

Marxism and Science: An addendum to “The Frankfurt School vs. Marxism”

By Ann Talbot and Chris Talbot
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David North has already ably dealt with many of the questions arising from both Alex Steiner's lecture "Dialectics and the Crisis of Science" and his polemic "Marxism without Its Head or Heart," but he asked us to provide an addendum supplementing some of the points he has made. (See David North's essay)

At the outset some background will be useful. We first encountered Steiner when we read the text of the lecture he gave to party members and supporters in Berlin in 2002. Both of us were concerned at his treatment of science and its history in the Renaissance and Enlightenment. Steiner had recently written a useful article on Heidegger, but his approach here was very different. The lecture was ill informed, thoroughly non-materialist and anti-dialectical.

The history of science is a complex subject and we assumed that Steiner had stumbled into an area of which he knew little and needed to do more work to develop an adequate analysis. We met informally for dinner while Steiner was on holiday in the UK and discussed some of the issues arising from the lecture in friendly terms. Later, Chris Talbot wrote to him suggesting some reading. Our patience was rewarded with the reply that North has already discussed. It was a 37-page diatribe reasserting and expanding on the points he made in the original lecture and article.

Neither Steiner's lecture nor his reply have been posted on his web site, which is perhaps not surprising considering what poor pieces of work both of them are. But Steiner has taken a sentence from Chris Talbot's letter out of context to demonstrate the supposed "vulgar materialist" and "empiricist" mode of thought indulged in by members of the International Committee. Ann Talbot's articles on the Enlightenment and bourgeois revolution have also come in for criticism from Steiner. He regards them as examples of the uncritical attitude of the WSWWS towards Enlightenment values and democratic rights and compares them to the comments of Christopher Hitchens and Sam Harris, or even the Bush administration, which claims to be exporting democratic values to Iraq.

We shall therefore take this opportunity to reply jointly to the attacks on both of us and to examine the questions of science and its history that he raises. These are wide-ranging topics, but Steiner's attacks in both areas are closely related methodologically. We will begin by looking at Steiner's misconceived view of String Theory before examining his conception of the Enlightenment and the bourgeois revolution.

Steiner's view of modern physics

North has already pointed out that Steiner's approach to science is highly idealist and fundamentally opposed to materialism, and has shown how Steiner's idealism is reflected in his attraction to the theories of Dame Francis Yates and Betty Jo Teeter Dobbs. The same idealist direction is expressed in Steiner's conception of the development of modern physics from Relativity to String Theory. In his Berlin lecture, Steiner claims:

The first major challenge to Newtonian mechanics comes,

interestingly enough, not from physics, but from the geometric theories of a German mathematician named George Bernhard Riemann. The beginning of the end of Newtonian physics takes place on June 10, 1854. That was the day when Riemann gave a public lecture in which he presented a geometric system that was an alternative to the Euclidean geometry upon whose shoulders Newtonian mechanics rested. Riemann's geometry postulated a space composed of higher dimensions than the normal three of Euclidean geometry. He postulated a space that was curved, much like the walls of the inside of a sphere are curved. Within this geometric system, all the axioms of Euclidean geometry are suddenly no longer obvious. For instance, in curved space parallel lines will meet. This was a radical mathematical theory, for no one had ever questioned Euclidean geometry before. After all, its small number of assumptions, such as the principle that parallel lines never meet, seem in the light of day-to-day common sense experience to be obvious.

Steiner places an extraordinary degree of emphasis on Riemannian geometry, which he regards as producing a sensation among physicists, writers, artists and psychics in the later years of the 19th century. Physicists tried to provide physical evidence of a fourth dimension, Steiner says, writers wrote novels about it, artists tried to visualize it and psychics claimed to be in communication with it. All this is drawn from Michio Kaku's book *Hyperspace*,[1] a popular account of String Theory for the layman, a work that provides a lively introduction to the subject for the non-specialist. But not even Kaku, a serious String Theorist himself, would pretend that his little book could be the basis for developing a new philosophy of science. Yet this is the only book that Steiner cites. No scientist could take him seriously and no Marxist could take him seriously.

Yet Steiner concludes:

The physical interpretation of the fourth dimension finally begins in 1905 with Einstein's theory of special relativity.

According to Steiner, Riemann's multidimensional geometry led directly to Einstein's theory of relativity. But this is simply not true. We have here another of those instances that North refers to when Steiner, for all his repeated invocations of "dialectics," demonstrates that he is a common or garden empiricist at heart. Here are two facts: 1854, Riemannian geometry; 1905, Einstein's Theory of Relativity; one fact precedes the other, therefore we have a causative relationship: Riemannian geometry gives rise to the Theory of Relativity.

This is an entirely idealist theory and, what is more, it is false and

unfounded in reality. The relationship between Riemann's geometry and Einstein's theory of relativity is immeasurably more complex than that, and of an intellectual complexity that far outstrips Steiner's impoverished and schematic conception. Reading Steiner's account of the development of modern physics is like being put on a diet of bread and water when there is a banquet set out in front of you.

Riemann was undoubtedly a mathematical genius who, in his short life, permanently altered the course of mathematics, but he did not pluck his conception of geometry out of the air. He developed his ideas while working with the experimental physicist Wilhelm Weber trying to develop a mathematical theory that would embrace electricity, magnetism, gravity and light. In other words, he was working on the same problem that Einstein was later to solve. He died in 1866 at the age of only 39 before many of the developments in electromagnetism that led to Einstein's theory. One biographer comments that "it is quite possible that had he been granted twenty or thirty more years of life he would have become the Newton or Einstein of the nineteenth century." [2]

We cannot, therefore, divorce physics from experimentalism and root its advances in an ideal world of pure mathematical thought, as Steiner would wish to do. It is true that mathematics follows its own technical rules that are internal to the discipline and even to a specific area of mathematics. Such is the degree of the division of labour in intellectual life that pure mathematicians may pursue those specialist areas for centuries without ever considering how they might be applied. Number theory, for example, was known to the followers of Pythagoras, but has only recently been applied in cryptography. Complex numbers were developed during the Renaissance and remained a rarefied branch of pure mathematics until they were found to be significant for modern electrical engineering.

Viewed in an idealist manner, the history of mathematics might seem to refute a materialist analysis of the development of human thought. Mathematics appears to exist in an ideal world. Many of its most brilliant exponents would maintain that to be the case. Yet if we pursue the history of mathematics with a little more tenacity and trace the discipline to its beginnings in the ancient civilisations of Egypt and Babylon, we find that mathematics develops in response to the material problems that confronted human beings in their attempt to make a living in the Nile valley or Iraq. Only at a later date did mathematics take on the abstract, generalised character with which we now associate it. This happened among the ancient Greeks in the course of the sixth century BC, when there was an attempt to understand the world scientifically, which is associated with the name of Thales of Miletus.

Thales is said to have introduced geometry from Egypt and used it to predict a solar eclipse in 585 BC. Thales and his successors were essentially materialists, but at the same time there developed an idealist school of philosophy among the followers of Pythagoras who regarded numbers as the real basis of a transitory, material world. In the course of the fifth century BC as philosophy developed in Athens it became sharply polarised between idealists and materialists. Plato characterised this struggle as a battle of gods and giants and, as is made clear in *The Sophist*, he was entirely on the side of the gods and opposed to the giants, the materialists, who wanted to drag everything down to the level of body.

For those who believe, with Alfred North Whitehead, that the whole of the Western philosophical tradition is no more than a series of footnotes to Plato, Plato's rejection of the materialism of Democritus and other ancient atomists provides the basis of their understanding of mathematics, science and philosophy. For them, mathematical ideas originate in the ideal world of Plato's forms and pass from there to the sordid material world of physics and engineering, becoming in the process less perfect and less beautiful. It is this anti-materialist and unhistorical view that Steiner has adopted.

The richness and, in a genuine sense, dialectical complexity of the

relationship between mathematics and physics is denied in Steiner's conception of a simple mechanical process in which one development in mathematics triggers a new direction in physics. Physics is certainly a mathematical discipline, but it is not possible to tie a development in humanity's understanding of the physical nature of the universe to an isolated advance in mathematics.

Steiner is entirely blind to the manifold interconnections of social thought that produce a new development in physics or any other area of human endeavour. Einstein's *annus mirabilis* in 1905, when he published the papers that were to revolutionize physics, were an integral part of the other epochal events of that memorable year. This was the year of the first Russian Revolution, in which Leon Trotsky played a leading role, and the year in which he published his theory of Permanent Revolution. In their own way, Einstein's and Trotsky's theories define the 20th century and continue to define the issues that confront the 21st in politics and science. It can be said with some justice that

Trotsky's approach represented an astonishing theoretical breakthrough. As Einstein's relativity theory—another gift of 1905 to mankind—fundamentally and irrevocably altered the conceptual framework within which man viewed the universe and provided a means of tackling problems for which no answers could be found within the straitjacket of classical Newtonian physics, Trotsky's theory of Permanent Revolution fundamentally shifted the analytical perspective from which revolutionary processes were viewed.[3]

Born in the same year, Trotsky and Einstein were driven to make fundamental theoretical breakthroughs by the political, intellectual and cultural ferment in Europe at that time. North's insight was taken up in an article by Peter Symonds.[4] who points out that Einstein cannot be understood apart from the times in which he lived, a period of rapid industrial expansion that had profoundly altered the character of science. "Capitalism drove technical innovation which," as Symonds writes, "in turn, provoked new scientific questions and provided new apparatus for their resolution."

Symonds outlines all the physical phenomena that had been found to be incompatible with Newton's equations and which were calling the old certainties into question. Henrich Hertz had confirmed the existence of radio waves in the 1880s; in 1895, Wilhelm Röntgen discovered X-rays, which were later found to be high-frequency electromagnetic waves; in 1890, J.J. Thomson discovered the electron, the first subatomic particle to be identified; Henri Becquerel and Pierre and Marie Curie were investigating radium in the same period and discovered that it had an ability to radiate energy that appeared to contradict the law of the conservation of energy.

North's lecture and Symonds' article offer a far more profound analysis of what gave rise to the Theory of Relativity than Steiner can provide and they express a genuinely dialectical and materialist historical consciousness. They reveal the intellectual depth of the WSWS and the seriousness with which its writers approach questions of science and culture in general. No writer for the WSWS would presume to base a theoretical article or lecture on one popular book.

But to return to Einstein, all this experimental work and the new phenomena observed by physicists in the latter part of the 19th century contributed to the problem that Einstein set himself to solve and to its resolution. The Special Theory of Relativity arose from contradictions between Newton's mechanics and the theory of Electricity and Magnetism developed by Faraday, Maxwell and others. Newton's theory depended on a traditional separation of time and Euclidean space that formed the background to the motion of corpuscular bodies or particles.

Electromagnetism, which now included light, radio waves and X-rays, was found to be inexplicable in terms of an "aether" made up of tiny particles governed by Newtonian physics. Eventually, Einstein resolved the issue by developing a new type of mechanics that would incorporate Electromagnetism as well as Newton's corpuscular particles, and a new unified theory of space and time.

It is true that when Einstein in 1915 extended his Special Theory of Relativity to include gravity with his General Theory of Relativity, he eventually used Riemannian geometry. As with the earlier theory, his genius was that he established certain physical principles on which the new theory needed to be based, in this case the "Principle of Equivalence" that identified the environment inside an accelerating spacecraft with the environment inside the same spacecraft in a gravitational field. There should be no distinction between the physical laws that hold in either situation. Struggling with the difficult mathematics and with the help of his mathematician friend Marcel Grossmann, Einstein used one particular version of Riemann's geometry with a particular set of mathematical rules that he himself discovered--the Einstein field equations. Gravity was no longer the mysterious force "acting at a distance" of Newton, but could be understood as the warping or distortion of space and time.

Riemannian geometry was one of numerous developments in geometry, algebra and other branches of mathematics that were applied to great effect in science and technology over the next century and a half, often feeding back into mathematics and stimulating new work there. Kaku naturally stresses Riemannian geometry because he is a String Theorist and these theorists have turned to higher dimensional geometry in their search for a new fundamental "Theory of Everything." But had Steiner read Kaku with an eye less prejudiced against experiment and materialism, he would have found that Kaku also refers to the experimental work that called Newtonian physics into question and that he anticipates significant results for String Theory from the Large Hadron Collider at CERN.

Ultimately, physics depends on experimental results. This is illustrated by the story of the mathematician Herman Weyl, who attempted to develop Einstein's Theory of General Relativity on the basis of Riemannian geometry. In 1918, he seemed to have developed a theory that would unify gravitation and electromagnetism, but unfortunately it was disproved by the experimental results.

Einstein, who greatly admired the elegance of Weyl's equations, wrote to him commiserating. "Apart from the [lack of] agreement with reality," Einstein wrote, "it is in any case a superb intellectual performance." [5]

A superb intellectual performance alone could not stand up against the evidence of experimental results. Steiner might wish to call that empiricism, but it is the method of science. North has already cited the famous anecdote about Einstein's reaction to Eddington's experimental confirmation in 1919 of his prediction that light was bent by gravity. Einstein was responding, with a certain amount of irony, to the excitement that Eddington's work had generated in the press, but to use this remark, as Steiner does, to suggest that Einstein did not take experimental results seriously is simply unfounded and intellectually irresponsible.

The way in which Steiner seizes on this incident tells us more about Steiner's attitude to science than it does about Einstein's. What Steiner is suggesting is that if science can be said to be based on experimental results, then one negative experimental result would of necessity sink an entire theory. This is a conception worthy of Karl Popper himself. Science does not blunder from one experiment to another. Scientists have built up a body of knowledge over many centuries that underpins every experiment and every theory. They do not experiment blindly, nor do they accept the results of experiments uncritically. The objective character of science is not confirmed by individual experiments any more than the objectivity of nature is confirmed by individual sensory experience. Knowledge of the real world is built up over many generations as a series

of approximations that become part of social consciousness.

The "crisis of science"

Anyone glancing at the title of Steiner's lecture could be forgiven for assuming that his reference to the "crisis of science" referred to the period of the late 19th and early 20th centuries, when the new developments were being made that led up to Einstein's work. Many historians of science would be familiar with this concept from Henri Poincaré, who suggested that science was on the eve of a crisis in 1905.

Many Marxists will be familiar with the idea of a crisis in physics from Lenin's *Materialism and Empirio-Criticism* (1908). [6] When a Marxist presents a lecture to other Marxists about the "crisis of science," it would be reasonable to assume it was about the crisis in fundamental physics in the later 19th and early 20th centuries, or perhaps the problems that have arisen with the attempts to develop a "Theory of Everything." But Steiner is not talking about that crisis of science. Far from it, he is referring to another much longer-running and much deeper crisis.

In passing, it is worth mentioning that this is an example of the rhetorical sleight of hand by which Steiner habitually avoids stating his positions clearly. He does not say openly that he is opposed to materialism, to dialectics and to science, but he aims to sow doubt and confusion and to sway his audience with an insidious and dishonest method of argument.

But to return to the crisis of science. One might speak about a certain crisis of science today, but Steiner explicitly excludes at the beginning of his lecture any of the issues that could legitimately be considered part of that crisis. For Steiner, the crisis of science does not arise from the way in which scientific research and the technological application of science is distorted by the profit drive. Nor does the crisis of science lie in the all-too-apparent gap between the immense productive capacity of modern capitalism and the social conditions in which the majority of the earth's population live. No, in proposing to examine the "crisis of science" Steiner was alluding to something quite different when he gave his Berlin lecture. He tells us:

What we have in mind instead is an investigation into the manner and degree to which science as such has strayed from its original goals.

Those original goals, Steiner says, were laid down in Ancient Greece where we see "the codification of the purpose of science":

In its beginnings, there was no sharp distinction between science and philosophy. In fact, the sharp distinction between the two that we now take for granted was only introduced in the last two or three centuries. Up to the Renaissance the close and unbreakable relationship between science and philosophy was a given.

Now, however, Steiner complains, "Science is split off from philosophy and each go their separate ways." Here lies the "crisis of science" for Steiner because

It is this separation of science from philosophy that provides us with a first approximation of what I refer to as the crisis of contemporary science. Note however that the modern sensibility does not consider this a crisis at all, but, on the contrary, we celebrate what we consider the liberation of science from the

constraints of metaphysics. For reasons that will become clear, we have elevated the sciences at the expense of philosophy. In fact, the very legitimacy of philosophy, of a systematic inquiry into the totality of what is, is automatically suspected of being a form of mysticism, if not worse.

Steiner's contention is that Aristotle's First Philosophy was rejected in the course of the Renaissance and early modern period, when there was a shift from the philosophy of Aristotle to that of Plato. North has already discussed this material so we will not repeat it here.[7] We will concentrate on what it means for Steiner's conception of the "crisis of science." Steiner maintains that, by breaking from Aristotle's understanding of the First Philosophy, Renaissance and modern science left themselves unable to comprehend the whole and could only examine the separate parts of nature.

But excising philosophy from the sciences has certain detrimental consequences, as I hope to demonstrate. If we return to the original conception of Aristotle, the relation of First Philosophy to a particular science is an example of a Whole to Part relationship.

Any one who has spent any time reading Steiner's material will know that "the Whole and the Part" is his repeated mantra. For Steiner, this is the summit of all wisdom. Aristotle's First Philosophy allows us to comprehend the whole and the part, according to Steiner, and this is where science has gone astray.

We have now arrived at what I think is characteristic of science throughout all the phases of its history, and that is the necessity to find a principle of order, to unify, to explain the particular through the universal principle of organization. This was the founding principle, the charter so to speak, that originally motivated Aristotle, and from which contemporary philosophy, in the form of its dominant mode of empiricism, has strayed. It is the reason for having a First Philosophy alongside the particular sciences.

Let us leave aside for the moment the fact that this is an untenable theory on so many grounds—historical, scientific and philosophical—and consider what it implies. Steiner is contending that science has been in a crisis for over 300 years. Galileo died in 1642. If Steiner is right in his identification of a crisis of science that began in the 17th century, then it would mean that all science from Galileo onwards is flawed and in some way suspect because it lacks the metaphysical foundations that Aristotle thought essential to it.

Newton's work and that of the Enlightenment scientists would be part of the same crisis. More recent science would be equally dubious, since modern scientists have, according to Steiner, inherited from the Enlightenment the same unfortunate tendency to belittle Aristotle and lack any regard for his First Philosophy. If the crisis of science goes back to the Renaissance and continues unabated to this day, then it would mean that both Lenin's efforts to provide a philosophical resolution of the early 20th century crisis and Einstein's attempt to put physics on a new footing were equally fruitless.

Steiner's "crisis of science" is a pretty thin disguise for an attack on science. He expresses intense dissatisfaction with modern science, which he condemns as "reductionist," "atomistic" and "empirical." For any one with even a passing acquaintance with the writings of the Frankfurt

School, particularly Adorno, Horkheimer and Marcuse, it is clear that Steiner's complaints against science are of a piece with the familiar anti-Enlightenment, anti-scientific litany of that school, which has become well established in the postmodern schools of thought that have developed among the radical intelligentsia hostile to Marxism. Steiner's claim that there is a "crisis of science" because it has strayed from its original objectives is, in reality, an attack on objective scientific thought.

Biochemistry, the area of science that has made the most dramatic developments in the course of the second half of the 20th century since the discovery of DNA, evokes a hysterical response from Steiner. The painstaking work of cognitive science on brain-damaged patients, the development of brain chemistry and the analogies that have been drawn between the brain and the computer send him into a frenzy. The work of Richard Dawkins and other evolutionary biologists, and the philosopher Daniel Dennett, give him a fit of apoplexy. Steiner writes:

We can no longer talk about our feeling of love, for instance, without discussing neuro-transmitters and serotonin levels. And we can no longer discuss the aesthetic qualities of a painting without reference to the experience of our ancestors millions of years ago on the African savannah.

Steiner seems to be a man unhappy in the corporeality of his own material, biological condition.

When Chris Talbot suggested that postmodernism was a serious matter, Steiner responded that the influence of postmodernism in universities was negligible in comparison to that of the scientists and engineers who are empiricists.[8] He continued:

But the intellectual climate at the universities is only one barometer of intellectual trends. Perhaps an even more important one is the state of popular culture. Just take a look at the topics highlighted in magazines and newspapers and you will find that the public is being inundated not with the intellectual fantasies of Jacques Derrida, but with the ethos of consumerism and a naïve worship of technology. There have been numerous accounts in the mass media propounding the views of biological determinism. For instance, at the time that the human genome project was completed, most accounts of its significance equated it with the discovery of human nature. There are hundreds of television nature shows--presenting a vulgarized adaptation of socio-biology—contend (sic) that the aggressive behavior exhibited by animals (often posed and encouraged for the camera to begin with) are correlates to the problems faced in human society. And every day hundreds of ads are run extolling the virtues of modern chemistry which allows you to reconstruct your consciousness simply by taking a pill. We have in fact become addicted to the quick and easy technological fix for virtually all our problems. I don't see much evidence of the postmodernists' antipathy to science in popular culture.

This incontinent rant against science and the mass of the population who expect to receive medical treatment for their ill-health and to use new technology in their daily lives, and who like to watch nature documentaries on television, reveals both Steiner's antipathy to science and his contempt for the working class.

The Enlightenment and the bourgeois revolution

The same "crisis of science" that Steiner detects in the Renaissance must

have run right through the Enlightenment. His knowledge of the science of the period is rudimentary. His knowledge of Newton seems to have been derived from historians with a neo-Platonic slant, who have focused their attention on Newton's alchemy and millenarianism rather than his work on optics and his theory of gravity. Steiner numbers Newton among the neo-Platonists. In his lecture he declared:

[T]he creators of the new science, men such as Bruno, Galileo, Newton, did not think of themselves as experimenters who then derived generalizations based on their experiments. They thought of themselves as Platonists who sought to discover the mathematical laws that governed nature.

Whether Newton thought of himself as a neo-Platonist is questionable, whether he was a neo-Platonist is even more doubtful. All we can say with certainty is that he knew some neo-Platonists, but guilt by association is not a good principle of justice or history. What distinguishes Newton, far more than any putative neo-Platonism, is that he was an outstanding mathematician. Steiner's identification of neo-Platonism with mathematics is too crude. Some neo-Platonists were mathematicians, but not all mathematicians were neo-Platonists. The reason for Steiner's insistence that Newton was a neo-Platonist becomes clearer in his reply to Chris Talbot. When citing Dobbs on Newton, Steiner crowed gleefully:

It turns out that Newton spent more time on alchemical experiments than on physics and his physical science was conceived by him as an expression of his mystical religious beliefs.[9]

Newton did indeed spend more time on alchemy than he did writing the *Principia*. The reason for that was very simple, concrete and all too material for Steiner. Newton did not succeed in turning lead into gold, but he did succeed in discovering the law of gravity. The project of the alchemists was to discover the natural process that had created the elements such as lead and gold, to reproduce that process and to harness it for the benefit of mankind. Given the technology available to Newton, this was an impractical objective, but it took him two decades to find that out. There was, however, nothing "unscientific" or "mystical" about the objective. Alchemy was no more inherently mystical than algebra, which, as its name suggests, came from the same Arabic source.

History has its own history, and by relying on Yates and Dobbs, Steiner is taking a position in a long-running polemic that can be traced back to 1931 and the Second International Congress of the History of Science and Technology in London. At that conference, the Soviet historian of science Boris Hessen gave a paper in which he set out for the first time a historical materialist analysis of Newton's life and work, including his alchemy and religious ideas.[10] In an article written in 2000, Ann Talbot explained:

Hessen showed that Newton's scientific work had a material basis in the technological developments and economic imperatives of the time. He established what he called the "earthy core" of Newton's *Principia* that underlay its abstract mathematical form.

Hessen's lecture was a seminal influence on many of the historians and scientists present, inspiring them to set the history of science in its wider social context rather than considering its development as though it had taken place in a vacuum. For others, Hessen's paper,

whether acknowledged or not, became the target of their attempts to deny that Newton had any connection with economics or technology.[11]

Yates's work on Newton belongs very much to the latter category. She was a conservative, High Anglican neo-Platonist. Anglican neo-Platonism can be traced back to the 17th century at least, when it was developed by the Cambridge Platonists as an antidote to materialism, but its postwar manifestation has more to do with the anxiety felt about communism and the strength of the working class.

In the 20th century, neo-Platonism became a significant trend of thought among conservative intellectuals who were gripped by a morbid fascination with phenomenology and were alarmed by Marxism. Yates was associated with the Warburg Institute in London, where Ernest Gombrich, a stalwart anti-Marxist, was the director. Born in 1899, she remained active until her death in 1981.

In the latter part of the 20th century, Yates's conservative idealism seems to have met up with postmodern trends in both the United States and Britain, which gave a fresh lease on life to her works at a time when the new developments in Renaissance and early modern scholarship might have been expected to render her, admittedly pioneering, work outmoded.

Steiner is placing himself firmly in the idealist camp by relying on Yates. The materialism to which Steiner evinces such a rooted opposition is essential to the process that we, following Kant, call the Enlightenment. Hegel was in a constant dialogue with the shade of Spinoza, as so many philosophers of the period were. Yet for Steiner, materialism is a dirty word.

Virtually every mention of materialism in Steiner's article and lecture is prefaced with the adjective "mechanical" or "vulgar." He claims that the mechanical materialists of the Enlightenment period justified their atomistic view of the world by claiming it originated with classical thinkers like Democritus and that this was a false claim repeated by 19th and 20th century positivists. Steiner cannot resist adding, "Likewise, many vulgar Marxists, particularly from the Stalinist camp, adopted this historical genealogy."

We will have to number Karl Marx and Frederick Engels among Steiner's "mechanical materialists" and "vulgar Marxists," since they stress the importance of the classical materialist tradition. They identify the 17th century French natural philosopher Gassendi as "the restorer of Epicurean materialism." Gassendi was, incidentally, one of Galileo's correspondents.

Marx and Engels go on to declare Francis Bacon to be "the real progenitor of English materialism and all modern experimental science," who often quotes "Democritus and his atoms" as his authority.[12] Engels refers to the "newly-discovered Greek philosophy" that "prepared the way for the materialism of the 18th century." [13] Marx and Engels associate the adjective "great" with the French materialists, in contrast to Steiner's consistent use of the terms "mechanical" and "vulgar." If Steiner wants to denigrate this view of history and Marxism as Stalinist it merely shows he is not a Marxist.

Steiner cannot go over to a complete and open rejection of the Enlightenment in the manner of postmodernism because he hopes to influence Marxists, but he objects to what he calls the "uncritical enthusiasm over the Enlightenment" of the WSWS. "Icons of bourgeois liberalism such as Hobbes, Locke and Jefferson," Steiner complains, "have been elevated at the expense of the historical ancestors of modern communism, Winstanley, Munzer or Babeuf." He criticises Ann Talbot's obituary of the historian Christopher Hill for failing to follow Hill in his "spirited defense of one of the great precursors of the communist movement [Winstanley] while at the same time providing a critique of the misanthropic bourgeois philosopher Thomas Hobbes."

He follows the historian Jonathan Israel in identifying a Moderate Enlightenment and a Radical Enlightenment. "The figures of the Radical Enlightenment were not satisfied with toleration and compromise, the watchwords of the Moderate Enlightenment of Montesquieu and Locke," Steiner writes, "but sought to base society on Reason and equality."

One can only suppose that Steiner has never read Locke, whose *Two Treatises of Government* is an extended study of reason and equality and the foundational role they play in a just society. As for Jefferson, who took whole phrases from Locke's works in drafting the Declaration of Independence, it is difficult to see why a Marxist should write less favourably of him than Marx did of Abraham Lincoln. On the occasion of his re-election Marx wrote to Lincoln:

From the commencement of the titanic American strife the workingmen of Europe felt instinctively that the star-spangled banner carried the destiny of their class.[14]

Jefferson failed to abolish slavery as he would have wished, but he set in motion that revolution which Lincoln ultimately concluded. For the artisans and dispossessed, not yet a working class, of Europe, the American War of Independence and the French Revolution challenged the long-established ancien regimes based on hereditary privilege. To suggest that Marxists should pay attention only to the plebeian elements within those revolutions is to miss the full historical significance of epochal events.

Ann Talbot's obituary of Hill was an article about a historian of the 17th century. There was no reason why it should have included a discussion of Thomas Münzer (ca. 1488-1525) or Gracchus Babeuf (1760-1797). Certainly, Christopher Hill was too good a historian to do so. Steiner's injunction that they should have been included indicates that he regards them as figures from a heroic pantheon rather than flesh and blood beings that lived and struggled in definite historical periods. This is very much in keeping with his utopian conceptions of socialism.

It is worth examining how Marx and Engels discussed Babeuf in the Communist Manifesto:

We do not here refer to that literature which, in every great modern revolution, has always given voice to the demands of the proletariat, such as the writings of Babeuf and others.

The first direct attempts of the proletariat to attain its own ends, made in times of universal excitement, when feudal society was being overthrown, necessarily failed, owing to the then undeveloped state of the proletariat, as well as to the absence of the economic conditions for its emancipation, conditions that had yet to be produced, and could be produced by the impending bourgeois epoch alone. The revolutionary literature that accompanied these first movements of the proletariat had necessarily a reactionary character. It inculcated universal asceticism and social levelling in its crudest form.[15]

Marx and Engels acknowledge their debt to Babeuf as they had done in *The Holy Family*, where they placed Babeuf among those who "gave rise to the communist idea,"[16] but their assessment of Babeuf's uprising and other similar early proletarian movements is a thoroughly historical materialist one. They stress that the conditions had not yet been produced by the development of capitalist society for such a movement to succeed and that its literature was necessarily reactionary and crude. Marxism is not based on crude, levelling ideas. It is based on the highest

achievements of the Enlightenment.

One could equally well apply Marx and Engels' words to Winstanley. But Hill was labouring under the burden of the Stalinist Popular Front theory of People's History, which sought to find national revolutionary heroes in every country. In an obituary, a writer must emphasise the best in the subject's life while not ignoring what was weakest. Hill's best work by far was his biography of Oliver Cromwell, who was a difficult figure for Hill to write about, but one who embodied the revolutionary impulse of his class.

Steiner's discovery of the Radical Enlightenment is a response to North's charge that he shared the hostility of the Frankfurt School to the Enlightenment and it does not substantially alter any of his earlier attacks on the Enlightenment. For Steiner, the Enlightenment requires to be "dialectically sublated" before Marxism can emerge because

Even the Radical Enlightenment does not provide us with an uninterrupted line of continuity between the 18th century and the revolutionary outlook of Marxism.

Here again we see an example of Steiner's rhetorical sleight of hand. Anyone who has read Lenin would assume that this was a reference to the combination of classical German philosophy, British political economy and French socialism out of which Marxism grew. But this is not the case. In his reply to Chris Talbot, Steiner takes Talbot to task for suggesting that the Enlightenment should be defended:

An even more important point to note is the notion you implicitly put forward that every historical-philosophical discussion is obliged to defend the Enlightenment against the attacks of postmodernists. I certainly agree that Marxists should defend the Enlightenment against its irrationalist detractors. But don't you think Marxists also have an obligation to defend dialectics against some of the progeny of the Enlightenment, the atomists and empiricists? Why does one need to undermine the other? Remember that when you say that the Enlightenment is the historical precursor of socialism and Marxism that it is just as true to say that it is also the precursor of liberalism and the bourgeoisie. The heritage of the Enlightenment is not an all or nothing proposition. Marxism comes into its own by way of a critique of the Enlightenment. Just take a look at the Theses on Feuerbach! Practically each one of the theses is directed at some doctrine or other of the Enlightenment. But "critique" does not mean "rejection." Marxism represents a genuine Hegelian *aufheben* of the Enlightenment. The Enlightenment is at once preserved and overcome.

The *Theses on Feuerbach* consists of 11 statements; all of them on philosophy. They are not "directed at some doctrine or other of the Enlightenment." They are directed very specifically at Feuerbach's conception of materialism, which is a mechanical one. Engels extracted them from the then-unpublished *German Ideology* that he and Marx had written in 1845-46. The *Theses on Feuerbach* were a crucial part of the process by which Marx developed historical materialism, not a critique of a jumble of Enlightenment ideas. There are no references to liberalism or the bourgeoisie. They are, as Engels says, "the brilliant germ of the new world outlook."

With his insistence that Marxism emerged from the Enlightenment by a process of "sublation" or "*aufheben*," Steiner is suggesting that Marx and Engels rejected the conception of equality that had been developed in the

course of the Enlightenment, advanced in the English Revolution and made a principle of the bourgeois revolution in America and France. He follows a path well trodden by radical and Stalinist opponents of Marxism in doing so.

It takes him inevitably to *On the Jewish Question*, an early work that Marx wrote in 1843, well before his own philosophy had matured. It was a polemic written against the left Hegelian Bruno Bauer, who rejected the demand for Jewish political emancipation in 19th century Germany. Bauer maintained that emancipation was not possible as long as people remained religious, so the Jews could not be emancipated until they ceased to be Jews. Marx pointed out that political emancipation never amounted to complete human emancipation. It certainly had not done so in America, which remained the "land of religiosity *par excellence*." Nevertheless, he maintained,

Political emancipation is certainly a big step forward. It may not be the last form of human emancipation, but it is the last form of human emancipation *within* the prevailing scheme of things. Needless to say, we are here speaking of real, practical emancipation.[17]

This is as clear a statement as one could wish that Marx supported real, practical, political emancipation, but *On the Jewish Question* has become one of the regular references for those who wish to claim that Marx rejected the Enlightenment demand for equality. Steiner is no exception. He claims that Marx

takes on one of the themes beloved of the Enlightenment, that the solution of the problems faced in trying to create a liberal nation state is to offer national minorities, such as the Jews in much of Europe, equal political rights under the law. Marx considered that remedy inadequate because it did not address the problem posed by their isolation from world culture though the institutionalization of ghettoized minorities.

If this were true, then no Marxist could campaign for the political rights of any oppressed minority, or even of the members of the working class who continue to hold religious ideas. There would be no point in demanding the right to vote, the right of assembly, free speech or habeas corpus in case those who benefited from those rights had not thrown off their religious ideas. One could immediately forget about building a socialist movement in America.

Marx was consistent in his defence of democratic rights. Universal suffrage was the second demand in the pamphlet that the Communist League issued in 1848, as revolution broke out in Germany. The first was for a republic. The separation of church and state was a central demand.[18] Marx edited the *Neue Rheinische Zeitung*, which carried on its masthead the slogan *Organ of Democracy*. He and Engels worked closely with British Chartists such as Julian Harney and Ernest Jones in their campaign for universal suffrage. They also defended the Irish Fenians in their struggle against British rule. All these are democratic questions.

Marx and Engels were critical of the high-flown abstractions of the French revolutionary slogan Liberty, Equality, Fraternity, particularly when it was used hypocritically by the bourgeoisie as they were shooting down workers in 1848. But they always took to task socialists who did not treat democratic questions seriously. For them, democratic rights were a concrete matter. As Engels pointed out to the Lassalleans:

The bourgeoisie cannot gain political supremacy and express this in the form of a constitution without, at the same time, arming the proletariat. On its banner it must inscribe human rights in place of the old system of social position based on birth.... Therefore, for consistency's sake, it must demand universal and direct suffrage, freedom of the press, association and assembly, and the repeal of all emergency laws directed against particular social classes. But this is all that the proletariat need demand from the bourgeoisie. It cannot expect the bourgeoisie to stop being the bourgeoisie, but it can demand that it apply its own principles consistently. The result will be that the proletariat will lay its hands on all the weapons which it needs for its final victory.[19]

It is not simply one aspect or another of the Enlightenment, or certain figures within it, to which Steiner takes exception. It is the whole process by which mankind emancipated itself from centuries of superstition, social deference and religious dread, and began, in Kant's famous phrase, to "Dare to know." Yet that process is the historical root of the Hegelian philosophy that he claims to admire so much, and of Marxism, which in a genuine sense sublated it. The only aspects of the Enlightenment that Steiner evinces any desire to retain are the most backward and confused forms of thought that were expressed in mysticism.

As far as Steiner is concerned, the democratic rights that Marx and Engels defended are merely the product of bourgeois reason. Steiner argues as though it was the Enlightenment demand for equality, the very idea of equality, that gave rise to the unequal social and political relations of bourgeois society, rather than it proving impossible to realize equality under the conditions of a capitalist economy. Ever the idealist, Steiner consistently imagines ideas as the determinants of history and never economics.

Steiner protests his enthusiasm for the Radical Enlightenment and complains about those who attempt to lump the Radical Enlightenment and the Moderate Enlightenment together. But it is curious that Steiner should lump himself together with Israel, because Israel regards the representatives of the Radical Enlightenment as precisely those Enlightenment thinkers who were materialists and often mechanical ones of the type that is so distasteful to Steiner. But perhaps Steiner has not read Israel's earlier book *Radical Enlightenment* in which he makes this clear.

Citing Israel in this way is typical of Steiner's light-minded approach of picking up books and ideas as and where he can. His theories are a melange of such *objets trouvés*. He is always eclectic, ungrounded and erratic. His work reveals a mind in chaos. The one theme that binds it together is a constant hostility to objective thought and resistance to its liberation from the authority of dogma.

Marxism is not a First Philosophy. In making his plea for a return to First Philosophy, Steiner is betraying his desire to return to the situation that existed in the Middle Ages, when the investigation of nature was controlled by an authoritarian Church which had converted Aristotle's philosophy into a dogma and decreed what scientists could and could not do. Steiner's is the deep-seated and dogmatic ignorance of a man who craves a pulpit from which to bully people.

Notes:

1. Michio Kaku, *Hyperspace*, (Oxford University Press: Oxford, 1994). [return]
2. E.T. Bell, *Men of Mathematics 2*, (Penguin Books: Harmondsworth, 1953), p 541. [return]
3. David North, "Toward a reconsideration of Trotsky's legacy and his place in the history of the twentieth century." <http://www.wsws.org/en/articles/2001/06/dn-j29.html> [return]
4. Peter Symonds, "One hundred years since Albert Einstein's annus

mirabilis." <http://www.wsws.org/en/articles/2005/07/ein1-j11.html>
[return]

5. Lee Smolin, *The Trouble With Physics*, (Penguin Books: Harmondsworth, 2006), p. 45. [return]

6. V.I. Lenin, *Collected Works*, vol. 14, (Progress Publishers: Moscow, 1972), p. 252. [return]

7. We are at a loss to understand why if, as Steiner claims, there was a shift to neo-Platonic philosophy in the Renaissance and not a development of experiment and observation, Plato, who was after all the teacher of Aristotle, could not provide a First Philosophy too. Steiner's argument is, however, illogical as well as unhistorical. [return]

8. David North has already discussed this point. [return]

9. Steiner's reference to Newton's alchemy, of course, entirely undermines the point that he made in the lecture when he claimed that Newton was not an experimentalist. Newton's alchemy was not an armchair occupation. He conducted experiments on a titanic scale and, in the process, nearly drove himself mad from the fumes. [return]

10. Science at the Crossroads, Papers from the 2nd International Congress of the History of Science and Technology, 1931. N.I. Bukharin et al., (Frank Cass and Co. Ltd.: London, 1971). [return]

11. <http://www.wsws.org/en/articles/2000/09/newt-s26.html> [return]

12. Marx and Engels, *The Holy Family*, *Collected Works*, vol. 4, p. 128;
or

http://www.marxists.org/archive/marx/works/1845/holy-family/ch06_3_d.htm [return]

13. Engels, *Dialectics of Nature*, *Collected Works*, vol. 25, p. 319. [return]

14. Marx, Address of the International Working Men's Association to Abraham Lincoln, President of the United States, *Collected Works*, vol. 20, p. 19. [return]

15. Marx and Engels, *Communist Manifesto*, *Collected Works*, vol. 6, p. 514;
or
<http://www.marxists.org/archive/marx/works/1848/communist-manifesto/ch03.htm> [return]

16. Marx and Engels, *Holy Family*, *Collected Works*, vol. 4, p. 119; or
http://www.marxists.org/archive/marx/works/1845/holy-family/ch06_3_c.htm [return]

17. Marx, *On the Jewish Question*, *Collected Works*, vol. 3, p. 155 ; or
<http://www.marxists.org/archive/marx/works/1844/jewish-question/index.htm> [return]

18. Karl Marx, "Demands of the Communist Party in Germany," *Collected Works*, vol. 7, pp. 3-4; or
<http://www.marxists.org/archive/marx/works/1848/03/24.htm> [return]

19. Frederick Engels, "The Prussian Military Question and the German Workers Party," *Collected Works*, vol. 20, p. 77; or
<http://www.marx.org/archive/marx/works/1865/02/27.htm> [return]

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