

Science and Society, a Socialist Perspective

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Chris Talbot, a member of the Socialist Equality Party in Britain who is a lecturer in mathematics, delivered the following guest lecture to a postgraduate course in Biotechnology and Public Affairs at the University of Canterbury, Kent.

I am speaking as a member of the Socialist Equality Party, which is part of the international Trotskyist movement--the International Committee of the Fourth International. Since February, we have launched the *World Socialist Web Site* and are seeking to encourage critical thought in many different areas, including science, medicine and technology. I am also speaking as someone with a background in science and am currently a lecturer in mathematics.

Let me start by making the claim that, in a certain sense, it is impossible to be consistently scientific in one's approach to the world and to the deep-seated social and political problems confronting mankind without being a socialist. That does not mean to say that valuable contributions to the development of science cannot be made without being a socialist or a Marxist, but to examine the role of science in society means to critically examine the ways in which this particular society--one based on the market and private profit--determines the directions of scientific research and the ways in which its findings are used.

What confronts anyone considering these issues is the glaring contradiction that, along with the staggering developments of science and technology in the twentieth century, we see the continued existence of disease, poverty and malnutrition. This is not only in the developing countries but also in advanced countries such as Britain, the US, etc. Science has provided the means for solving many of these problems, yet they not only continue to exist but also are getting worse. For example, world-wide we have three million people a year dying from tuberculosis, more than at any time in history. Even in Britain cases are significantly on the increase. Malaria, according to the World Health Organisation, is 'escalating at an alarming rate' with at least 300 million cases of infection a year and at least 1.5 million deaths, including 90 percent of the deaths of children under five in Africa.

The resources exist to solve these problems, but they are in private hands and are used for the accumulation of vast riches by a few. To quote from a recent UN report on growing inequality, the 225 richest people in the world now own more than \$1 trillion, which is equal to the annual income of the poorest 47 percent of the Earth's population. Four percent of this wealth, that is \$40 billion dollars, would provide enough funds for one year--according to the United Nations--to make possible universal access to basic education for everyone in the world, as well as basic healthcare for all, adequate food for all, and safe water and sanitation. At the present moment 1 billion people are without these basic needs.

The criticism I am making of the way in which science is used in society today flows from a critique of the profit system itself. As a Marxist, I hold that ideas are deeply influenced by the social relations that give rise to them. The philosophical outlook generated by capitalist society influences scientific theories in many, often quite subtle, ways. Some of the most obvious examples lie in the attempts to resurrect crude theories that crime is genetic, not social, in origin, or that the wealthy are genetically superior and therefore deserve their social position, etc.

How then do we analyse social questions in an objective, scientific way? The natural sciences--physics, chemistry, biology, etc--by and large maintain an objective outlook and methodology. Of course, there are all kinds of disputes and even subtle influences of a social origin--but in the last analysis, and this may take a very long time compared to the work of an individual scientist, theories are tested out in experience and practical applications.

In comparison, when we come to the social sciences, theories and ideas are profoundly influenced by the existing social order. Without being disrespectful to the employees of various corporations who address you on this course, I would maintain that their standpoint on questions of science and society is far from objective. I am not speaking of dishonesty and corruption, or suggesting that there is a grand conspiracy where scientists and academics are completely controlled by big business. Nevertheless, the increasing pressure on scientists and academics--for jobs, for research funding, from their peers, etc.--means that when it comes to social questions, overwhelmingly there is an acceptance of the status quo, and very little in the way of generalisations or theories of a scientific character.

I know that you are all biochemistry students, so I won't go on at great length about the social sciences. But you must be aware that in the social science and humanities departments of universities there is widespread acceptance of ideas that can be grouped under the term 'postmodernism'. This is a broad heading, which could include post-structuralists, feminists, eco-radicals, and so on. What is common to them is not merely their justification of the present social order--to which, despite their radical verbiage, they offer no real alternative--but their attack on science.

What is the central point of their attack?--it is on objective truth. They promote an unbridled relativism in science as they do in every other field. Truth, they say, is purely relative. Science is just a discourse, like any other discourse. The myths and legends of an African tribe about the night sky have just as much value as modern astronomy and cosmology, etc., etc. They attack the whole tradition of the scientific revolution and the Enlightenment. This is bound up with a sceptical attitude to any possibility of social progress or progressive social change. While many of them profess to being socialists and even Marxists of sorts, they are hostile to the basic tenet of Marxism--that the working class is the sole social force capable of transforming society and that the tasks of socialists are bound up with the political education and mobilisation of working class people.

There has been a certain opposition developing amongst scientists to these post-modern attacks--you may have seen Alan Sokal's work [1] and his spoof exposure of postmodernism, 'Transgressing the Boundaries. The Transformative Hermeneutics of Quantum Gravity', which was published in the cultural studies journal *Social Text*. But I would argue that a thoroughgoing refutation of post-modern anti-science demands a response that is not just restricted to their ignorance and distortion of questions relating to the natural sciences. To answer postmodernism on the one hand, and the open defenders of the profit system and the big corporations on the other, requires a critical and scientific approach. Dealing with all the problems relating to the application of science in modern society calls

for a socialist perspective.

The BSE disaster

Consider the topical issue of the BSE/'Mad Cow Disease' disaster. This illustrates some of the more general points I wish to make on science in contemporary society.

Some of you may know that, although we have limited resources, the SEP organised an inquiry into the BSE issue in May last year. You can read the contributions made to that inquiry and our findings in our book [2]. It was a very important experience in bringing out the truth behind the BSE issue. Whilst not minimising the contributions made by relatives of those who died from CJD, or those on political, economic, and other areas, I will concentrate on some questions relating to science.

Professor Richard Lacey and Dr. Harash Narang helped us very much in our work. Like many of those participating, they did not necessarily agree with all our political ideas, but on the science issues they have considerable firsthand experience.

At least one revelation coming out of the present government inquiry completely validates our position--that the profits of the meat industry took precedence over any concern for public health. I refer to the reports of the discussion between Tory Agriculture Minister Douglas Hogg and Deputy Leader Michael Heseltine. Confronted with the evidence coming out that BSE in cows was the 'likely' cause of new variant Creutzfeldt Jacobs Disease (CJD) in humans, Hogg proposed they kill off all cattle in Britain at a cost of many billions, as the only safe option. Heseltine refers to the fact that 'our' (i.e., the Tory government's) academic critics were proved correct. He means, of course, Professor Lacey and others. The Tory cabinet overruled Hogg and the government concentrated its efforts on the rebuilding of 'consumer confidence' rather than prioritising public health. This was despite the fact that Secretary of State for Health Stephen Dorrell was forced to make his statement of March 20, 1996 accepting a link between BSE in cows and CJD in humans, which led to the collapse in beef sales and the European ban. The Tory policy has continued under the Labour government.

Let me summarise some of our findings.

1) *The use of meat and bone meal from sheep and cattle in the preparation of animal feed is generally recognised as the origin of BSE.* It wasn't subject to adequate testing or control. The drive for profits from increased beef exports was paramount. Because of the incubation period--2 to 9 years in cattle, 5 to 15 years in humans--its effects were not immediately seen.

This was a relatively low-tech development in agribusiness and the British beef industry is small fry compared to the corporations that now dominate the world food and pharmaceutical industries. It highlights the risks involved in the present use of much more advanced science and technology, backed by billions of dollars, in the food and pharmaceutical industries. How many products are given the degree and duration of testing that are really necessary?

2) *Government scientists and committees were dominated by their concern for business interests.* This was most blatant in the case of the Ministry of Agriculture, Fisheries and Food (MAFF), which describes itself as a sponsor for the food industry as well as supposedly being responsible for food safety. Because of the libel laws, we had to cut out some of the comments made by Professor Lacey about various scientists on government committees. They were consistently--putting it diplomatically--'economical with the truth' as far as the dangers of BSE are concerned. This was not only confined to MAFF. It would be farcical, were it not so serious, to report the statement to the government inquiry of Sir Donald Acheson, Chief Medical Officer of Health in the 1980s, attempting to explain why he said beef was safe: 'It was several years after the events that I became aware that for some people the word 'safe'

without qualification means zero risk.'

Some have argued that the role of MAFF was the problem and support Labour's proposal for a Food Standards Agency--which the government now appear to be backing away from. Modelled along the lines of bodies such as the Food and Drug Administration in the United States, it is said it would be a more independent regulatory body. Given the huge power of the major corporations, I would beg to differ.

Here are the conclusions of a detailed study in 'Science, Politics and the Pharmaceutical Industry' by John Abraham [3]. He speaks of the 'consistent way that the British and American authorities awarded the benefit of the scientific doubt to industry' (p. 248). Whilst he agrees that the US bodies are perhaps 'less vulnerable to industrial pressure'--which wouldn't be difficult--he says that in the US the 'pharmaceutical companies often have commercial links with the two major political parties' and so can 'muster substantial resistance to unwelcome regulatory activity.'

3) *Threats to, and vilification of, those scientists who did speak out.* Both Professor Lacey and Dr. Harsh Narang were threatened for speaking out on the dangers of BSE. Dr. Narang, was researching into Transmissible Spongiform Encephalopathies (TSEs are the type of diseases that include BSE, CJD and Sheep Scrapie.) He was sacked. Professor Lacey was described in parliament, where the slander laws do not apply, as 'mentally deranged'. Apart from a few exceptions, they were kept off TV and radio programmes. Professor Lacey has now lost his job at Leeds University.

I suggest that any scientist who speaks out against business interests would get the same treatment. A recent example was Dr. Arpad Pusztai, a researcher for 35 years at the Rowett Research Institute in Scotland, who publicly expressed concern over genetically modified food. His research work was called into question and he 'decided' to retire [4].

4) *Finally, the effects of financial restrictions in the public health sector and particularly the decision to stop research into TSEs.* Which areas of research get financial backing, particularly given the expense of state-of-the-art apparatus, has become a crucial issue in current scientific practice--a point to which I will return. Without being over-dramatic, it is true that, in Britain at any rate, 10 years has been lost in the search for an effective test for the presence of BSE/CJD infection, let alone a cure.

Before going on to general questions of science policy, let me comment briefly on the present situation in regard to BSE. I am sure that if you have followed the scientific work on prions and TSEs, you will know that the present government's claim that beef is now safe is just not true. Infectivity may well have been reduced by the present culling procedures, but there is absolutely no guarantee that this extremely infectious agent has been eradicated. Dr James has asked me to concentrate on the broader questions of science and society, so I won't go further into the politics of this Labour government and the BSE inquiry, but I hope you will read some of the articles from our website. [5]

Global corporations and science

BSE is only one example--a very serious one--of the way in which the defence of industry's profits impinge upon the practice of science. Let me indicate very briefly an analysis from a Marxist standpoint.

There has been a significant change, particularly in the last two decades, from the way that science functioned in the immediate post-war years. Much of the science and technology of that period was publicly funded and, to a considerable extent, free from the corporate pressures we see today. Vast developments were made, from semiconductors and computing to the discovery of the DNA basis of genetics. I am certainly not uncritical of the policies towards scientific questions which existed--it can be justifiably argued, for example, that the huge military drive which took place in the so-called Cold War was responsible for a reckless

nuclear energy programme. The horrendous results of the Chernobyl disaster are still with us today. However, we can point to the general acceptance of a long-term approach to science--even the Defense Department in the US funded basic research that was unlikely to provide immediate benefits for them.

What has happened in the recent period? The vast social and political changes--the collapse of the USSR and the end of the Cold War, the capitulation of national liberation movements and the rise of new virulent nationalisms, the huge decline in trade unionism, the growth of social inequality on a world scale, growing world economic and financial instability, etc.--can only be explained on the basis of fundamental changes in the world economy. I am speaking of a huge shift to globalised production, and the domination of transnational corporations and international finance capital over national states and governments. These changes, which were themselves dependent on science in the development of the microchip, are now having a fundamental impact on the practice of science and technology.

One of the major effects of this has been the attack on publicly funded science and the requirement of 'accountability', which is part of the general demand of the free market philosophy for reduced government spending and privatisation measures. Let me just indicate two effects of this on a world scale.

From the UNESCO World Science Report of 1996 [6], we read:

'The CIS [Confederation of Independent States] countries are consequently experiencing a drastic downsizing of their R & D base, an unprecedented event in the history of science and technology in the 20th century.'

'The share of R & D expenditure in GDP in Russia declined from 2.03% to 0.81% between 1990 and 1993.' [Since GDP was plummeting, this is a fall in absolute terms from \$23.9 billion in 1990 to \$6.4 billion in 1993.]

These figures speak for themselves. The possible dangers in terms of the effects on health and on the environment are incalculable.

Then from the same UNESCO World Science Report on Africa:

'The African university system has been in ever deepening crisis since the mid 1970s.... Increased pressure for university undergraduate enrolments in the face of decreasing university budgets, the rise of graduate unemployment in the face of escalating liberalisation of the economy,' and so on--a long list of dire problems.

Let me remind you that the virtual absence of a scientific base in Africa coincides with a raging HIV/AIDS epidemic, with 21 million infected; up to one in four people in Botswana and Zimbabwe are afflicted with this disease.

You may argue that these are extreme cases and an examination of what is happening inside the so-called 'developed nations' in science and technology presents a different picture. I would argue that here also an objective assessment--I am certainly not speaking from an anti-scientific, eco-radical standpoint--brings out many areas of concern. This too relates to a downsizing of publicly funded science, particularly the slashing of basic research. It includes the intense competition for scientific innovations in areas such as food, agribusiness and pharmaceuticals, and the pressure for fewer regulations and all the problems that gives rise to, I highlighted in the case of BSE.

I know that in this course you have been discussing the issue of genetically modified food. Many concerns have been raised by experts in the field--I'm sure you know much more about this than I do. You can read our article on the World Socialist Web Site [4]. Given the possible dangers, I think you have to be very critical of the huge pressure being brought to bear by Monsanto, Dupont and other corporations to lift all restrictions and allow them to boost their profits.

But this is an area where regulations still apply. A recent *Financial Times* Survey on Biotechnology points out there are many areas in biotech which fall outside of the present regulatory system. Naturally, most in the

industry argue that self-regulation is adequate, but the FT quotes at least one sceptical scientist in a US company saying, 'It's a bit like asking the National Rifle Association to regulate itself' [7].

Perhaps what is now taking place in the universities is, in some ways, more serious for the long-term future of the culture of science. Research is now funded largely from business directly, or from government bodies whose main criteria are meeting the needs of industry, or, at least, responding to so-called 'public interest'. In other words, if you cannot argue for immediate usefulness, you have to attempt to attract business funds by creating 'media interest'. (The European Mars expedition will have huge balloons to cushion it on landing, and advertising space is being sold on them--the first Coca-Cola sign in outer space!)

In general there is enormous competition for funds--for grants, for PhD funding, for temporary academic posts. The book *Downsizing Science* by Kenneth M. Brown [8] discusses this phenomenon in the US. Brown is from the US National Science Foundation. He formerly worked for the CIA, and is certainly a supporter of global capitalism. Nevertheless, he views with alarm the decrease in US spending for science, which is estimated to fall by 16.8 percent in real terms between 1994 and 2002. Interestingly, he quotes the widely circulated e-mail from Alan Hale, co-discoverer of the Hale-Bopp Comet:

'My personal feeling is that, unless there are some pretty drastic changes in the way that our society approaches science and treats those of us who have devoted our lives to making some of our own contributions, there is no way that I can, with a clear conscience, encourage present-day students to pursue a career in science.'

This is not just a question of finance. The whole structure of science has gone through an unprecedented upheaval. As John Ziman puts it in his book *Prometheus Bound* [9]:

'Science is going through a radical structural transition to a much more tightly organised, rationalized and managed social institution. A new language of 'accountability', 'evaluation', 'input and output indicators', 'priority-setting', 'selectivity', 'critical mass', etc., has become commonplace throughout the world.'

Not only does this place the objectivity of scientific research under question, when there is such pressure to get the 'right' results, it places severe restrictions on the freedom to investigate and develop ideas. As Ziman correctly states, Einstein and Darwin would have been unlikely to get funded under this system. Fundamental or 'pure' research is certainly under attack. I can only briefly refer to the restriction on the free flow of information, under threat from systematic use of patents on so-called intellectual property--a huge area for concern in its own right.

As well as depending on the free flow of information, science has always depended on international collaboration. Increasingly we now find national rivalries and the profit motive intruding into what should be joint international ventures. Because of these international rivalries, and because of the economic collapse in Russia, the International Space Station, for example, may not be completed.

Let me bring my remarks to a conclusion. The changes in science I have outlined throw up extremely serious questions. They range from the disasters, or potential disasters, affecting our health and environment, to the fundamental issue of the development of science itself as a function of society.

My argument is that the unfettered development of the global market economy is, in the final analysis, at the centre of these huge problems. It is also quite clear that the transnational companies will not allow tighter national controls or regulations to restrict their operations. This approach ignores the increasing business control of every aspect of public life.

What is needed is genuine public control over the fruits of science and technology, not simply a call for a few tighter regulations. I do not accept the argument, put forward in the book *Downsizing Science* for example, that the alternative to privatisation--public control and ownership of

science and technology--must inevitably give rise to bureaucracy, stagnation and cronyism. I would argue--as a member of the Trotskyist movement with a record of opposition to Stalinism for over 70 years--that society can be run along other lines than by the domination of national state bureaucracies.

A secure future for mankind, the development of human potential, can only be realised if there is genuine democratic and international control over science. That cannot take place unless ownership and control of the huge resources now available are taken out of the hands of the transnational corporations. That is why I consider that a socialist perspective is of such importance and relevance to science today.

References

[1] Intellectual Impostures by Alan Sokal and Jean Bricmont, Profile Books, 1998

[2] Human BSE: Anatomy of a Health Disaster, IW Books, 1998
For further information about this book see:
<http://www.mehringbooks.co.uk/recent.htm>

[3] Science, Politics and the Pharmaceutical Industry by John Abraham, UCL Press, 1995

[4] WSWs: Concern grows over genetically modified food
[21 November 1998]

[5] WSWs: Export-ban on British beef to Europe lifted
[28 November 1998]

[6] World Science Report, UNESCO, 1996

[7] Financial Times, 6 October 1998

[8] Downsizing Science, Will the United States Pay a Price by Kenneth M. Brown, American Enterprise Institute, 1998.

[9] Prometheus Bound, Science in a Dynamic Steady State by John Ziman, Cambridge University Press, 1994

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See Also:

Marxist standpoint on 'Science and Society' debated at British University
[29 December 1998]

Selected documents relating to the Independent Workers Inquiry into the BSE/CJD Crisis

Medicine and Health: Full Coverage on WSWs

Science & Technology: Full Coverage on WSWs



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Socialist Equality Party visit:

wsws.org/contact