

MARXISM & SCIENCE STUDIES: a sweep through the decades

International Studies in the Philosophy of Science

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ABSTRACT

This paper outlines the distinctive contribution of marxism to science studies. It traces the trajectory of marxist ideas through the decades from the origins of marxism to the present conjuncture. It looks at certain key episodes, such as the arrival of a Soviet delegation at the International History of Science Congress in London in 1931 as well as subsequent interactions between marxists and exponents of other positions at later international congresses. It focuses on the impact of several generations of marxists who have engaged with science in different ways. It examines the influence of marxism on contemporary trends in science studies. It concludes that marxism survives in circuitous and complex ways. It argues not only for a positive interpretation of its contribution in the past but for its explanatory and ethical power in the present and future.

The history of marxism in relation to science is extraordinarily dense and dramatic. From the beginning, marxism took science extremely seriously, not only for its economic promise in building a socialist society, but for its revelatory power in understanding the world.

Marxism has made the strongest claims of any intellectual tradition before or since about the socio-historical character of science, yet always affirmed its cognitive achievements. Science was seen as inextricably enmeshed with economic systems, technological developments, political movements, philosophical theories, cultural trends, ethical norms, ideological positions, indeed with all that was human. It was also a path of access to the natural world. There were studies, texts, theories, tensions, debates exploring the complexities of how this was so. The objectivist / constructivist dichotomy could never capture its epistemological dynamic. Nor could the internalist / externalist dualism ever do justice to the interacting field of forces harnessed in its historiographical process.

After the October revolution, there was an intensification of this activity. Science was a necessity in building a new social order. Scientific theory was thought to be, not only a matter of truth and error, but of life and death. There were many debates, some between those more grounded in the empirical sciences and those who stressed the continuity of marxism with the history of philosophy.

Intertwined with all the intellectual debates of the day was an intense struggle for power. There was tension between a more cosmopolitan marxist intelligentsia, who had found their way to marxism in difficult and dangerous conditions, exposed to an array of intellectual influences, accustomed to mixing with intellectuals of many points of view and arguing the case for marxism in such milieux.

Increasingly they were coming under pressure from those who had come up under the revolution, never been abroad, knew no foreign languages, had little detailed knowledge of either the natural sciences or the history of philosophy, never mixed with exponents of other intellectual traditions. Some were more inclined to cite the authority of classic texts or party decrees than to engage in theoretical debate. They were being fast-tracked in their careers and taking over as professors, directors of institutes and members of editorial boards, occupying positions of authority over intellectuals of international reputation. There was high drama and there was soon to be blood on the floor. (Sheehan 1993)

It was the more cosmopolitan intelligentsia that came to London in 1931. The 2nd International History of Science Congress spilled over into the mass media with the arrival of a Soviet delegation led by NI Bukharin and including BM Hessen, NI Vavilov and others renowned in the history of science. They were struggling for their version of marxism against one set of pressures at home and quite another abroad. They navigated these turbulent waters impressively. Nevertheless, tragedy engulfed them. Bukharin, Hessen and Vavilov perished in the purges.

The paper from this congress that had greatest impact then and since was Boris Hessen's "The Social and Economic Roots of Newton's *Principia*", often cited as a classical manifesto of the externalist position in the historiography of science. Hessen examined the roots of Newton's thought within the social, political and economic forces of his time, seeing Newton as a son of 17th century mercantile capitalism and the class compromise of 1688 in the way he combined mechanistic causation with theological speculation in his pattern of scientific explanation. (Hessen 1931 in Bukharin et al 1931, 1971) With the Soviet Union, Hessen was defending relativity theory and quantum mechanics against a position which argued that the new physics was rooted in bourgeois idealism. Loren Graham has argued that Hessen was concerned with disarming his Soviet critics with the more subtle aim of delinking scientific theory from the ideological framework of its development, demonstrating that cognitive value was not totally determined by socio-economic conditions, that both newtonian and einsteinian physics had a scientific basis, despite their origins in capitalism and association with bourgeois ideology. (Graham 1985). Although he emphasized socio-economic roots in London and cognitive credibility in Moscow, most provocatively in both contexts, against conflicting pressures, his position was a consistent one, demonstrating a dialectical synthesis of internal and external factors, of empirical evidence, logical argument and socio-economic context. Hessen was not an externalist.

Bukharin was a major figure in both the political and philosophical development of marxism. Although a possible successor to Lenin, he had fallen from the pinnacle of power, the politbureau, but was still on the central committee, editor of *Izvestiya*, member of the USSR Academy of Sciences, head of its commission on the history of knowledge and still active in many sectors of Soviet life, from the arts and sciences to economic planning. In the pressure to 'bolshelize' every social institution and academic discipline, to shut down debate and to arrive at an correct marxist line on every question, Bukharin stood up to brash bolshevists, who were attempting to override the process of scientific discovery, and sided with geneticists, such as Valilov, against Lysenko. In London he set out to convey the intellectual vitality of marxism to a sceptical audience, placing marxism within the context of all contemporary currents in philosophy and emphasising how dialectical materialism had overcome the narrowness of mechanistic materialism by superceding its ahistoricism, its quietism, its individualism. He continued refining his philosophical position throughout the decade. Even in his prison cell, preparing to leave life, he wrote a major tract on philosophy, showing a most impressive grasp of the history of philosophy as well as philosophical problems within science. (Bukharin 2005)

The 1931 congress brought forces already in motion into a new level of interaction with each other. At the congress, contrasting world views were in collision. Those most touched by this confrontation were those who stood in between, not on a via media, not in a space of ideological neutrality, but on terrain where they lived and worked among those sceptical or hostile to their position while sharing a vision with those who came from afar. Nevertheless there was an upsurge of the left through the 1930s and the wind was at their backs. The ideas of JD Bernal, JBS Haldane and other leading scientists who became marxists took hold among many of their contemporaries. Some of those who were fired up by these ideas perished as a direct result. (Werskey 1978, Sheehan 1993)

This encounter between British and Soviet marxists radiated outward and touched many who did not attend the congress. The book *Science at the Crossroads* (Bukharin et al 1931, 1971) was translated into many languages and found its way into many parts of the world for decades. It was read by Antonio Gramsci in his prison cell. Significantly it came into the hands of Christopher Caudwell, as he raced through every field of human knowledge reconceptualising all from a marxist point of view. From this came amazing tracts on biology and physics as well as history, philosophy, psychology, culture and much more, all left unfinished when he struck down in the Spanish civil war. David Guest, before he too died in Spain, took the text of *The Crisis in Physics* (Caudwell 1939) to Hyman Levy, who edited and introduced it, and JBS Haldane reviewed it.

Caudwell showed how scientific discoveries reflected fresh contact with the natural world through empirical experiment, but received their form and pressure from the social relations of the age. He argued that the problems of physics could not be solved within physics alone and looked to the metaphysics of physics as rent by the same dualisms as inflicted every other aspect of bourgeois consciousness. He saw knowledge as advancing at an empirical level, but generating confusion and anarchy, as bourgeois culture was unable to assimilate the forces it unleashed and the results it achieved, because of the lack of an integrated world view that would explain all within a unified framework.

Bernal too saw marxism as providing such an integrated world view. It was a philosophy derived from science that brought order and perspective to science and illuminated the onward path of science. It provided a method of co-ordinating the experimental results of science and of pointing the way to new experiments, of clarifying and unifying the different branches of science in relation to one another and to other human activities. He called for a science of science. He saw dialectical materialism as a way of integrating the sciences, a way of contextualising science in deep socio-historical perspective. (Bernal 1934)

Marxists of this period - Bukharin, Bernal, Haldane, Caudwell and many others - not only elaborated this position, but entered into polemics with others holding contrary views. In philosophy of science, arguments against Jeans and Eddington, who were seen as importing irrationalism into science itself, were particularly prominent.

After 1945, the influence of marxism spread ever wider. In Eastern Europe, marxism became the dominant force in the universities, research institutes, academic journals of new socialist states. It spread to Asia, Latin America, Africa in liberation movements, some of which became parties of power. Marxism was sometimes a matter of deepest conviction, but sometimes not. Being an orthodoxy in a one party state was not a recipe for healthy development of an intellectual tradition. We have passed the time in history now where it seems possible or desirable to organise a society on the basis of a common world view, but it is important to remember that it did not yet seem that way for much of the history of the world. Up until the 1960s, the Catholic Church exercised that kind of power in Ireland.

Nevertheless, there was serious work done in developing a distinctive approach to science studies, particularly in exploring the philosophical implications of the natural sciences. This was the case in the academies of Eastern Europe, particularly in the German Democratic Republic (Hörz 2005), in the intellectual life of communist parties, in journals such as *Science and Society*, *La Penée* and *Modern Quarterly*. It was very different from the narrowly methodological approach being pursued in philosophy of science elsewhere. It was work of profound significance that was too little known outside these milieux.

Marxism combined attention to the advancing results of the empirical sciences, development of a philosophical framework capable of integrating expanding knowledge and awareness of the socio-historical context of it all.

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 scrutinised 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*, *Science as Culture* gave expression to this ferment. Many of my generation threw ourselves wholeheartedly into this searching, this striving. We burnt many boats and set ourselves swimming in strange seas. Never in my youth as a little catholic cold warrior did I imagine myself crossing to the other side of the 'iron curtain' and becoming a communist. Even when I first moved to the left, I didn't see myself as heading that way.

There was residual anti-communism as well as generational rebellion in the US new left's attitude to the old left. There was also a naiveté about power, obliviousness of economics and suspicion of

science. I shared these attitudes at first. I changed when I moved from America to Europe, where the gap between new left and old left was not so large. My involvement in the political culture of Europe was transforming and I took a new look at the previous generation of the left. Although many were still alive, those who touched me most deeply were dead. Nevertheless they came to life again in my imagination, as I read their texts and grilled their contemporaries about their lives. Bernal and Caudwell especially were my mentors. It had something to do with the sensibility of catholics who become communists, no doubt.

I was interested in marxism as a comprehensive world view. I was intrigued by the ways in which intellectual movements were rooted in socio-historical forces. I saw the whole history of philosophy that I had been studying in a new way. I saw everything in a new way, a way in which everything was interconnected: philosophy, culture, politics, economics, science. I decided to focus on science within this network of relationships, as it was what I most needed to understand. Researching my book *Marxism and the Philosophy of Science: A Critical History* (Sheehan 1987, 1993) was an absorbing adventure. I felt like a detective uncovering an intricate series of intersecting stories. I tried to write a marxist history of marxism and science, despite the enormous and opposite pressures on me as I strove to do so, pressures from east and west, from left and right, from old and new left, from commitment and career.

Sometimes, to my surprise, I felt more of an affinity with the previous generation than my own. I could not understand why my contemporaries, especially among British marxists turned their backs on the earlier generation of British marxists and went flocking to Althusser or Foucault. *New Left Review* veered between obliviousness and hostility to the previous generation of British marxists.

Radical Science Journal did engage with the earlier generation, however critically. Gary Werskey's book *The Visible College* (Werskey 1978) was perhaps the most substantial work mediating between these generations on the question of science. Robert Young's "Science is social relations" was the most explicit and provocative exposition of a new left position on science. (Young 1977) Reacting strongly against the view that science itself is neutral and that only the use or abuse of science is ideological, Young and *RSJ* held that science as such is ideological. We never encounter nature unmediated, the argument went, and so what we call nature is socially negotiated and socially constructed, a product of interactions among contending interests. Indeed, this approach even offered a socio-historical explanation of the current state of the philosophy of science and the sociology of knowledge as expressing the position of the alienated but politically uncommitted bourgeois. Settling for relativism was, according to Young, a liberal's expansion of the moment between demystification of one cosmology and commitment to another. From the premise that modern science, with its characteristic concepts of truth and rationality, and modern capitalism, with its alienating division of labour, arose upon a single edifice, came the conclusion that both would have to be totally dismantled. So, for Young, science = capitalist science; epistemology is a bourgeois pursuit; philosophy of science is a dead end. It was hard to see a way forward for science. It was demystification of one cosmology, to be sure, but it did not offer commitment to another. It was a far cry from the affirmation of science characterising previous generations of the left.

Meanwhile, *Marxism Today* went from being a journal where science was integral to its agenda and where various positions and generations could argue their case to one that began to close down on science and close out those who held certain positions.

Nevertheless, through the 1970s I found what was going on within the intellectual culture of the left to be much more absorbing than anything at Trinity College Dublin, where I was based at the time. Every summer I went over to the Communist University of London. There were alternative approaches to every academic discipline and the most lively debates imaginable. I veered to the courses on philosophy, history, science, Soviet studies, gender studies, but regretted that I couldn't attend the ones on psychology, anthropology, literature, etc.

Living as if in some parallel universe much of the time, parts of academe proceeded as if the only story in philosophy of science was the one proceeding from the Vienna Circle through Popper, Lakatos, Kuhn. Philosophy of science in philosophy departments rarely took a sideward glance at this other tradition. The work of Engels, Bukharin, Hessen, Bernal, Haldane, Langevin, Hörz and many others was never mentioned. I found adjusting to the philosophy department of TCD strange every time I returned from Moscow or Berlin or Dubrovnik or even London.

Meanwhile, Soviet delegations were no longer a surprise at international conferences. They were integrated into the organising structures and gave papers in many sessions. However, how much of a meeting of minds occurred was another matter. The World Congress of Philosophy was to be held in Düsseldorf in August 1978. I spent much of that year in Eastern Europe, mostly in Moscow. The philosophers there were constantly talking about it. In fact, they were preparing for it as if for Warsaw Pact manoeuvres. They kept asking me what Irish and British philosophers were planning. They weren't planning anything in the sense that they meant. They were coming or not coming as individuals and thinking only about their own papers and travel arrangements.

At the congress itself, philosophers from the socialist countries and philosophers from the rest of the world mostly read papers past each other (as most academics at most congresses do). There were, however, several skirmishes and a cold war atmosphere. I felt myself to be in a similar situation to that of British marxists at the 1931 congress. I moved between both sides in a way that very few did. I found this quite stimulating and entered into all of the polemical possibilities the situation offered. (Proceedings WCP 1978)

It was similar at other conferences in those years, for example, the International Congress of Logic, Methodology and Philosophy of Science in Hannover 1979 (Proceedings ICLMPS 1979) and the International History of Science Congress in Bucharest 1981 (Proceedings IHSC 1981). At the latter I was often in the company of British historians of science, mostly of the kind who were not convinced at 1931 congress. I felt that my arguments that marxism plus science did not necessarily equal Lysenko constantly being undermined by the locus and events of the congress. Elena Ceausescu was presented to a plenary session as a great scientist and many sessions featured Romanians arguing that Romanians were responsible for many discoveries in the history of science and technology attributed to others, including Einstein. There were others who were negotiating these tensions. Joseph Needham, present at the 1931 congress and prominent in the movement of left scientists in the 1930s, was there still mediating between east and west 50 years later.

There were other enclaves where there was sustained cross-fertilisation, such as the Boston Colloquium in Philosophy of Science, issuing in many volumes of *Boston Studies in the Philosophy of Science*, edited by Robert Cohen and Marx Wartofsky. The Inter-University Centre in Dubrovnik, was a pioneering and important base for interaction between east and west, between marxists and non-marxists. I have happy memories of stimulating encounters at both the philosophy of science conference as well as the *Praxis* conference in 1981. The philosophy of science conference was preoccupied with the defence of scientific realism against various forms of social constructivism, particularly the Edinburgh School and Paris School. Although neither Barnes and Bloor nor Latour and Woolgar were there, their theories were much addressed. Arguing against were philosophers from a critical marxist position such as Marx Wartofsky, Srdan Lelas and Wladislaw Krajewski alongside those from other philosophical traditions such as William Newton-Smith, Rom Harre and Ernan McMullin. The dialogue was free, friendly, funny, purposeful.

This was a particularly difficult time for me. It became harder and harder to continue in this area. It was not likely that you could earn a living as an expert in marxism and science unless you were in Eastern Europe or Boston (and later not even there). I was an unemployed PhD. I was offered a postdoc in history of science at Harvard, but could not take it as it would have involved my children in a transatlantic tug of war. When it came to a secure university position in Ireland, there was always someone safer, even if less qualified. I often felt angry and bitter, near to despair at times, but I kept working. I lived as a freelance gramscian organic intellectual for many years. I lectured in many venues, from ivy league universities to local employment centres, became a taking head on radio and tv, diversified into cultural studies. Long after I decided it would never happen, I did finally get a tenured academic position.

Marxism may have not have been an asset to me in career advancement, but it developed in me a way to think to get me through the trials and tribulations that it brought upon me. I had intellectual clarity and moral purpose and that was a lot. I had ways to steel and to console myself. I thought: who were the prestigious professors of philosophy when Marx and Engels were writing their classic texts while living difficult exiled marginalised lives, when Caudwell and Guest were bleeding on battlefields with all their brilliance and passion draining into the earth of Spain, when Bukharin was writing in his bleak cell, arguing the case for marxism to posterity right up to the moment when he

was taken out to be shot? So many times I had sung ‘through dungeons dark and gallows grim’, but I was not imprisoned (not for long anyway), I was not executed. I could live with unemployment, semi-employment, marginalisation, condescension, injustice. I could endure the loneliness of the long distance marxist.

In Eastern Europe, within a few years, there was much happening. Everything opened up only to close down again. In 1990 it seemed that the world turned upside down. The USSR, GDR, Czechoslovakia and Yugoslavia disappeared from the map of the world. I often wondered how many of the intellectuals I met in Eastern Europe would be marxists if there was a regime change. I found out. I had several confrontations in the 1990s with those who had made their careers professing marxism and then made their careers by denouncing it. Academic life all over the world is full of such people. They do what is necessary to advance themselves and they are rewarded, then and now, but they will never produce anything of value.

In 1996 I was sent to a university in Slovakia, as part of the European Union’s TEMPUS programme, which sent western academics into eastern universities to show them how ‘proper’ universities were run. I was asked to give a guest lecture on a topic of my choice. I said: marxism. They were surprised, then disconcerted. Nevertheless, they organised it. The room was packed. Marxism had the frisson of forbidden fruit again. I said that the situation was ridiculous. Marxism was *the* philosophy for decades and then it disappeared from the curriculum, as if it had never happened. It was orthodoxy one day and apostasy the next. It was not healthy. Marxism, I argued, is a major intellectual tradition in the history of the world and things will never be healthy until it finds its place vis a vis all contenders in the overall scheme of things. People came whispering to me in the following days, saying that they agreed.

I was recently in Berlin visiting the vanquished, the marxist intelligentsia of the ex-GDR, especially those involved in philosophy of science, who once occupied the apex of academe and now lead quite marginalised lives. I was most impressed by the strength of their convictions and seriousness with which they have continued their work under such unfavourable circumstances. (Hörz 2005)

I have had a number of occasions to speak to Eastern European intellectuals of different countries, generations and points of view in recent years. There is still much dishonesty and denial. It extends even to the dead. I have been profoundly distressed to read obituaries of those I knew as marxists where this was never mentioned. When I ask questions about intellectual orientation and transformation, it is sometimes as if I am probing sexual liaisons or spy scandals. Nevertheless, while the topic still generates a considerable unease among many, what I have found most striking is the surprise of younger intellectuals at hearing someone make a case for marxism in this area and their openness to considering it.

Loren Graham of MIT, who has spent his whole professional life studying Soviet and post-Soviet science and philosophy of science has said of dialectical materialism: “This philosophy of science is actually quite a sensible one and corresponds to the implicit views of many working scientists all over the world.” (Graham 1998, 14) Graham, who, incidentally, is not a marxist, has gone on to show that this philosophy has had a lasting impact on Russian scientists, even after the demise of the Soviet state. The story of marxism in relation to these experiments in socialism is not so played out as some might think.

At Dublin City University I have taught science studies for the last decade, from BA to PhD level, but I also range more widely in history of ideas and media studies. I may seem to be a fox, darting around between all these areas, but I am a hedgehog. I know only one big thing. It all holds together at the level of world view. For me marxism still makes more sense of science and all else than anything else I see around me. In my lectures on marxism within my history of ideas courses, the reaction of students is overwhelmingly positive in that they confess to overcoming prejudices about marxism in the process of studying it, however briefly, and to seeing value in it. They come to respect marxism, but they do not - with a few exceptions - embrace it. I am not beset by students wanting to change the world - or even to do PhD theses on it.

What does marxism have to offer to science and science studies now? Science and science studies seem to be flourishing in the sense that there is a lot happening. There is much funding, many metrics, all sorts of empirical studies. Much of this is interesting and valuable, although a lot of it is

bland and bitty. Many studies are short and shallow and driven by market demand and fast-track careerism more than intellectual quest. There is not much in the way of thinking that is simultaneously empirically-grounded, philosophically integrated, socio-historically contextualised. This is what marxism could bring to bear. Instead it goes from one extreme to the other: from the minutiae of molecules to the tao of physics. It is either science stripped of philosophical or historical reflection or it is new age nonsense stepping into the philosophical gap and filling the bookshop shelves. Both are commercially successful. Contradiction sells.

The intensification of the commercialisation of science, as part of the general commodification of knowledge, is the strongest force in the field today. A new orthodoxy has taken command, not so much by winning arguments, but by wielding systemic power on a global scale. Philosophy is not thriving in this arena. Nor is theory in any discipline. Universities are being harnessed to operate by market norms and survival of the fittest in commercial competition is outstripping all other forms of validation, particularly truth criteria, theoretical depth and breadth, moral responsibility, political engagement. There are powerful pressures disincentivising, eroding, marginalising critical thinking, creative thinking, systemic thinking, especially systemic thinking.

Universities are contested terrain. Those who would defend theory, however, are in a weakened state. This is partly because of tendencies to theoreticism, theories flying apart from practice, losing traction in the flow of experience and experiment. It is also because cold winds are blowing upon both sense and nonsense in this arena. The atmosphere has changed drastically from what prevailed in the 1960s and 1970s. Then there were large scale contending paradigms in every area facing off with each other with great energy and passion. It has dissipated now. It is disconcerting, because it is not as if anything has been solved. It is that people have learned to live with problems unresolved or unacknowledged or to settle for resolution at a less than fundamental level. The confrontations of world views have given way to low level eclecticism. There is a narrowing of perspective and a retreat from engagement, whether through myopia, ignorance, shallowness, conformity, fear or careerism.

So much of what I read or review in so many areas is so half-baked. Conceptualisation is weak and confused. Contextualisation is thin and random. Marxism has nurtured in me a demand for conceptualisation that is strong and lucid, for contextualisation that is thick and systemic. Many social studies of science, including some associated with the strong programme, are still too weak in conceptualisation and contextualisation.

This is not to deny the significant contribution that the Edinburgh School have made to this field, offering a most impressive output of empirical studies of intriguing episodes in the history of science connecting social structures to cosmologies, relating class interests to positions taken in scientific controversies. They have argued against seeing what is considered to be true and rational in the history of science as unproblematic and as needing no sociological explanation and against seeing social factors as necessarily involving distortions or corruptions of science. They have taken issue with the older view of knowledge as individualist, passive and contemplative in favour of a view of knowledge as social, active and contextualist. Knowledge is conceived as a product, not of passively perceiving individuals, but of interacting social groups. Scientific theories are not individually revealed but socially constructed. (Barnes 1974, 1977, Bloor 1976) This much is in common with marxism.

However, unlike marxism, they see scientific knowledge as totally contingent, leaving us with no overall patterns, no necessary connections linking knowledge either to the social order or to the natural world, no concept of scientific progress, no criteria of differential assessment. For them, social groups simply choose theories as resources to suit their purposes and there is no way in which such theories can be ranked in terms of their proximity to reality or their rationality. They constantly shift ground, going from the most arbitrary voluntarism to the most mechanistic determinism, setting down a hard-line interest-constitutive model of knowledge and then pleading for disinterested research, arguing against giving science a special status vis-à-vis other forms of culture and against criteria of demarcation and then giving the highest honorific status to science. It is all too random, too contradictory and too loose to take us any further towards a deeper insight into the relationship between the cognitive and social aspects of science.

The science wars of the 1990s took up the threads of this tension. I found myself on both sides, yet wholly on neither. I agreed with those who wanted to defend the cognitive capacity of science against epistemological anti-realism, irrationalism, mysticism, conventionalism, especially against anything-goes postmodernism. I also agreed with those who insisted on a strong socio-historical account of science against a reassertion of scientism. A better grounding in what the marxist tradition has brought to bear on these issues would have illuminated the terrain. (Sheehan 2001)

I do not believe that the debunking of science in terms of its cognitive capacity is an appropriate activity for the left. It is neither epistemologically sound nor politically progressive. The left should take its stand with science, a critically reconstructed, socially responsible science, but with the possibilities of science.

Science studies has tended increasingly to back away from the big ideas that were once in play. It is becoming too small, too introverted. It exponents esoterically cite themselves and each other and fail to look wider. I picked up a science studies reader (Biagioli 1999) recently and could not imagine why anyone would want to read it. It seemed obsessed with mini-debates of micro-tendencies: Latour and Callon versus Yearley and Collins, etc. I am not sure who cares. There was only weak evidence of relevant intellectual history and thin social context. There are no references to Bernal, Haldane, Caudwell, Bukharin, Hessen, Levins, Lewontin, Wartofsky, Hörz and only trivial ones to Marx and Engels. Sometimes the older ideas really were better.

As to philosophy, although it is central to the human condition, many professional philosophers have reduced it to technicist esoterica. They have alienated many who have come to it seeking meaning, putting any defense of its declining status on dubious grounds, all the while strutting about oblivious, preening themselves on their ratings in their philosophical gourmet guide. Some discourses in philosophy of science seem to me to be equivalent to obsession with a game of chess while the house is burning down around it.

Marxism is still an alternative. It is still superior to anything on the scene. It is a way of seeing the world in terms of a complex pattern of interconnecting processes where others see only disconnected and static particulars. It is a way of revealing how economic structures, political institutions, legal codes, moral norms, cultural trends, scientific theories, philosophical perspectives, even common sense, are all products of a pattern of historical development shaped by a mode of production.

Marxism as a philosophy of science is materialist in the sense of explaining the natural world in terms of natural forces and not supernatural powers. It is dialectical in the sense of being evolutionary, processive, developmental. It is radically contextual and relational in the sense of seeing everything that exists within the web of forces in which it is embedded. It is empiricist without being positivist or reductionist. It is rationalist without being idealist. It is coherent and comprehensive while being empirically grounded.

It needs constantly to be revised in light of the most advanced science, the most up-to-date knowledge, of its time. It is my hope that new generations will come forward to take up this tradition in new times. In philosophy of science this means reflecting substantively on the philosophical implications of the empirical sciences and doing so in a thick socio-historical context. In philosophy generally it means looking to other disciplines and to inter-disciplinary inquiries and participating in debates at the theoretical foundations of growing knowledge. It means scrutinising contemporary shifts in the very production of knowledge.

Marxism has been a major position in the history of philosophy. It has been a formative force in science studies and other disciplines and it is a continuing influence. It is not as influential as it deserves to be on the current intellectual landscape, but it is still more influential than many might think. It is there in ways that are not always acknowledged. It is sometimes the philosophy 'that dare not speak its name'. Since the rise of the new right in the west and the collapse of socialist experiments in the east, marxism has become heresy again. Moreover, many of its premises have come to be so accepted that it seems no longer necessary or opportune to say from where they have come. It is not only a matter of dare not or need not, but often know not. Many younger academics have only a weak knowledge of the history of their disciplines or the history of much else. They do not know that many of their premises come from marxism.

Marxism lives on, but in circuitous and complex ways, sometimes in strong, brilliant, defiant ways, sometimes in subtle yet influential ways, but sometimes too in weak, confused and debased ways. It is often marxism lite as an element of intellectual history lite to be raided for random insights for theory lite. Sociology of knowledge must be brought to bear upon trends in sociology of knowledge, including sociology of knowledge lite.

So where have all the marxists gone? Some of us are still of us are there, struggling on, sadder but wiser. Others are still there, but quieter. It does not come screaming off their cvs or web profiles as it does on mine, but it informs their work in many ways. Others are quasi-marxists or post-marxists. They have become discouraged by defeat or decentred by postmodernism. It was one thing when the wind was at their back, but they have been swept off their feet by crosswinds they could not withstand. Then there are the ex-marxists. Some of them go witch-hunting and draw up lists. (Horowitz 2006)

There is modest evidence of a revival of interest in marxism and science now, if I can judge by the number of invitations I have received to write or speak on the topic in recent times, more than at any time since I first published in this area. I was especially honoured to be asked to write an introduction to the manuscript written by Bukharin discovered buried deep in a kremlin vault during the glasnost period. (Bukharin 2005, Sheehan 2005). I found new interest at a seminar at Princeton on geopolitics, marxism and 75 years of science studies in March 2006 and at a conference at the Science Museum in London in September 2006, both marking the 75th anniversary of the 2nd International History of Science Congress in 1931. How many academic congresses are so commemorated? There was an event in June 2006 to assess and honour JD Bernal organised by the Institute of Physics in Ireland in Limerick. I could give other examples. There is something happening, although I am not yet sure on what scale.

Recent events and publications take different points of view, bringing forth new debate. Gary Werskey's paper at the Princeton conference made a strong connection between the legacies of 1930s and 1960s and the tasks for today, conceptualising the relationship of marxism to science studies as a history in three movements. (Werskey 2006) At the same time all of the old caricatures are still in play. I found myself at odds with Andrew Brown, author of a new biography of Bernal (Brown 2005), when we were both speaking at the event in Limerick. In his biography and the reviews of it, I detected an emerging consensus that I want to contest. It is admiring of his science and war effort, bemused by his sex life and condescending about his philosophy and his politics. Some commentators seem to believe that the mere mention of dialectical materialism makes the case that it is self-evidently ridiculous, but, I ask, what more appropriate philosophy is there for a scientist or anyone else? positivism? neokantianism? postmodernism? theism? what? As for politics, what sheds more light on the world that we inhabit? neoliberalism? neoconservatism? what? (Sheehan 2007)

So where are we now? It is a paradox: never has there been such a totalising systematising force as contemporary global capitalism and yet never has there been such inhibition of synthesising systemic thinking. The centralising market decentres the psyche. It organises production and consumption, but disorganises community. Nevertheless, there is a seeking of truth, a striving for justice, that the system can neither satisfy nor suppress. In this I place my hope in a revival of the kind of totalising thinking and collective acting that marxism has nurtured through the decades.

So, in conclusion, the history of marxism and its relation to science is tied inextricably to the history of everything else. It has been so far a riveting drama, full of revelation, catharsis, tragedy and farce. It is not over, not as long as I have breath in me. I am ready for the next act.

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