

Back to Engels: A Long Century of the First Fiddle without the Second

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*In hearing nature hears itself,
in smelling it smells itself,
in seeing it sees itself.
(Marx, 1841)*

BOTH WESTERN MARXISM AND SOVIET MARXISM share the assumption that Engels and Marx agreed upon a division of labour between them: Engels had specialized in nature and Marx in history.¹ Therefore, the contributions of Engels were either rejected or embraced for this exact reason in Western Marxism and Soviet Marxism, respectively. Consequently, these two seemingly contrasting camps had agreed on a similar positivistic approach that amounted to a ‘Marxism without Engels’.

There was a period when Marxism had not fully divided into two opposite camps; this is roughly the period between the Second International and World War II. Marxists in this period did not assume such a division of labour between Engels and Marx. Those Marxists such as Lafargue, Kautsky, Adler, Labriola, Plekhanov, Lenin, Trotsky, Bogdanov and Bukharin, who were also political leaders, represented this line of Marxism in various degrees in this period.

For example, Lenin especially tried to integrate natural sciences² into Marxism: “Lenin took the occasion of the second issue of *Pod znamenem*

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1. I use the term *history* to refer social sciences and humanities in general within the context of the alleged division of labour between Engels and Marx.
 2. I use the term *natural science* to refer any discipline studying natural science, as well as for any discipline studying on natural science such as the history, philosophy, anthropology, and sociology of science. Similarly, the term *natural scientist* is also used in this broad sense throughout this essay.

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marksizma (Under the Banner of Marxism), the new journal of Soviet Marxism launched in 1922, to call for an alliance between communists and natural scientists inclined to materialism” (Sheehan 1993 [1985], 157).³

Bukharin, similarly, was among the delegations from Soviet Union—other well-known names were Hessen and Vavilov—attended to the special session, ‘Science at the Crossroads’ at *The International Congress of the History of Science* held in London in 1931. This date also marked the final years of Marxism prior to the division. Unfortunately, those Soviet delegates could not survive much: Hessen, Vavilov and Bukharin were executed in 1936, 1938 and 1943, in the Soviet Union, respectively.

Two separate traditions of Marxism emerged after the Comintern. Western Marxism that was mainly based on philosophy, sociology, political science and history, excluding natural sciences almost completely. Soviet Marxism that mainly existed as an official ideology based on a formulation according to which historical materialism corresponds to social sciences and humanities, and dialectical materialism to natural sciences.

One specificity of Western Marxism was obviously rejecting Engels. On the contrary, Engels was uttermost embraced and respected besides Marx in Soviet Marxism. Yet, Engels shared a similar fate in the Soviet Union, ironically, since he was rather considered as a specialist in natural sciences. However, the place of Engels in the Soviet Union was not as the widely shared simplistic assumption:

In the Soviet Union and its allied states, the image of Engels had an increasingly negative connotation. “As a result, Engels was forgotten as a historian, as a political theorist and as a military specialist, and as a whole his intellectual achievement was irrelevant, compared to the Marxian, his work was not congenially and rather negatively dismissed” (Krätke 2007, 142).

(Altieri 2020, 276–277)

On the contrary, the study of Graham (1987) shows in detail the complexity of the problem about the appropriation of Engels throughout the history of the Soviet Union.⁴ He argues that discussions and works on Engels went much beyond the official party discourses, despite tragic tensions. Although, the appropriation of Engels in Soviet Marxism is as much

3. The monograph of Helena Sheehan (1993 [1985]) is still a unique source on the relation of Marxism and natural sciences. Sheehan especially focuses on the period between the formation years and the Comintern years, in detail, where the problem of Engels also occupies a central place.

4. Sheehan (1985) also shows that the picture of Engels and natural sciences is quite complicated in Soviet Marxism until the end of Comintern.

important, the topic is wide in scope enough to be the subject of another essay.

In what comes next, I will try to provide both an historical and theoretical framework for the main theme of this first issue, 'The Actuality of Engels'. I will first discuss the history of 'Marxism without Engels', accompanying a defense of Engels. To this end, the relevant discussions in Western Marxism, where criticism against Engels was originated and developed, will be presented. The section after, will discuss the position of Marxism as found itself trapped in a kind of *Mexican Standoff* as a result of trying to survive without Engels. In the last section, I will present and discuss the events, which brings Engels back, and this first issue of the *M&S*.

MARXISM without ENGELS

According to Perry Anderson, the disreputation of Engels historically overlapped with the emergence of Western Marxism, as the incompatibility of some of his arguments in *Anti-Dühring* with the recent findings of natural sciences became more evident after 1920 (Anderson 1976, 59–60). Anderson (1976) adds that Western Marxism was an outcome of various 'legitimate' attempts to fill the gap left by Engels. This argument had been formulated previously by Sebastiana Timpanaro (1975) in a more radical way:

Perhaps the sole characteristic common to virtually all contemporary varieties of Western Marxism is their concern to defend themselves against the accusation of materialism. Gramscian or Togliattian Marxists, Hegelian-Existentialist Marxists, Neo-Positivizing Marxists, Freudian or Structuralist Marxists, despite the profound dissensions which otherwise divide them, are at one in rejecting all suspicion of collusion with 'vulgar' or 'mechanical' materialism; and they do so with such zeal as to cast out, together with mechanism or vulgarity, materialism tout court. (Timpanaro 1975, 29)

Furthermore, the contribution of Timpanaro is unique as he insists on the crucial place of nature and natural sciences within Marxism. Consequently, he considers Western Marxism, overtly 'illegitimate'.

In short, Engels had been made a 'scapegoat' throughout the history of Western Marxism. Economic determinism, positivism, Stalinism, reductionism, vulgar or 'mechanical' materialism, reformism and revisionism were all the sins (of Marxism) that Engels committed. These criticisms had started with a rather moderate tone with Gramsci, Lukács and Korsch in 1920s and got severer with Colletti, Althusser, Sartre, Marcuse and

Lefebvre (see Anderson 1976, 59–60). Finally, the intensity of criticisms reached to the level of excommunication of Engels by Lichtheim, Schmidt, Lewis, Avineri, Jones, Kolakowski, Levine and Carver after the 1960s (see Rees 1994).

All these criticisms were more or less variations of the aforementioned assumption: there is a division of labour between Marx and Engels according to which the former focused on history and the latter on nature. However, the *original sin* committed by Engels was his attempt to extend the domain of dialectics to include nature. Hence, the following argument: “Marx’s method was anthropological, critical, pragmatic, empirical. Engels’, in contrast, objectivist, contemplative, determinist, abstract” (Sheehan 1993[1985]: 54).

The remaining task was to explain the reasons behind Marx’s silence. The growing aversion towards Engels in Western Marxism also paved the way to accomplish this task based on the following insulting argument: Engels was *Marx’s bulldog* who had slipped the leash at the final years of his ill owner and got completely free after his death (Hunt 2009).

Therefore, Engels had felt much freer for deviating theoretically from Marx by publishing works such as *Anti-Dühring*, of which, supposedly, Marx was not aware at his final years. After Marx’s death, he had been freer in writing *Dialectics of Nature*, manipulating Marx’s unfinished works such as *Capital Volume 2* and 3, or publishing *The Origin* based on Marx’s notebooks under his own name. Furthermore, Marx had always been aware of every sin Engels committed but kept silent due to his financial dependence on Engels.

No doubt that all these criticisms refer to some facts. It is true that natural sciences and dialectics in relation to nature had not occupied such a central place in published works of either Engels or Marx before *Anti-Dühring* (1878) and *Dialectics of Nature* (1930 [1883]). It is also known that Engels had almost rewritten *Capital Volume 2* and 3 based on Marx’s manuscripts and went beyond a mere editorship. Similarly, *The Origin* was written and published by Engels based on some notebooks of Marx. Finally, it was not a secret that Engels had financially supported Marx throughout their lifetime comradeship.

Nevertheless, these facts do not necessarily support those criticisms. Of course, the most reasonable criticism about Engels is related to his ‘overt’ interest in natural sciences and attempt to extend the domain of

dialectics to include nature. All other accusations such as economic determinism, positivism, Stalinism, reductionism, vulgar or ‘mechanical’ materialism and revisionism were somehow related to this *original sin*.

Studies disproving such criticisms against Engels mainly started by 1970s. The number of such studies have raised recently and more detailed analyses have been provided on the basis of new approaches to Marxism and Marx’s and Engels’ newly discovered texts. It suffices to provide a short list of counter-facts:

- It is now known that it was Marx who commissioned *Anti-Dühring* to Engels; he even wrote one of its chapters; and that Engels was not certainly happy with this task.
- *Dialectics of Nature* was mostly written while Marx was alive and Engels had the opportunity to discuss its topics with him. Furthermore, *Dialectics of Nature* was neither the title given nor completed and published by Engels.
- Engels’ main reason for leaving *Dialectics of Nature* uncompleted was the priority he gave to the publication of *Capital* volumes 2 and 3. Recent comparison of Marx’s manuscripts with the published volumes shows that Engels accomplished a great editorial task, which no one else could.
- It was not a secret that *The Origin* was based on Marx’s notes, which was already stated by Engels in the book.

Lafargue’s memoirs, among others’, witness such a unique comradeship, which invalidates the accusation of self-interest in the relation of Marx with Engels:

Besides, Engels was, so to say, also a member of the Marx family. The girls spoke of him as their second father. He was Marx’s alter ego [...] In our modern age, Marx and Engels realized the ideal of friendship portrayed by the writers of classical antiquity [...] Marx valued Engels’ opinion more than that of anyone else. Engels was the man he deemed worthy to be his collaborator. In fact, Engels was for him a whole public. To convince Engels, to win Engels over to an idea, no labor seemed to Marx excessive. [...] To win over Engels’ opinion was a triumph for him. Marx was proud of Engels. He recounted to me with pleasure all his friend’s moral and intellectual merits; [...] He admired the remarkable versatility of Engels’ knowledge; and he was uneasy at the possibility of any accident that might befall him. “I am always terrified lest he should be thrown on one of his mad cross-country gallops,” said Marx to me one day. (Lafargue 1943 [1890], 23–24).

Here is a short list of evidence against the criticisms of economic determinism, positivism, Stalinism, reductionism, vulgar or ‘mechanical’ materialism, reformism and revisionism:

- *Economic determinism/reductionism*: Engels already wrote a number of letters in his final years in order to correct economic determinist understanding of their theory that was prevalent among young ‘Marxists.’ These letters were the most vivid and brilliant first hand examples directed against determinist-reductionist base-superstructure template.
- *Reformism and revisionism*: Engels continued to support German Social Democrat Party (SPD) after Marx’s death and corresponded with its leaders such as Liebknecht, Kautsky and Bernstein. Since the SDP was one of the founding parties of the Second International and social democracy, Engels has been associated with evolutionary and reformist politics. On the contrary, Engels had already started to struggle against those leaders who censored his article in the official newspaper of the party. He writes, “I was amazed to see today in the *Vorwärts* an excerpt from my ‘Introduction’ that had been printed without my prior knowledge and tricked out in such a way as to present me as a peace-loving proponent of legality *quand même*” (Engels 2004 [1895], 486).
- *Positivism/vulgar or ‘mechanical’ materialism*: The founder of positivism, Auguste Comte (1798–1857) was already familiar to Marx and Engels so that Marx called his work as ‘shitty positivism’ in a letter to Engels. It is not necessary to write anything about the criticism of vulgar or ‘mechanical’ materialism, since most of the works of Engels are based on arguments against them.
- *Stalinism*: In fact, it was Stalin, not Engels, who provided the official “definitions” of dialectical and historical materialism: Dialectical materialism is completely about nature and historical materialism is simply application of dialectical materialism to human society (Stalin 1949, 3).

Of course, all these responses still leave a problem unsolved: The division of labour between Marx and Engels, and extending the domain of dialectics to include nature. The most straightforward solution would be to show that either there was not such a division of labour or Marx had also committed similar sins. I will try to touch upon both briefly.

Lukács, who had initiated this line of criticism against Engels' investigations of dialectics in nature in 1922, retreated from this position as early as 1967, before Timpanaro. Lukács admitted that his book *History and Class Consciousness* unintentionally recapitulated a certain tendency within Marxism which "strike at the very roots of Marxian ontology" (Lukács 1971 [1967], xvi). He also stated that his work had a definite impact on this tendency, which considers Marxism as a mere social theory or philosophy by excluding the theory of nature it embodies (*ibid.*).

It is more interesting that the recent findings of *Marx-Engels-Gesamtausgabe* (MEGA²) by the *Internationale Marx-Engels-Stiftung* (IMES)⁵ showed that the diversions between Marx and Engels is nothing more than a myth of Western Marxism. Michael R. Krätke (2011) shares these findings as follows:

There is a series of notebooks on physiology, on mineralogy, on geology and on agro-chemistry has already done in 1850s. Now huge and much more than Engels by the way. Everybody thinks that Engels was a specialist but Marx's excerpts and notebooks on science are much larger than Engels and of course he was in debate with Engels about their joint project which you probably know under the title, the wrong title, *Dialectics of Nature*. And there is a second series of notebooks from 1877 to 1883 on chemistry, on physics and particularly on electricity and on statistical thermodynamics. (Krätke 2011) (transcribed by A.C.G.)

There was also enough evidence against this myth already available in works and letters of Marx even prior to these recent findings. Marx and Engels, separately express in various letters that they first agree before starting to work on a joint project (e.g. see Marx 1981 [1860], 114). There is not a single word in these letters implying that they shared the workload by dividing their joint project into two parts as history and nature.

On the contrary, Marx wrote to Engels in 1864 that he is studying physiology, anatomy of brain and neural systems and cells and decide to spend more time on these topics, and adds that he is planning to attend to the talks and lectures of scientists (Marx 1985 [1864], 546). Indeed, Liebknecht (1943 [1896], 43) wrote in his memories that Marx had noted every progress in natural sciences and attended to the lectures of foremost natural scientists, such as Moleschott, Liebig and Huxley, conscientiously.

5. IMES was founded in 1990 to continue the publication of the *Marx-Engels-Gesamtausgabe* (MEGA-2). <http://www.iisg.nl/imes/>

Furthermore, Marx wrote how he confirmed one of the categories of dialectics is valid in a similar fashion in both history and nature:

Incidentally, you will see from the conclusion to my Chapter III, where I outline the transformation of the master of a trade into a capitalist—as a result of purely quantitative changes—that in the text there I quote Hegel’s discovery of the law of the transformation of a merely quantitative change into a qualitative one as being attested by history and natural science alike. (Marx 1987 [1867], 385)

The centrality of the relation between human society and nature was expressed overtly even in the first pages of *Capital I*: labour, as the creator of use value, is the material exchange between human and nature, which neither any human society nor life is possible without it (Marx 1996 [1867], 53). Therefore, labour is the father and nature is the mother of material wealth (*ibid.*). This relation between human and nature also represents their unity, which Marx calls *metabolism* in *Capital*. Accordingly, the material exchange between human and nature is a *metabolic exchange*.

This is the exact point which constitutes “the most important real pillars of the Marxist view of the world” according to Lukács (1971 [1967], xvii). The point, which, in his own words, was disregarded in *History and Class Consciousness* is “labour as the mediator of the metabolic interaction between society and nature” (*ibid.*).

Some of the leading Marxists proposed counter-criticisms in defense of Engels following Timpanaro by the end of 1970s. While E.P. Thompson (1978: 69) said that he “will not allow Frederick Engels to be cast as a senile clown after all,” Raymond Williams (2005 [1980]: 105) points to the “unusual uneasiness between Marxism and natural sciences” which he denounces. These responses were also unusual due to authors’ professional backgrounds; they were experts in fields of history and literature, not in natural sciences.

Overall, other studies in defense of Engels were not composed by Marxist natural scientists. These studies either accepted the assumption of ‘division of labour’ such as Gouldner (1980, 279) or did not reject it such as Ollman (1976), Rubel (2005 [1970]) and Larrain (1986).

MARXISM in MEXICAN STANDOFF

Natural Sciences and Nature in Marxism

There were always Marxist natural scientists on both sides who were certainly not positivist and had brilliant achievements. However, Marxists in

social sciences and humanities, on the one hand, and Marxists in natural sciences, on the other, were living as if in different worlds, especially in the West.

Despite tragedies such as *Lysenkoism*, Graham (1987, 431) acknowledges certain achievements of Marxist natural scientists in the Soviet Union, especially in philosophy of nature.⁶ The achievements of Marxists in natural sciences were not limited with the Soviet Union. Although fewer in numbers and less supported institutionally, the achievements of Marxist natural scientists in the West were not less pronounced. In this sense, the existence of Marxists within the domain of natural sciences is another common feature of the two Marxisms.⁷

Marxist natural scientists were at the far periphery of Marxism especially in the West. In this sense, Marxist natural scientists and Marxists were either isolated from each other or in a one-directional communication, from center to periphery. Consequently, Marxists in natural sciences were not represented in Western Marxism especially after the World War II.

A number of Marxists in natural sciences such as Bernal, Haldane and Levy had considerable impact especially during the radical science movement of 1930s.⁸ Tragic cases related with natural sciences in the Soviet Union such as *Lysenkoism* of the 1930s and then the Cold War in general hindered the radical science movement, gradually (Sheehan 2021).

Nevertheless, a number of Marxist journals, such as *Science and Society* (1936–) in United States, *Modern Quarterly* (1938–1953) in Britain and *La Pensée* (1939–2012) in France, that were in line with the *Under the Banner of Marxism* (1922–1944) in the Soviet Union, were founded during this period. The weight of natural sciences in terms of founders, editors and articles were unmatched in comparison to present Marxist journals. Although the weight of natural sciences gradually diminished in these journals, *Science and Society* remains distinguished by its openness to natural sciences.

6. It is very interesting that the name of the Iyenko, who developed a unique Marxist approach towards the unity of history and nature between 1950s and 1970s is not mentioned even once. Considering the detailed work of Graham, this fact either decreases the value of his work or shows the degree of isolation subjected to Iyenko in Soviet Union.

7. I deliberately do not prefer to use Western and Soviet adjectives for identifying those Marxists related with natural sciences, because they do not seem to be an organic part of the two Marxisms, theoretically.

8. For a full consideration of Marxist natural scientists from Britain and other European countries during this period see Sheehan 1993.

Since then other influential Marxist journals have been founded but with an exclusively social sciences and/or humanities orientation. For instance, the *Monthly Review* (1949–) founded in the United States was not a journal especially dedicated to natural sciences.⁹ However, the journal contributed to the development of ecological thinking within Marxism by its emphasis on nature and physical sciences (Foster 2000, vii).

A decisive revival of natural sciences in Marxism was witnessed both in the West and in the East in 1960s. While political climate for natural scientists relaxed in the Soviet Union, another radical science movement, *Science for the People*, emerged in the United States. The prominent figures of this movement were again Marxist natural scientists such as Gould, Levins, Lewontin and Rose whose works and legacies are quite alive.

Sheehan, both as an expert on the issue and a witness to this period, lucidly summarizes the mood and the related events:

The 1960s and 1970s put Marxism on the agenda in a new way in the rest of the world where capitalism held sway. New Left ferment pervaded North America and Western Europe especially. This was a time when all that had been assumed was opened to question, when the universities and the streets became contested terrain. Academic disciplines were scrutinized at their very foundations. Philosophy, sociology, literature, science—all knowledge—was seen as tied to power. University campuses and academic conferences were alive with passion and polemic. Journals such as *Radical Philosophy*, *Insurgent Sociologist*, *Science for the People*, *Radical Science Journal*, and *Science as Culture* gave expression to this ferment. Many of my generation threw ourselves whole heartedly into this. [...] Meanwhile, Soviet delegations were no longer a surprise at international conferences. They were integrated into the organizing structures and gave papers in many sessions. (Sheehan 2021)

In this sense, it is interesting to note the indifference of most Marxists from social sciences and humanities towards these works of Marxist natural scientists. For instance, despite the theoretical and practical militancy of *Science for the People* (*SftP*) movement and its incomparable impact, even factual books reviewing history of Marxism in the States by Marxist social scientists could have been completely ignorant about the movement and its members.

Soon afterwards, the Green Theory emerged as a response to environmental issues that gradually came to the fore in capitalist countries in late

9. However, Albert Einstein's 'Why Socialism?' was published in the first issue of *MR*.

1970s. The emergence and the rise of postmodernist theories also coincided with the rise of Green Theory. Despite their different agendas, they also shared a certain hostility towards ‘natural sciences’ and Marxism.

Although under the heavy influence of Green Theory, eco-socialism also emerged and marked a milestone for the return of nature back to the focus of some Marxists throughout the 1980s and 1990s. One of the founding names of eco-socialism, Michael Löwy (2018) presents the brief history of the movement:

Manuel Sacristan, a Spanish dissident-Communist philosopher, founded the ecosocialist and feminist journal *Mientras Tanto* in 1979, introducing the dialectical concept of “destructive-productive forces.” Raymond Williams, a British socialist and founder of modern cultural studies, became one of the first in Europe to call for an “ecologically conscious socialism” and is often credited with coining the term “ecosocialism” itself. André Gorz, a French philosopher and journalist, argued that political ecology must contain a critique of economic thought and called for an ecological and humanist transformation of work. Barry Commoner, an American biologist, argued that the capitalist system and its technology—and not population growth—was responsible for the destruction of the environment, which led him to the conclusion that “some sort of socialism” was the realistic alternative. In the 1980s, James O’Connor founded the influential journal *Capitalism, Nature and Socialism*, which was inspired by his idea of the “second contradiction of capitalism.” (Michael Löwy 2018)

Consequently, Marxists in social sciences and humanities started to seriously take nature—if not the natural sciences—into account, despite their mostly negative reception of Marx and Engels, as Prometheans and conquerors of nature. Grundmann (1991) briefly summarizes these discussions among Marxists as follows:

Contemporary Marxism has responded in a number of ways to the challenge posed by ecology. Broadly speaking, three currents of thought can be distinguished. The first I shall call the ‘Marxist dissident’ response. Its proponents have abandoned central elements of Marx’s theory, claiming that the new questions posed by ecology cannot be solved within its theoretical framework. [...] Opposed to this group we find a tendency which aims to defend central elements of that theoretical corpus. I shall call this current ‘Marxist orthodoxy’. Between them we can locate a third group of authors who think that ecology in fact presents a serious challenge to Marxism, but who are at the same time convinced that ready-made answers are contained within Marx’s thought. (Grundmann 1991, 103)

Long story short, these first generation Marxists within eco-socialism contributed in large to the subject and thus paved the way for the second

generation. Especially, studies of figures such as Ted Benton (1979, 1989, 1993, 1996a, 1996b) stands out in this sense. Nevertheless, Marxists were not well prepared when the Sokal Hoax broke in 1996.

The Sokal Hoax

The main two targets of postmodern theories were Marxism and natural sciences as two strong representatives of totality and universality.¹⁰ Although Marxists obviously had produced more inclusive and voluminous counter-criticisms¹¹, it was interesting that the most influential counter attack came not from Marxists but from a mathematician and a physicist, Alan Sokal in 1996. This fact was clearly expressed by Brett Clark and Richard York:

In fact, Monthly Review Press published *In Defense of History: Marxism and the Postmodern Agenda*, edited by Ellen Meiksins Wood (then coeditor of *MR*) and John Bellamy Foster (current coeditor of *MR*), around the same time as the Sokal scandal was in full swing, and the essays in that volume leveled many of the same criticisms of postmodernism that were made by Sokal and his supporters. (Clark and York 2006)

This event was called as the Sokal Hoax afterwards. The hoax was about Sokal's paper published in the *Social Text*, a prominent journal of cultural studies. He argued that recent developments in physics were in line with postmodern theories. Sokal intentionally had filled the paper with completely nonsensical, false arguments; the editors, however, swallowed the bait.

Although the result was certainly not a victory for Marxism, the hoax publicly discredited the founding names of postmodern theories such as Lyotard, Derrida, Lacan, Baudrillard, Deleuze and Guattari. However, far from being a victory for Marxists, the Sokal Hoax seemed to put Marxism in a kind of a *Mexican Standoff*— a confrontation of many parties where any shot could trigger a blind kill of all parties. Leading Marxist natural scientists—already very few in number— such as Richard Levins and Hilary Rose were among the contributors of the issue where Sokal published his “paper”. Furthermore, Richard Lewontin, another leading Marxist natural scientist was one of the authors of the book that was an expanded version

10. This fact can be clearly seen from one of the masterpieces of postmodern theories, *The Postmodern Condition* by Lyotard published in 1979.

11. Wood 1986; Jameson 1991; Callinicos 1990; Smith 1993; Larrain 1994; Wood and Foster 1995; Zavarzadeh et al. 1995.

of the same journal issue. Finally, the editor of both the journal and the book, Andrew Ross was a Marxist cultural studies scholar.¹²

In fact, the background of the hoax is more complicated: Sokal's paper (1996a) was published in a special issue of the *Social Text*, titled 'Science Wars' and edited by Ross (1996a). This special issue was a response to the attack of Gross and Levitt (1994), two positivist natural scientists, on 'academic left'. Lewontin (1995) had already criticized the book, before the *Social Text* affair. After Sokal (1996b) revealed the hoax, the special issue of *Social Text* was published as a book, edited again by Ross (1996b). Finally, a short response of Ross (1997) to the hoax was followed by an extensive book by Sokal and Bricmont (1998). For clarity, the whole process of this complex academic scandal is briefly summarized in Table 1 and its corresponding note.

Table 1. Timeline of the Sokal Hoax.

Year	Authors	Title of Publication
1994	P. Gross and N. Levitt	<i>Higher Superstition: The Academic Left and Its Quarrels with Science.</i>
1995	R. C. Lewontin	"A La Recherche Du Temps Perdu." <i>Configurations</i> 3 (2)
1996a	A. Ross (ed.)	"Science Wars." Special Issue, <i>Social Text</i> 46/47
1996a	A. Sokal	"Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity." In "Science Wars." Special issue, <i>Social Text</i> 46/47
1996b	A. Sokal	"A Physicist Experiments with Cultural Studies." <i>Lingua Franca</i>
1996b	A. Ross (ed.)	<i>Science Wars</i> (expanded version of the <i>Social Text</i> issue)
1997	Andrew Ross	"Reflections on the Sokal Affair." <i>Social Text</i> 50
1998	A. Sokal and J. Bricmont	<i>Fashionable Nonsense: Postmodern Intellectuals' Abuse of Science</i>

NOTE: 1994-Paul Gross and Norman Levitt: The book with a clear anti-communist and anti-Marxist stance, was a reactionary and fully positivist response against 'academic left'—including postmodernists—for their 'mistrust' to the 'objectivity' of science. In other words, the authors seemed to be against e.g. history, sociology, anthropology, political economy and philosophy of science, or in short, *science studies*.

12. Ross was a contributor in one of the few sources on Marxism and culture (Nelson and Grossberg 1988), at least. Furthermore, not only Ross but also Aranowitz and two prominent figures of post-Marxism, Chantal Mouffe and Etienne Balibar, and one of the prominent representatives of post-colonialism, Gayatri Chakravorty Spivak were contributors of one of the same book. Henri Lefebvre, Perry Anderson, Fredric Jameson, Stuart Hall and Terry Eagleton were other contributors who were rather on the side of 'traditional' Marxism.

1995-Richard C. Lewontin: One of the first critical reviews of Gross and Levitt (1994) from a Marxist perspective was published by Lewontin.

1996a-Andrew Ross (ed.): *Social Text* published a special issue titled as 'Science Wars' dedicated to the criticisms of Gross and Levitt (1994). Ross presented 'Science Wars' in his editorial introduction as an expansion of Culture Wars into the realm of science: On the one side *Social Text* represents *progressivism* of left, on the other side Gross and Levitt represent *orthodoxy* of right.

1996a-Alan Sokal: The paper of Sokal, "Transgressing the Boundaries" was also published at this exact same issue.

1996b-Alan Sokal: Sokal revealed his hoax with a short article published in *Lingua Franca*. Sokal's position was rather within the context of a discussion among left in contrast to Gross and Levitt's right-wing stance which attack the whole left. Furthermore, Sokal considered himself politically on the side of the *Social Text*. However, he was clearly against epistemic relativism of postmodern theories, which dominated academic left within cultural studies.

1996b-Andrew Ross (ed.): The special issue of the *Social Text* titled 'Science Wars' was published as a book with some additional chapters such as Lewontin (1995) in response to the hoax.

1997-Andrew Ross: While Ross acknowledged that Sokal Hoax did not fit to the picture of Culture Wars, he tried to present the Hoax as a Culture War within the left: *progressivism* was represented by the 'new left' and *orthodoxy* by those supporters of Sokal from the 'old left.'

1998-Alan Sokal and Jean Bricmont: Their book was first published in French in 1997 and presented an extensive critique of leading postmodern theorists' *abuse of science*. Although their stance was not anti-communist and anti-Marxist, they had neither stayed back from accusing any kind of Marxism, including the 'traditional' one or attacking 'academic left' within cultural studies.

As a result, the hoax escalated the *Science Wars*. The clash was apparently between Paul Gross, Norman Levitt, Alan Sokal, Lewis Wolpert, Richard Dawkins, Steven Weinberg on the one side and Andrew Ross, Stanley Aronowitz, Barry Barnes, David Bloor, David Edge, H. M. Collins, Sandra Harding, Donna Haraway, and Bruno Latour on the other.

However, the sides of the *Science Wars* were much more complicated than it looked. Leading positivist natural scientists—including Gross and Levitt—supporting Sokal were the target of Marxist natural scientists' criticisms. While Sokal considered himself rather as an 'old left(ist),' postmodernists accused him of traditional Marxism. Of course, post-Marxists whose trademark is their flirting with postmodern theories were expectedly against Sokal. However, when cultural studies considered, post-Marxism have been almost the only kind of Marxism around since 1980s.

As a result, Marxists, unfortunately, almost completely stayed silent about the Sokal Hoax, as if they were in a kind of *Mexican standoff*. The results of a quick search for the title 'Sokal' at the archives of some leading

Marxist journals within the four years between 1996 and 2000, after the hoax, are presented in Table 2.

Table 2. Search results for the name ‘Sokal’ at the archives of leading Marxist journals within four years after the hoax, between 1996 and 2000. Book reviews are not included.

Marxist Journals (foundation year)	Articles (1996–2000)
<i>New Left Review</i> (1960) <i>Critique</i> (1973) <i>Capital & Class</i> (1977) <i>Nature, Capitalism and Socialism</i> (1978) <i>Thesis Eleven</i> (1980) <i>Historical Materialism</i> (1997)	None
<i>Science & Society</i> (1936)	Editorial Perspectives (1996/1997) Joost Kircz (1998) Derek Lovejoy (1999/2000)
<i>Monthly Review</i> (1949)	Meera Nanda (1997a) Notes from the Editors (1997)
<i>Socialist Register</i> (1964)	Meera Nanda (1997b)
<i>Rethinking Marxism</i> (1988)	In this issue (1999a) Meera Nanda (1999)

It is quite interesting to note that an Indian natural scientist, Meera Nanda stands out with three extensive articles on the Sokal Hoax, while not only leading Marxist natural scientists, but also most prominent Marxist theorists kept quiet on the issue. In her studies, Meera Nanda counter-attacks postmodernists from a particular Marxist stance in support of Sokal based on history and philosophy of science. She especially discusses how epistemic and cultural relativism of postmodernist theories damaged the social life in Third World.

Studies by Kircz (1998) and Lovejoy (1999/2000), two of the very few Marxist physicists, are unique contributions to the issue given the authors’ expertise in both physics and Marxism. Although the Sokal Hoax is not the focus of Kircz’s (1998) study, his contribution is conspicuous in terms of bringing Engels, and thus natural sciences, back to Marxism—one of the first attempts after a long time. Finally, Lovejoy (1999/2000) focuses on the Sokal Hoax from a Marxist perspective in terms of quantum physics, which was at the heart of discussions. Both studies can be considered as being somehow on the side of Sokal.

The other contributions come from editors of the *Monthly Review* and *Rethinking Marxism*. In the 'Notes from the Editors' (1997) of the *Monthly Review* it is stated that the journal organized six panels within Socialist Scholars Conference, where one of the panels was dedicated to the Sokal Hoax. Although Sokal is not mentioned in the editorial note of the *Rethinking Marxism*, 'In this issue' (1999b), it seems that there had been a debate on the issue at the 1996 conference of the *RM*. The editors address the issue as the 'so-called' debate on "relativist-social constructivist, postcolonial, and postdevelopment-views of science" while presenting Nanda's article (1999).

A Marxist colleague and a participant of the conference, Louis Proyect (n.d.a; n.d.b), provides some details of the debate(s) where the Sokal Hoax seemed to be at the center. He argues that the organisers were not happy with these debates. The debates were about the protest of some participants on the side of Sokal. The 'In this issue' (1999a) of the *Rethinking Marxism* that addresses the Sokal Hoax, makes it clear that the journal is not on Sokal's side. For example, the editors present the review of the book by Goshgarian (1999), *Impostures Intellectuelles* by Sokal and Bricmont, as follows:

Goshgarian takes to task the insinuations, summary dismissals, quotations out of context, guilt by association, "gotchas," and so on that comprise Sokal and Bricmont's attack on the "intellectual dishonesty" of postmodernism and ultimately mark the book as a self-referential exercise: "a series of intellectual impostures that decries a series of intellectual impostures." ('In this issue' 1999a, iv-v)

In my view, the 'Editorial Perspectives' (1996/1997) of the *Science & Society*, with its subtitle 'Science and Its Cultural Critics, or Hermeneutical Gravity and Quantum Levity' embraces a genuine Marxist position: roughly, a critical support to Sokal. The editors acknowledge the complexity of the issue and declare their intention to discuss the matter within a Marxist context:

[...] the nature and validity of the cultural critique of science; the question of the social construction of natural and social reality, in relation to materialist philosophical foundations; the problem of explaining the communications gap that evidently exists between scientists and their critics; and the puzzle raised by modern physics of the objectivity of the external world, and the possibility of our knowing it. ('Editorial Perspectives' 1996/1997, 387)

Despite the very few studies on the hoax by Marxists, it is clear that there was not an agreement among them. I contend that Lewontin's brilliant review (1995) of Gross and Levitt's book clarifies this whole complex picture, interestingly, a year before the hoax. Neither Gross and Levitt (and Sokal)¹³ were seriously aware of Marxism and Marxists, nor did they have a clear idea of what 'left' and 'academic left' mean:

The first problem with Gross and Levitt's thesis is that it is impossible to tell what is meant by the 'academic left,' although they spend a lot of energy trying to justify the term. It definitely does not mean academics who are politically left: they exclude all practicing scientists with leftist politics. Indeed, some of their best friends are lefties. They love Steve Gould (*a leading Marxist natural scientist, acg*). Nor does it include all leftist humanists and social scientists. They use, for example, an article in the *New Left Review* by an admirer of Marx, Elizabeth Wilson, to castigate the 'academic left.' On the other hand, the academic left includes such well-known lefties as Paul de Man! Nor does one have to be an academic to be included (Jeremy Rifkin is on the list). Their archetype of the 'academic left' is Stanley Aronowitz, whose leftist credentials are for them that he is actually a member of the Democratic Socialists of America, the left wing of what used to be the Democratic Party. (Lewontin 1996, 296)

Unfortunately, Lewontin also clarifies his own position in this complex picture, while underestimating the impact of postmodernists:

It is certainly true, and Gross and Levitt provide some lovely examples, that some people have written nonsense about the method and content of natural science. What is not clear from their treatment is whether these examples of nonsense represent any significant or threatening attack on rationality, any more than their own vulgar six page history of the Left in the United. (Lewontin 1996, 296)

Unfortunately, the overall picture reminds the painting of Pieter Bruegel the Elder, *The Blind Leading the Blind* (1568) which turns the situation into a blind version of *Mexican Standoff*. For clarification, the parties in the *Mexican Standoff* are presented graphically in Fig. 1. For simplicity, Western Marxism is not represented in the figure; it had already been evolved into post-Marxism, mostly, by the time, as Wood (1998 [1986], 18) implied.

13. While Sokal (1996b) was accusing the *Social Text* and its editors by their names, Fredric Jameson and Andrew Ross as postmodernist, Fredric Jameson (1991) already published a collection of articles against postmodernism dating back to 1984. One of the Jameson's article was then reprinted in a book edited by Wood and Foster (1997), one of the earliest and strongest counter-attacks of 'traditional' Marxists against postmodernism.

Instead, the term ‘Traditional Marxists’ is used to refer those Marxists struggled against postmodernists and post-Marxists.

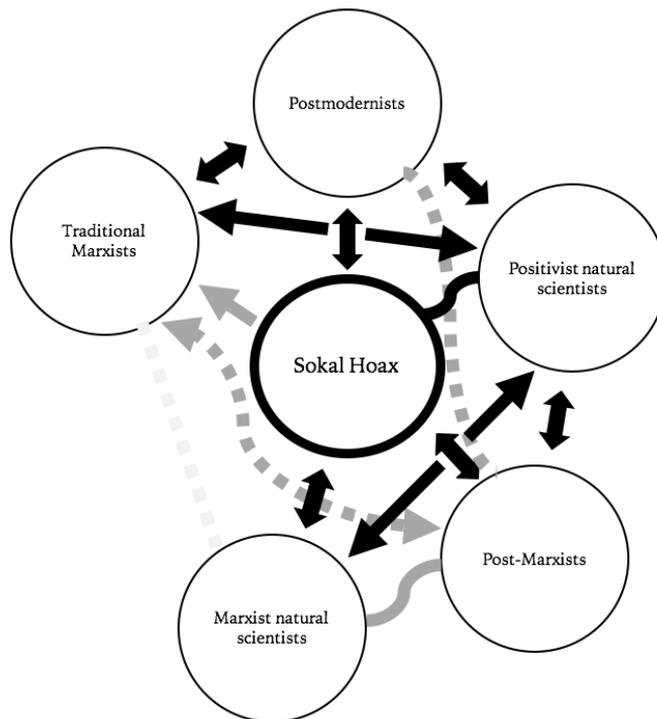


Figure 1. Marxism in Mexican Standoff. Arrowed line/curve represents disagreement; line/curve without arrow represents agreement; darkness of line/curve represents the strength of the relation. Three kinds of strength are used: black, gray and light gray. Dashes are used only for visual reasons.

It seems that traditional Marxists and Marxist natural scientists were not much aware of each other’s existence as it is represented in the figure with light grey that signifies the weakest relation. Lewontin and the rest of the prominent Marxist natural scientists seems to be more prepared and alert to attacks of positivist natural scientists, as already proved by their excellent works in response to them.¹⁴ Similarly, traditional Marxists

14. It is also important to remember that Marxist natural scientists were very interested in Engels, in contrast to Marxist theorists. Dedicating their book, *The Dialectical Biologist* to Engels, Levins and Lewontin (1985) wrote: “to Engels who got it wrong a lot of the time but who got it where it counts.”

seemed to be more sensitive to the attacks of ‘true’ socialists (Wood (1998 [1986])—postmodernists and post-Marxists—when issues on social sciences came to the fore, as already proved by their brilliant works. It turns out to be that the strengths of traditional Marxists and Marxist natural scientists, alone was not valid, enough. At least, the silence of both sides about the Sokal Hoax seems to leave no room for any other explanation.

BACK to ENGELS

After a Long Century

Since the heydays of the Sokal Hoax, Engels and nature have gradually returned to the agenda of Marxism, after a long century, as never before. One of the early signs of this return was the special issue of *Science & Society* on Engels, edited by Joost Kircz and Michael Löwy (1998). The real climax came by the masterworks of second generation of Marxists studying on ecology besides the subsequent works and organizational successes of the first generation:

A new generation of eco-Marxists appeared in the 2000s, including John Bellamy Foster and others around the journal *Monthly Review*, who further developed the Marxian concept of *metabolic rift* between human societies and the environment. In 2001, Joel Kovel and the present author issued “An Ecosocialist Manifesto,” which was further developed by the same authors, together with Ian Angus, in the 2008 Belem Ecosocialist Manifesto, which was signed by hundreds of people from forty countries and distributed at the World Social Forum in 2009. It has since become an important reference for ecosocialists around the world. (Michael Löwy 2018)

While Kovel (2002) and Löwy (2015) continued to develop their approaches within eco-socialism, especially, two studies of the second generation were ground breaking: Burkett (1999) brought nature back into political-economy, for the first time seriously after Marx, and Foster (2000) placed nature back into the heart of Marxism, by extracting the concept of ‘metabolic rift’ from works of Marx and Engels. Furthermore, Foster’s study (2000) was ground breaking not only in its defense of Engels but also in representing Engels’ counter-attack.

Since then, not only Foster (2002, 2009, and 2020) and Burkett (2006) continued to develop their analysis but also they collaborated with others, the outcome of which are works such as Foster, Clark, and York (2010),

Foster and Burkett (2016) and Foster and Clark (2020). Engels and/or nature have been continued to be the subjects of other studies, for example, Kohei Saito (2017, 2021), Xueming Chen (2017) and Kangal (2021).

Unfortunately, these developments do not correspond to a similar revival of interest in natural sciences within Marxism. Therefore, the relation between dialectics and nature, and contributions of Engels in this respect, has been left untouched. Consequently, the core of the problem, resulting a ‘Marxism without Engels’, remained unsolved.

The result of a similar quick search for the title ‘Sokal’ at the archives of these same Marxist journals within twenty-two years between 2000 and 2022 is mainly book reviews, with the exception of Clark and York’s (2006) study published in the *Monthly Review*. It is the only attempt for considering the Sokal affair in a detailed way, within the context of natural sciences and Marxism.

Another exception is the ambitious two-volume book on natural sciences and Marxism by Woods and Grant (2002, 2003). The content of the book, covering physics, geology, archeology, biology, and physiology within the context of Marxist philosophy of science is astonishingly comprehensive. However, it had almost no impact on the aforementioned Marxist journals.

The legendary organization *Science for the People (StfP)* which had ceased to exist in 1989 was reanimated in 2014. The magazine of the *StfP* started to be published again in 2019. The title of the first issue after the renewal was ‘The Return of Radical Science’ reminding radical science movements of the past. It was not by chance that the mathematician Micheal Harris (2019) wrote an article on ‘Sokal Squared’, another academic publishing hoax, referring to the Sokal in this issue. Harris’ discussion of Science Wars and Sokal Hoax is one of the very few critical reviews on the issue written by a natural scientist from a Marxist perspective. While criticizing positivism of Sokal, Harris revealed how the other side of the war, that is, science studies scholars tried to keep themselves distant from *StfP* and radical science movement, and thus Marxism.

Finally, although not published in a Marxist journal, Sheehan’s (2001) review of a book on Science Wars is distinguished by its acknowledgement of the complexity of the subject and the questions it raises, which point to underlying much deeper problems:

What is the basic storyline in the drama of the science wars? Is it a conflict of science versus science studies? Or is it a conflict of pro-science versus anti-

science tendencies? Or is it a conflict of epistemological realism versus relativism; of scientific objectivity versus sociological constructivism? Or more broadly of positivism or neopositivism versus postmodernism, feminism, marxism, afrocentrism, new age mysticism? Or is it a conflict of right versus left? [...] Certainly the left is actively on both sides of it. So the issues involved are quite complex. (Sheehan 2001)

Furthermore, Sheehan genuinely formulated the crucial point of the problem for the both sides, that is, their indifference to Marxism and lack of any backgrounds in it:

Marxism constitutes a long and complex intellectual tradition, which has robustly combined a defence of the cognitive capacity of science with a strong emphasis on its socio-historical character. Given the fact that these current debates dramatise a striving to reconcile the rationality of science with the historicity of science, it would do no harm for those involved in this debate to know more of the preceding debates that have taken place within this tradition and between it and contending positions. (ibid.)

The concluding words of Sheehan is also unique in the sense of grasping the vitality of the problem as a matter of life or death for humanity, nature and Marxism, which I tried to discuss throughout this essay:

The basic storyline, I contend, is the epistemological crisis of our times in its fullest socio-historical context. The conflict between a particular group of scientists and a particular trend in science studies is only one subplot in a much larger and longer drama. (ibid.)

The Actuality of Engels

Unfortunately, the relation between Marxism and natural sciences, despite the brilliant studies of the past and recent hopeful developments, is still in its stage of infancy given a long century of Marxism without Engels.

The recent reintroduction of Engels to Marxism in terms of nature is a great achievement of eco-Marxists. It is clear that Marxists in social sciences and humanities already defined their task and progressed on their way quite seriously. That being the case, it is now time for natural scientists to play their 'natural' part.

However, the solution of the problem is not certainly as simple as concatenating various disciplines in which Marxism need to be developed. No doubt, such kind of work is obviously not a trivial one. The real problem seems to be redefining and rebuilding the totality of Marxism in theory and methodology, and in relation to practice. Therefore, the main problem of Marxism without Engels is not the loss of natural sciences but of totality.

On the one hand, the main weakness of Marxism in defending itself against the attacks of postmodernism was exactly the absence of this totality. On the other hand, the main strength of postmodernists' attacks was based on a totality peculiar to such theories. It is ironic to remember that postmodernists were once present in every realm from arts to humanities, from social sciences to natural sciences and thus politics while Marxism was stuck in social sciences and humanities, exclusively.

Overall, this picture has greatly changed. Recent withdrawal of post-modernist theories coincides with the return of Engels. However, new theories immediately started to occupy the space left by postmodernist theories. After the theoretical shift from Marxism to postmodern theories, known as 'Cultural Turn,' in the 80s and 90s, we witness another theoretical shift from 'Cultural Turn' to 'Material Turn' and thus the emergence and rise of the so-called 'post-humanist' theories.

Rooted in material culture studies in archeology and socio-cultural anthropology, material turn represents an intellectual enterprise covering cultural geography and science and technology studies (STS) (Hicks and Beaudry 2010). The Material Turn, which is as heterogeneous as Cultural Turn, represents a common interest in 'things' with a philosophical background called new materialism hostile to dialectical and historical materialism (Choat 2018).

While material turn emerged as a result of dissatisfaction with Cultural Turn which reduces things to meanings (Hicks and Beaudry 2010), both 'turns' share lack of critical discourses and politics as well as hostility to Marxism. In this sense, Material Turn provided a basis for post-humanist theories (Mukerji 2015) which replaced post-modernist ones. Furthermore, while post-humanist theories have a specific interest in nature, they also share many features of postmodernist theories: An ambitious attempt to dominate the whole intellectual sphere as a result of their own conception of totality and universality against Marxism.

Therefore, in order not to be caught in another Mexican Standoff, Marxism needs to regain its own totality. In fact, Marx and Engels once built this totality. They succeeded in resolving crucial dualities such as nature vs. human, nature vs. culture, mind vs. body and universalism vs. particularism by way of their own conception of totality in theory:

We know only a single science, the science of history. One can look at history from two sides and divide it into the history of nature and the history of men. The two sides are, however, inseparable; the history of nature and the history

of men are dependent on each other so long as men exist. (Marx and Engels 1975, 28)

In terms of methodology, *M&S* defined the totality based on Marx and Engels, as follows:

Marx and Engels were quite clear in defining materialist dialectics as the general laws of matter in motion where matter emerges in the form of thought, nature and human society not in isolation from one another but as mutually interrelated. In this sense, the materialist conception of history, according to Marx and Engels, not only is based on materialist dialectics but also is a study of dialectics. ('About us' 2021)

I consider these principles not as given finalized laws to be followed or applied, but as the principles of a theoretical and a methodological framework to be researched and developed in every single branch of science, as a never-ending process, with the aim of unifying them.

I think that the task of redefining and rebuilding the totality of Marxism in theory and methodology, and in relation to practice is the testament of Marx and Engels, which is the main goal of *M&S*:

The fundamental goal of *Marxism & Sciences* is to develop a research programme, which paves the way for an all-encompassing Marxist grasp of intellectual domain and a merger of class struggles in nature, culture and society as once developed by Marx and Engels and embodied in Marx's *Capital* at the highest level. ('About us' 2021)

I think that such an attempt within Marxism would not certainly result in a tragic end, like the one, Cyrano de Bergerac experienced, while reciting his final words:

Philosopher and physicist,
Musician, rhymester, duellist,
Explorer of the upper blue,
Retorter apt with point and point,
Lover as well,—not for his peace!
Here lies Hercule Savinien
De Cyrano de Bergerac,
Who was everything ... but of account!

(Edmond Rostand 2004 [1654], 246)

REFERENCES

- 'About us'. 2021. *Marxism & Sciences*. <https://marxismandsciences.org/about/>
- Altieri, Riccardo. 2020. "In the Shadow of Karl Marx Perception and Reception of Friedrich Engels in the Digital Age." In *Engels@200: Reading Friedrich Engels in the 21st Century*, edited by Frank Jacob, 271–288. Marburg: Büchner-Verlag.
- Anderson, Perry. 1976. *Considerations on Western Marxism*. London: NLB.
- Benton, Ted. 1979. "Natural Science and Cultural Struggle: Engels on Philosophy and the Natural Sciences." In *Issues in Marxist Philosophy*, Vol. 2, *Materialism*, edited by John Mepham and David-Hillel Ruben 101–142. New Jersey: Humanities Press.
- . 1989. "Marxism and Natural Limits." *New Left Review* 178: 51–86.
- . 1993. *Natural Relations: Ecology, Animal Rights and Social Justice*. Verso.
- . 1996a. "Engels and the Politics of Nature." In *Engels Today: A Centenary Appreciation*, edited by Christopher J. Arthur, 67–93. Hampshire: Macmillan Press.
- . 1996b. *Natural Relations: Ecology, Animal Rights, and Social Justice*. London and New York: Verso.
- Burkett, Paul. 1999. *Marx and Nature: A Red and Green Perspective*. New York: St. Martin's Press.
- . 2006. *Marxism and Ecological Economics: Toward a Red and Green Political Economy*. Leiden and Boston: Brill.
- Callinicos, Alex. 1990. *Against Postmodernism: A Marxist Critique*. Polity Press
- Chen, Xueming. 2017. *The Ecological Crisis and the Logic of Capital*. Leiden and Boston: Brill.
- Choat, Simon. 2018. "Science, Agency and Ontology: A Historical-Materialist Response to New Materialism." *Political Studies* 66 (4): 1027-1042.
- 'Editorial Perspectives: Science and Its Cultural Critics, or Hermeneutical Gravity and Quantum Levity'. 1996. *Science & Society* 60(4): 386–392.
- Engels, Friedrich. 2004 [1895]. "Engels to Karl Kautsky, 1 April." In *Marx and Engels Collected Works*, Vol.50, 486. London: Lawrence & Wishart.
- Foster, John Bellamy. 2000. *Marx's Ecology: Materialism and Nature*. New York: Monthly Review Press.
- . 2002. *Ecology against Capitalism*. New York: Monthly Review Press.
- . 2009. *The Ecological Revolution: Making Peace with the Planet*. New York: Monthly Review Press.
- . 2020. *The Return of Nature: Socialism and Ecology*. NYU Press.
- Foster, John Bellamy and Brett Clark. 2020. *The Robbery of Nature: Capitalism and the Ecological Rift*. NYU Press.
- Foster, John Bellamy, Clark, Brett and Richard York. 2010. *The Ecological Rift: Capitalism's War on the Earth*. New York: Monthly Review Press.
- Foster, John Bellamy and Paul Burkett. 2016. *Marx and the Earth: An Anti-Critique*. Leiden and Boston: Brill.
- Goshgarian, G. M. 1999. "Review." *Rethinking Marxism* 11 (1): 120–131.
- Gouldner, Alwin W. 1980. *The Two Marxisms: Contradictions and Anomalies in the Development of Theory*. London: Macmillan Press.
- Graham, Loren R. 1987. *Science, Philosophy, and Human Behavior in the Soviet Union*. New York: Columbia University Press.
- Grant, Ted, and Woods, Alan. 2002. *Reason in Revolt, Vol. I: Dialectical Philosophy and Modern Science*. New York: Algora Publishing.
- . 2003. *Reason in Revolt, Vol. II: Dialectical Philosophy and Modern Science*. New York: Algora Publishing.

- Gross, Paul and Norman Levitt. 1994. *Higher Superstition: The Academic Left and Its Quarrels with Science*. Baltimore, MD: Johns Hopkins University Press.
- Grundmann, R. 1991. "The Ecological Challenge to Marxism." *New Left Review* 187: 103–120.
- Harris, Michael. 2019. "Science Wars: The Next Generation." *Science for the People Magazine* 22 (1). <https://magazine.scienceforthepeople.org/vol22-1/>
- Hicks, Dan, and Mary C. Beaudry. 2010. "Introduction: Material Culture Studies: A Reactionary View." In *The Oxford Handbook of Material Culture Studies*, edited by Dan Hicks and Mary C. Beaudry, 1–21. New York: Oxford University Press.
- Hunt, Tristram. 2009. *The Frock-Coated Communist: The Revolutionary Life of Friedrich Engels*. London: Penguin Books.
- 'In this issue' 1999. *Rethinking Marxism* 11 (1): iii–v. doi: 10.1080/08935699908685560
- Jameson, Fredric. 1991. *Postmodernism, or, the Cultural Logic of Late Capitalism*. Durham: Duke University Press.
- Kangal, Kaan. 2020. *Friedrich Engels and the Dialectics of Nature*. New York: Palgrave Macmillan.
- Kircz, Joost. 1998. "Engels and Natural Science: A Starting Point." *Science & Society* 62 (1): 62–78
- Kovel, Joel. 2002. *The Enemy of Nature: The End of Capitalism or the End of the World?* London and New York: Zed Books.
- Krätke, Michael R. 2011. "Why Could Marx Not Complete Capital?" *York University, Department of Political Science Seminar Series*, vimeo video: <http://vimeo.com/33204484>
- Lafargue, Paul. 1943 [1890]. "by Paul Lafargue." In *Karl Marx, His Life and Work: Reminiscences by Paul Lafargue and Wilhelm Liebknecht*, 7–29. New York: International Publishers, 1943,
- Larrain, Jorge. 1986. *A Reconstruction of Historical Materialism*. London: Unwin Hyman,
———. 1994. *Ideology and Cultural Identity: Modernity and the Third World Presence*. Cambridge: Polity Press.
- Levins, Richard, and Richard Lewontin. 1985. *The Dialectical Biologist*. Cambridge, Mass.: Harvard University Press.
- Lewontin, Richard C. 1995. "A La Recherche Du Temps Perdu." *Configurations* 3 (2): 257–265.
- Lewontin, R. C. 1996. "A la recherche du temps perdu: A Review Essay." In *Science Wars*, edited by Andrew Ross, 293–301. Durham and London: Duke University Press.
- Liebknecht, Wilhelm. 1943 [1896]. "by Liebknecht Wilhelm." In *Karl Marx, His Life and Work: Reminiscences by Paul Lafargue and Wilhelm Liebknecht*, 30–64. New York: International Publishers.
- Lovejoy, Derek. 1999/2000. "Objectivity, Causality and Ideology in Modern Physics." *Science & Society* 63 (4): 433–458.
- Löwy, Michael. 2015. *Ecosocialism: A Radical Alternative to Capitalist Catastrophe*. Illinois: Haymarket Books Chicago.
———. 2018. "Why Ecosocialism: For a Red-Green Future." *Great Transition Initiative* (October), <https://greattransition.org/publication/why-ecosocialism-red-green-future>
- Lukács, G. 1971 [1967]. *History and Class Consciousness: Studies in Marxist Dialectics*. Translated by Rodney Livingstone. Cambridge, Massachusetts: MIT Press.
- Marx, Karl. 1981 [1860]. "The Augsburg Campaign." In *Marx and Engels Collected Works*, Vol. 17, 111–132. London: Lawrence & Wishart.
———. 1985 [1864]. "Marx to Engels, 4 July." In *Marx and Engels Collected Works*, Vol. 41, p. 545–547. London: Lawrence & Wishart.

- . 1987. “Marx to Engels, 22 June 1867” In *Marx and Engels Collected Works*, Vol. 42, 385. London: Lawrence & Wishart.
- . 1996 [1867]. “Capital Volume 1.” In *Marx and Engels Collected Works*, Vol 35. London: Lawrence & Wishart.
- Marx, Karl and Frederick Engels. 1975. “The German Ideology.” In *Marx and Engels Collected Works*, Vol. 5. London: Lawrence & Wishart.
- Mukerji, Chandra. 2015. “The Material Turn.” In *Emerging Trends in the Social and Behavioral Sciences: An Interdisciplinary, Searchable, and Linkable Resource*, edited by Robert A. Scott and Stephen Michael Kosslyn. 1-13. Hoboken, NJ: Wiley.
- Nanda, Meera. 1997a. “Against Social De(con)struction of Science: Cautionary Tales from the Third World.” *Monthly Review* 48 (10) March. doi: 10.14452/MR-048-10-1997-03_1
- . 1997b. “Restoring the Real: Rethinking Social Constructivist Theories of Science.” *Socialist Register* 33: 302–352.
- . 1999. “In Search of an Epistemology for Third World People’s Science Movements.” *Rethinking Marxism* 11 (3): 104–123.
- Nelson, Cary and Lawrence Grossberg, eds. 1988. *Marxism and the Interpretation of Culture*. Urbana and Chicago: University of Illinois Press.
- ‘Notes from the Editors’. 1997. *Monthly Review*. June 49 (2). https://monthlyreview.org/1997/06/01/mr-049-02-1997-06_0/
- Ollman, Bertell. 1977. *Alienation: Marx’s Concept of Man in Capitalist Society*. Cambridge: Cambridge University Press.
- Proyect, Louis, (n.d.a). “Rethinking Marxism Conference.” <http://www.columbia.edu/~lnp3/mydocs/modernism/amherst.htm>
- . (n.d.b) “Deeper Complexities of the Sokal Affair.” <http://www.columbia.edu/~lnp3/mydocs/modernism/sokal2.htm>
- Rees, John. 1994. “Engels’ Marxism.” *International Socialism* 2: 65 (Winter). <http://www.marxists.org/history/etol/writers/rees-j/1994/xx/engels.htm>
- Ross, Andrew, ed. 1996a. “Science Wars.” Special issue. *Social Text* 46/47.
- . (ed.).1996b. *Science Wars*. Durham and London: Duke University Press.
- Ross, Andrew. 1997. “Reflections on the Sokal Affair.” *Social Text* 50: 149–152.
- Rostand, Edmond. 2004 [1654]. *Cyrano de Bergerac*. Translated and adapted for the stage by Anthoy Burgess. New York: Barnes & Noble.
- Rubel, Maximilien. 2005 [1970]. “The Legend of Marx, or “Engels the founder’.” In *Marx Myths & Legends*, edited by Andy Blunden and Rob Lucas. <https://www.marxists.org/subject/marxmyths/maximilien-rubel/article.htm>
- Saito, Kohei. 2017. *Karl Marx’s Ecosocialism: Capital, Nature, and the Unfinished Critique of Political Economy*. NYU Press.
- Saito, Kohei, ed. 2021. *Reexamining Engels’s Legacy in the 21st Century*. Palgrave Macmillan
- Sheehan, H. 1993 [1985]. *Marxism and the Philosophy of Science: A Critical History*, New Jersey: Humanities Press International.
- . 2001. “The Drama of the Science Wars: What is the Plot? Review of *Beyond the Science Wars: The Missing Discourse about Science and Society* by Ullica Segerstråle (ed)”. https://www.academia.edu/1427321/The_drama_of_the_science_wars_what_is_the_plot_Review_Beyond_the_science_wars_the_missing_discourse_about_science_and_society_
- . 2021. “John Desmond Bernal, Marxism, and the Scientific Revolution.” *Jacobin*, April 24. <https://jacobinmag.com/2021/04/john-desmond-jd-bernal-marxism-scientific-revolution>

- Smith, Tony. 1993. *Dialectical Social Theory and its Critics: From Hegel to Analytical Marxism and Postmodernism*. State University of New York Press.
- Sokal, Alan. 1996a "Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity." *Social Text* 46/47: 217–252.
- . 1996b. "A Physicist Experiments with Cultural Studies." *Lingua Franca*
- Sokal, Alan D. and Jean Bricmont. 1998. *Fashionable Nonsense: Postmodern Philosophers' Abuse of Science*. New York: Picador.
- Thompson, E.P. 1978. *The Poverty of Theory and Other Essays*. London: Merlin Press.
- Timpanaro, Sebastiano. 1975. *On Materialism*. Translated by Lawrence Garner. London: NLB.
- Williams, Raymond. 1982. *Socialism and Ecology*. London: Socialist Environment and Resources Association.
- . 2005 [1980]. *Culture and Materialism*. London and New York: Verso Books.
- Wood, Ellen Meiksins. 1998 [1986]. *The Retreat from class: A New "True" Socialism*. London and New York: Verso Books.
- Wood, Ellen Meiksins and John Bellamy Foster (eds.).1995. Special issue "In Defense of History: Marxlsm and the Postnlojern Agenda." *Monthly Review* (47: 3). <https://monthlyreview.org/product/mr-047-03-1995-07/>
- . 1997. *In Defense of History: Marxlsm and the Postnlojern Agenda*. New York: Monthly Review Press.
- York, Richard and Brett Clark. 2006. "Debunking as Positive Science: Reflections in Honor of the Twenty-Fifth Anniversary of Stephen Jay Gould's The Mismeasure of Man." *Monthly Review*, 57(9). <https://monthlyreview.org/2006/02/01/debunking-as-positive-science/>
- Zavarzadeh, M., Ebert, T. L., Morton, D. E., and Zavarzadeh, D., eds. 1995. *Post-ality: Marxism and Postmodernism* (Vol. 1). Maisonneuve.