‘reminds us that actual conditions [of this disjuncture] prevent (rather than simply hinder) overcoming the [town-city] opposition.’ According to Engels ([1872] 1975, 92) – as Lefebvre ([1972] 2016b, 98) noted, closely following Engels’s words –

every day, London discards, at great expense, more natural fertilizer than Saxony produces, so that an illustrious savant by the name of Liebig asks that man shall give back to the earth what he takes from it.

This understanding then became – in Engels’s argument, as recounted by Lefebvre ([1972] 2016b, 98) – the basis for a ‘revolutionary utopianism’ in which ‘the suppression of the opposition between town and country is no more a utopia (abstract) than the suppression of the antagonism between capital and wages. In fact, it becomes an increasingly “practical necessity”’ (Engels [1872] 1975, 92), pointing beyond capitalism to socialism. This analysis of course is now recognized as representing the problem of the metabolic rift addressed more fully by Marx.

In the following chapter on ‘Capital and Land Ownership,’ Lefebvre ([1972] 2016b, 121) turned to Marx’s analysis of the metabolic rift itself, explaining that the new urban developments represent the robbery of both the soil and the workers, in such a way that it ‘disturbs the organic exchanges [metabolism]

between man and nature.’ Lefebvre favorably quoted Marx’s ([1867] 1976, 637–638) statement ‘that metabolism [of humanity and the earth], which originated in a merely natural and spontaneous fashion,’ was being ruptured by capitalism, requiring its ‘restoration as a regulative law of social production.’ This meant, Lefebvre suggested, that capitalism has ‘its negative side, which pushes it forward but tends toward destruction and self-destruction. Capital destroys nature and ruins its own conditions, preparing and announcing its revolutionary disappearance’ (Lefebvre [1972] 2016b, 122; see also Elden 2004, 133).

In Marx’s critique, as Lefebvre ([1972] 2016b, 134) observed, ‘the umbilical cord that tied society to nature was badly severed.’ The metabolic ‘connection had dried up’ with the rise of the industrial city, ‘but the vital exchange between the community and the earth was not replaced by rational regulation.’ Instead, capitalist property relations subordinated land to the market, converting the former umbilical cord into ‘a rope, a hard, dry cord’ as the ‘ultimate constraint’ on the development of the community. Hence, for Lefebvre ([1972] 2016b, 149), the implications of Marx’s theory of metabolic rift were profound:

Mastery over nature, associated with technology and the growth of productive forces, and subject to the demands of profit (surplus value), culminated in the destruction of nature. The flow of organic exchange [metabolism] between society and the earth, a flow whose importance Marx pointed out in his discussion of the town, is, if not broken, at least dangerously modified. With the risk of serious, even catastrophic results. We may very well ask whether the destruction of nature is not an ‘integral’ part of society’s self-destruction, a turning against itself, while maintaining the capitalist mode of production, its forces, and its power.

Although Lefebvre himself did not concretely explore actual ecological science to any extent, the general significance of Marx’s notion of the metabolic rift was incorporated into his thought as a general, dialectical principle, with repeated references to the destruction of nature, ruptures of natural cycles, the breaking of the symbiosis of nature and society, and the catastrophe of nature-society relations. Allusions to ecological crises in this sense were an underlying theme, frequently cropping up, in all of his later work. Thus, in the conclusion to *Critique of Everyday Life*, Lefebvre (2014a, 838) argued that the alienated second nature promoted by capitalism runs the ‘risk of destroying the first nature and severing the increasingly frail nutritive bond that links the two,’ i.e. the metabolism of nature and society. In his magisterial *The Production of Space*, Lefebvre ([1974] 1991, 326) noted that ‘the symbiosis – in the sense of energies and materials – between nature and society has recently undergone modification, doubtless to the point of rupture.’ In his writings

on the state, he addressed the ‘space of catastrophe’ associated with various ‘ruptures’ encompassing ‘the ruins, the chaos, the waste, pollution (which eventually causes the death of the seas, the Mediterranean, for example, and even the Atlantic Ocean!)’ (Lefebvre 2009, 250–251). Lefebvre thus recognized early on that in the core Marxian conception ecological crisis was characterized primarily by the ‘disruption’ of natural, biogeochemical cycles and the planetary environment as a whole (Tsuru 1970, 325).

In Marx’s conception, according to Lefebvre (2014a, 92), the human effort to dominate nature was systematized and extended under capitalism in ways that led to the totalization of alienation and destruction, resulting in the ‘reciprocal degradation’ of both nature and society – also manifesting itself as ‘fragmentation, dispersion, externalization, and exclusion’ in relation to both the natural (*physis*) and social realms. Humanity was ‘a being emerging from nature and dominating nature,’ but in such a way that ‘its roots are plunged ever more deeply within,’ with the result that there is a ‘tearing apart.’ Hence, ‘in the growing control that man has over nature, nature as such keeps control over man.’ The result of such blind capitalist development, in which ‘things progress ... with their bad side forward,’ is the extension rather than supersession of ‘the contradictions of nature’ (Lefebvre 2014a, 92–93).

Based on the conception of ecological crisis that he discovered in Marx, Lefebvre also strongly criticized what was then the commonplace interpretation that Marx had advanced a Promethean or productivist approach to the environment (Benton 1989). Lefebvre ([1972] 2016b, 125) argued instead that Marx had adamantly rejected the “productivism” of Adam Smith.’ Rather than promoting a Promethean or accumulative approach to development, ‘Marx,’ Lefebvre (2014a, 618, 622) contended, ‘was concerned not so much with transforming the outside world as with metamorphosing everyday life.’

Lefebvre ([1972] 2016b, 131, [1962] 2011, 138, 143) encapsulated Marx’s ecological critique, including its emphasis on sustainability as follows:

The rational organization of production includes organic [metabolic] exchanges between society and nature, exchanges of raw materials and energy that support the exchange of material goods within society. Yet, our author [Marx] knows that given capitalism’s relentless exploitation of all sources of wealth, nature itself is threatened. The regulation of organic exchanges must become a ‘governing law’ of the new society.⁶

The capitalist juggernaut, if allowed to proceed unhindered, would thus lead to ecological catastrophe. This was highlighted in Lefebvre’s (2013, 62–65) final book, *Rhythmanalysis*, where he argued that the regime of capital exhibits ‘a contempt for life ... It kills nature. It kills the town,’ threatening natural and everyday-social

cycles and rhythms. It represents a 'destructive capacity that comes at its peak and is raised to a world scale.'

Behind Lefebvre's understanding of the metabolic rift was a deep appreciation of the structure of Marx's critique of political economy. Hence, following Marx's lead, Lefebvre pointed to the insurmountable contradiction between natural-material use values and commodified exchange values, to which both the economic and ecological crises of capitalism could be traced. Lefebvre's (2014c, 93–94, 128–135) argument in this respect was most fully developed in his *Toward an Architecture of Enjoyment*, where he contended that under the accumulative society of capitalism, the 'sequestration of [natural-material] use value' by exchange value takes on a destructive relation preventing the sustainable human *appropriation* of the earth.

A concrete reflection of this powerful ecological critique was Lefebvre's (1976a, 102–119) analysis in *The Survival of Capitalism*, in which he scrutinized the 'ideologies of growth.' What Marx had called 'expanded reproduction,' referring to net accumulation, was for Lefebvre (1976a, 102) 'the only scientific term for "growth" under capitalism. The system's tendency 'to maintain growth' or expanded reproduction at all cost meant that 'destruction becomes inherent to capitalism.' This could be seen in universal pollution, waste, product obsolescence, and the rift in the relation to the natural conditions of production characteristic of monopoly capitalism. 'The destructive side of capitalism accentuates and takes over, destroying nature, and at its most extreme, the planet.' Behind this, however, for Lefebvre, lay the reality of 'a crisis in the reproduction of the relations of production,' given that capitalist social relations were no longer compatible with either the natural conditions of production or human advancement (Lefebvre 1976a, 109, 117; see also [1974] 1991, 329, 1976b).

The 'automobilization' of society (Baran and Sweezy 1966; Sweezy 1973) was emblematic of the destructive path taken by contemporary capitalism. 'In the large modern countries,' Lefebvre noted, in a manner similar to Schnaiberg (1980),

some 20 percent of production and the working population are devoted to the automobile and its use. Everything is being sacrificed to this form of growth: the historical past, convenience, amusement, 'culture.' The historical city is rebuilt according to the demands of growth 'impelled' by the automobile. Automobile and construction lobbies join forces with the state technostucture. Working together, they eventually circumvent popular opposition to traffic, pollution, the withdrawal of public transport, etc. (Lefebvre 2009, 237, 1976a, 102–119)

All of this pointed to the emergence of a 'space of catastrophe' arising out of 'conditions of ... rupture'

and fracture/fragmentation. Everything to do with non-accumulative everyday life and the rhythmic cycles of nature, Lefebvre argued, was now threatened with being torn apart by this new destructive hierarchy.⁷

The destructive tendencies brought to a culmination under capitalism could also be seen in the treatment non-human animals, which were reduced to mere manipulable machines, and which then came to exemplify a general annihilating approach to nature and even to human beings themselves. 'The domination-exploitation of human beings,' Lefebvre (2013, 62) suggested, 'begins with animals.' Non-human animal species were the subject of 'killings, stockbreeding, slaughters, sacrifices (and in order better to submit) castration ... [constituting] a raw material, a primary *substance* that each society treated in its own way' – but that (seemingly) justified a more generalized brutality and the commodification of all life.

In his last major statement, 'Dissolving City, Planetary Metamorphosis,' devoted to the concept of 'planetary urbanization,' Lefebvre ([1989] 2014b, 205) underscored the ecological rift in the human relation to nature:

Another threat the planetarization of the urban ... Soon, only islands of agricultural production and concrete deserts will remain at the Earth's surface. Hence the importance of ecological questions: it is correct to assert that the milieu of life and the quality of the environment have acquired an urgent, politically central status.

The historical answer to this planetary threat, for Lefebvre, lay, as always, in the radical potential embedded in everyday life. Given the destruction of the planet, this was increasingly an issue of 'revolution or death' (Kolakowski and Lefebvre 1974, 264–265). Death here referred to the ecological threat; revolution signified the possibility of a qualitative transformation in the social (and ecological) relations of production (and reproduction).

The theory of accumulative/non-accumulative societies/processes

Key to Lefebvre's (2014a) critique of everyday life, at the heart of his sociological worldview, was the distinction that he drew from Marx between accumulative and non-accumulative societies/processes. Precapitalist economic formations (i.e. societies characterized by the tributary mode of production [Amin 2009]), though almost invariably producing an economic surplus, were primarily *non-accumulative*, geared to simple reproduction. Such societies were engaged mainly in agricultural and craft production and integrated with natural, cyclical rhythms. In

contrast, capitalism, as an *accumulative society*, systematically geared to expanded reproduction based on the exploitation of formally free labor power, was an animal of an altogether different color. Among the contradictions of the capitalist order, as an accumulative society, were ‘the idea [illusion] of progress,’ the reality of uneven development, and an uncontrollable expansive tendency that ‘shatters and subordinates whatever resists it’ – both humanity and nature (Lefebvre 2014a, 623). Nevertheless, in the very processes of ‘progress’ and uneven development, capitalism generates *discards* or *residuals* that nonetheless persist and constitute the (partial) basis for its negation at a higher level with the reemergence of revolutionary social praxis.

Indeed, the distinction between accumulative and non-accumulative societies could be extended, Lefebvre argued, to a distinction between accumulative and non-accumulative processes, a view that he believed was integral to the classical Marxian critique. If capitalism was a system of the accumulation of capital, it also promoted other, related accumulative processes directed at areas such as knowledge and technology (Lefebvre 2014a, 621), often viewed under the mantra of the domination of nature. In contrast, ‘among non-accumulative activities’ were ‘sensory perception, sensibility, sensuality, spontaneity, art in general, morality (subjective or deriving from custom, as distinct from objective morality which depends on law and the state) and finally civilization in the broadest sense (as opposed to culture)’ (Lefebvre 2014a, 628). Accumulative and non-accumulative processes constantly interact, with ‘everyday life’ lying precisely ‘at the ill-defined, cutting edge [border] where the accumulative and non-accumulative interact’ (Lefebvre 2014a, 629). The struggle over and metamorphosis of everyday life was then a struggle to transcend the narrow, destructive domination of accumulative processes, particularly capital accumulation, in order to create a space and rhythm for the metamorphosis of everyday life, in a context of non-hierarchical structures, space for living, and human spontaneity and culture.

Perhaps more than any other thinker in the late twentieth century, Lefebvre therefore saw the socio-historical stage as a struggle over the creation of a space for culture-ecology independent of and transcending the driving force of accumulation – conceiving this as an issue not just of life, but of survival. ‘Everything ... affected by scarcity,’ Lefebvre ([1974] 1991, 329) noted

has a close relationship to the Earth: the resources of the land, those beneath the earth (petroleum) and those above it (air, light, volumes of space, etc.), along with the things which depend on these resources, such as vegetable and animal products and energies of various kinds.

Capitalism, as an alienated, accumulative society, however, puts all of this in jeopardy.

Lefebvre and the future of environmental sociology

Lefebvre’s critique of accumulative society, which overlapped with his ecological critique, was fully in accord with the underlying, foundational perspectives that have historically defined environmental sociology. This is less surprising when we recognize that Lefebvre was a sociologist by profession, building his analysis in this area directly on Marx and the Marxian tradition, and a major critical figure, who influenced the growth of the Green movement in Europe.

Environmental sociology was first formally organized as a discipline in the United States primarily around Dunlap and Catton’s (1994) distinction between the *human exemptionalist paradigm*, in which human society was seen as completely transcending natural laws, to the point that natural limits were no longer of any real significance, and the *new ecological paradigm*, arising out of the environmental movement itself, which challenged the notion of human exemptionalism. In its most advanced articulation, the new ecological paradigm was seen as having five components: (1) limits to growth, (2) non-anthropocentrism, (3) fragility of nature’s equilibrium (defining a safe space for humanity), (4) the untenability of human exemptionalism, and (5) the reality of ecological crises from the micro level all the way up to the planetary (Dunlap et al. 2000).

Lefebvre (1976a, [1972] 2016b, [1974] 1991, 2014a, 12–35) had explicitly articulated all of these elements, integrating them with his thought as a whole, by the 1970s, if not before. As he wrote in *Everyday Life in the Modern World*, it was necessary, in line with Marx, to ‘subordinate the mastery of nature to man’s *adaptation* of his own natural and social being’ (Lefebvre [1968] 1984, 195).

Similarly, Lefebvre’s critiques of the ‘ideologies of growth’ and of accumulative society, and his adoption of Marx’s notion of ruptures in organic exchange, anticipated those traditions of Marxian (and neo-Marxian) environmental sociology focusing on the treadmill of production (Schnaiberg 1980) and on the metabolic rift (Angus 2016; Burkett 2014; Foster 1999; Foster, Clark, and York 2010; Saito 2017).

But what makes Lefebvre’s work crucial for environmental sociology is the extent to which an ecological critique is deeply embedded in his work, widely regarded as one of the foremost critical elaborations of Marxian theory in the twentieth century. Here we have a synthetic vision, like Marx’s, where the critique of capitalism is cut out of whole cloth, equally ecological and economic, cultural, and sociological;

a dialectical view that encompasses both a critical metaphilosophy and a philosophy of praxis.

Moreover, the ecological character of the whole comes increasingly to the fore as Lefebvre's worldview develops. Here we have, perhaps for the first time, a critique of everyday life that recognizes both the alienation of urban existence and the metabolic rift in the mediation of nature-society. The ever-changing dialectic of town and country never disappears in Lefebvre's ([1974] 1991, 421–22; see also Elden 2004, 151) analysis of capitalism, any more than the dialectic of nature (*physis*) and society. At the same time, his understanding that contemporary working-class struggles are increasingly filtered through the city, and urbanization more generally, enabled him to perceive what we would now call environmental justice struggles. His conception of aesthetics, represented in his analysis by the concept *oeuvre*, stood for the potential of everyday life in its unalienated artistic form, constituting new seeds for revolt.

Lefebvre drew on Epicurus (1994) and Nietzsche (1999) to argue for real enjoyment, divorced from consumer culture, as the basis of the making of revolutionary moments, as in May 1968 (Lefebvre 1968c, 2014a, 66), thus anticipating notions of degrowth as abundance (Hickel 2019). He highlighted the historical contradictions between non-accumulative (non-capitalist) and accumulative (capitalist) societies. Like Gramsci, he pointed to struggles over cultural hegemony, manifested in the 'right to the city,' and the creative power of human *poiesis* (Lefebvre [1968] 1996, Lefebvre [1965] 2016a, 8). From Heidegger's (1993, 343–64) notions of habitat and dwelling, Lefebvre ([1972] 2016b, 135) took the idea of 'the earth as a dwelling place.'

Lefebvre was one of the first Marxian theorists in the post-Second World War period to focus on the issue of social reproduction. A key aspect of Lefebvre's ([1974] 1991, 71, 2013, 84) analysis was an analysis of the 'dispossession' of the body, or the expropriation of corporeal life – a view that needs to be emphasized more fully within the general ecological critique, and which is crucial to contemporary feminist theory (Fraser 2014; Foster and Clark 2018). For this reason, along with his critique of everyday life, he has become enormously influential in contemporary feminist thought (de Simoni 2015; Rendell 2018) – indeed in no other area outside geography does his influence extend so far.

As with other great social theorists, it is the scale and scope of Lefebvre's analysis and commitments, in which his ecological critique played a pivotal role, that gives his work so much *potential* (in the sense of *poiesis*) with respect to theory and praxis. Here environmental sociology is placed at the center of the critical social project as a whole, no longer on the margins – either theoretically or in terms of praxis. Integrating Marx's theory of metabolic rift with his critique of

everyday life, Lefebvre was able to develop what David Harvey (2010) has called a 'co-revolutionary' view, bringing together the various anti-systemic movements within a unified field of praxis. Research in Lefebvre's vast corpus thus offers the opportunity to develop a more revolutionary and systemic environmental-sociological critique. Not the least of his achievements was the critical retention of a dialectics of nature and society, built on Marx's notion of metabolism, as well as the concepts of mimesis and poiesis (Lefebvre [1965] 2016a, 161–244), allowing him to promote a revolutionary materialism, in accord with both praxis and critical realism/natural science.⁸

In looking to the future, Lefebvre gave no reason for equanimity. Rather he consistently charted the current capitalist path to catastrophe. Like Mike Davis's (1998) 'ecology of fear,' Lefebvre (2009, 98, 278) warned repeatedly of 'the Earth, threatened by terricide' based on capitalism's 'utopia of limitless growth,' and 'as such the stake of a terrible game.' Speaking of how the 'natural environment' had been 'ravaged and threatened with destruction,' he underscored: 'We are now on the brink of a terrifying destruction, the gravity of which is only now being understood' (Lefebvre 1976a, 32–33). Capitalism is an alienating system that generates 'conflicting dualities of production and destruction, with increasing priority for the destructive capacity that comes at its peak and is raised to a world scale' (Lefebvre 2013, 65).

Yet, all is not lost. An ecological revolution, rooted in the radical potential of everyday life and enveloping today's worldwide society, Lefebvre tells us, is necessary to reorganize the human relation with the earth. In this sense, Lefebvre can be considered a revolutionary environmental sociologist for the twenty-first century.

Notes

1. Although Lefebvre's analysis of nature-society relations has received some attention, primarily within geography (Loftus 2012; Smith 1998, 2003, [1984] 2008), his approach has frequently been dismissed – wrongly we believe – as dualistic, reflecting the posthumanist, hybridist turn (see Malm 2019; Napoletano et al. 2019 for critiques of such views). Yet, systematic, in-depth treatments of his conception of the dialectics of nature and its relation to classical Marxism are lacking.
2. The central role played by the dialectics of nature in the classical, First International Marxism of both Engels and Marx has now been firmly established in recent research in Marxian ecology. See especially Foster (2020).
3. It would be a mistake to attribute the criticism of the dialectic of nature by Western Marxism simply to its rejection of official Soviet Marxism. Rather it had its deeper bases in the development of neo-Kantianism in Germany, which established epistemology as the queen of philosophy, relegating logic to a much more minor role than it had played in German idealism, and enshrining the principle that the Kantian

thing-in-itself removed the natural sciences from the realm of reflexive or dialectical knowledge. It was out of this tradition that the main figures of critical theory, from Georg Lukács to the Frankfurt School, were to emerge (Ilyenkov 2008, 289–319).

4. The interpretation of the Frankfurt School and Western Marxism on nature and society offered here is firmly established in the literature. See Foster and Clark (2016), Bhaskar (2011), Jacoby (1983), Sheehan (1985), Dickens (2004), Jameson (2009), Jay (1973), Leiss (1974), Timpanaro (1975), and Napoletano et al. (2019). Nevertheless, some notable recent interpretations have taken a much more positive view of the Frankfurt School on the environment. See in particular the work Gunderson (2015a, 2015b) and Cook (2014). In our argument Lefebvre is to be viewed as a genuine representative of 'theory of praxis' (Hoffman 1975), who also holds on to the notion of the dialectics of nature. He thus represents a crucial bridge between orthodox/official Marxism/historical materialism and Western Marxism (including the Frankfurt School) – a bridge needed all the more in our age of planetary ecological crisis.
5. Lefebvre refers here to the 'control of nature,' even though he acknowledges that nature is appropriated only in part and human beings are unable to break away from it. Still, his emphasis on control is one-sided compared to his later work. Lefebvre's argument here thus reflects the fact that *The Sociology of Marx* was written in 1966, before he began to incorporate ecological assumptions centrally into his analysis in the early 1970s. Nevertheless, his emphasis on human-social emergence out of nature, and the continuing dependence on nature, reflect the dialectical nature of his thinking.
6. Lefebvre is referring here to Marx ([1864–65] 1981, 959).
7. Lefebvre's treatment of 'spaces of catastrophe,' ecological rupture, the metabolic rift, etc., along with his critique of the ideologies of growth, put his work in line with what are now known as the metabolic rift and treadmill of production traditions in environmental sociology, theoretically opposed to capitalist modernization theory.
8. Lefebvre's analysis is entirely compatible with that of dialectical critical realism as exemplified by Bhaskar (1993, 2011).

Disclosure statement

No potential conflict of interest was reported by the authors.

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