

**SCIENCE, KNOWLEDGE AND  
SOCIETY – A RESPONSE  
TO SOKOL AND NANDA**

Sundar Sarukkai

Philosophy of Science Unit  
National Institute of Advanced Studies  
Bangalore

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**National Institute of Advanced Studies  
Indian Institute of Science Campus  
Bangalore 560 012, India**

## ABSTRACT

In a recent issue, EPW carried three articles on scientific epistemology which essentially argued that it should be given a privileged position in contrast to other systems of 'local knowledge'. This paper is a response to these pieces. In it I argue that you cannot exhibit the primacy of scientific epistemology staying within epistemology itself. Nanda's attempt to correlate scientific epistemology and social reforms, the confusion regarding relativism and postmodernism, the pressure to inculcate 'scientific temper' in the society are flawed for various reasons. It is also argued that this fashionable attack against postmodernism misses an important point about postmodernism, namely, its ability to understand the discursive structures of science in a way which the scientific discourse itself is not capable of doing. I believe that the tendency, as exhibited by Nanda, to club fascism with postmodernism and then using this as an excuse to prioritize scientific epistemology does no justice to science nor postmodernism.

There are many issues, some convergent and others divergent, in the stand taken by EPW (April 18, 1998) recently in the form of an editorial and two articles by Sokol and Meera Nanda. As the editorial makes explicit, this collection is aimed at 'initiating a critical reassessment of the culturalist critiques of modern science among Indian intellectuals' (Ed., 912). All these three articles take a strong position against relativist epistemologies and in favour of scientific epistemology. The target of these attacks is the postmodern discourse. Making 'Sokol's affair' the catalytic point, they condemn the postmodern and postcolonial discourse by stating, 'if they can be made to support a purely nonsensical thesis, one cannot but wonder how sound they are...' (Ed., 912) and also 'to wonder, at the very minimum, if these theories are not missing something important about the nature of scientific knowledge?' (Nanda, 919).

Their arguments also go beyond merely being a critique of postmodernism. Both Sokol and Nanda would like to prioritize scientific knowledge as opposed to other knowledge systems, primarily in order to liberate the 'oppressed' in India (and presumably in other societies) and also to guard societies against 'fascism' which apparently arises in societies not sufficiently 'scientific' in nature. Of course, this tendency to valorize science as an agent of emancipation is nothing new, and many scientists and commentators of science have long held this position. Sokol's and Nanda's responses differ in their epistemological and ideological leanings towards authentic scientific knowledge and the belief in the Left as an agent of emancipation of the oppressed.

Although Sokol's concern is against relativism it is also directed against the intellectual trend in American Universities and the American Left. I shall not discuss his article in detail like I shall do with Nanda's but only point out that too much has been made out of too little as far as his 'affair' is concerned. Primarily, the fact that he managed to publish what he considers a fraudulent piece which extensively used the language and style of postmodernism has been seen as an indictment of postmodernism itself! The flaws in making such a conclusion are very clear, at least for those who do not have ideological positions at stake.

Even in the scientific literature, there have been many examples of fraudulent papers (and many times papers filled with mistakes but which get published because they conform to the received discourse), which have been published. Most times



these papers get published for the same reasons which made the editors of Social Text publish Sokol. But unlike him and his friends nobody would like to claim that these cases prove the duplicity of the discourse itself! And frankly, if you place his piece within the tradition of postmodernism there is nothing to even raise a gasp about. For what does it matter if Sokol thought he was pulling a fast one - his text transcended his intentions the moment it was brought into the public domain. As an author of that piece, he has no copyright over its meanings including that of "fraudulence".

Sokol seems to believe that 'sloppy thinking' which does not distinguish 'truth' and 'claims of truth' lies at the root of the confused postmodernist notions of truth. 'What I'm saying is that it's crucial to distinguish between the concept of 'truth' and the concept of 'claim of truth'...' (Sokol, 916). He believes that it is this confusion which pervades all alternate theories of truth. I find it hard to believe that Sokol does not realize that it is exactly this distinction which is the bone of contention: how do 'claims of truth' become 'truth'? Science claims to have a methodology which makes this transition possible. The critique of science, rephrased for Sokol, is merely the questioning of the primacy of this particular methodology. There seems to be no 'obvious' way to believe that a truth which has been established from a claim of truth can only be done within the scientific enterprise. Most human activities always involve a similar kind of adjudication.

On the other hand, Nanda's thoughtful and coherent paper situates the problem in the Indian context, primarily for two reasons: one, the project of emancipation through the agency of the Left and two, her conviction that alternate epistemologies tend to consolidate Hindu culturalism which she sees as a fascist movement. To stake these positions she argues forcefully for the primacy of scientific knowledge and method. Her elaborate defence of this position allows me to intervene at many places. I shall focus on some, in my view, facile categories which allow her to establish her claims.

Let me summarize my own position here. Nanda would like to base her arguments against relativism through recourse to scientific epistemology. But nowhere in her paper does she succeed in 'proving' that alternate epistemologies are untenable; she merely keeps reiterating her belief that such alternate epistemologies



do not fit into her political and personal agenda. The arguments against alternate epistemologies (especially those in 'opposition' or distanced from the scientific one) are untenable if based on epistemological arguments, per se. The reasons have to do with confusing domains of applicability, conflating different 'objects' of discourse, insufficient understanding of the link between epistemology and social behaviour, incoherent positions of epistemology and action and so on. The state of the Left and their claims as agents of emancipation, the resurgence of Hindu fascism etc., are not problems in the epistemological domain. Linking them with epistemological concerns is a project which stretches its resources beyond their capacity.

I do not believe that comparison of different 'epistemologies' is possible in an 'objective' way. There is a need for a qualitative shift from posteriori epistemologies to apriori categories of social and individual existence. Traditional and alternate systems of knowledge are just that - systems and not stray statements taken out of their systemic context<sup>1</sup>. To imply, as Nanda does, that explanation from science regarding crops is more desirable than the explanation of a peasant woman (920) is to be blind to the notion of lived experience. Even seen through categories of science, lived experience is empirical, perhaps more empirical than much of science. But this does not imply that science and tradition have to be mutually exclusive strategies - when they both shed their ideological masks, they can grow together.

We don't live by knowledge and knowledge alone. Of course, one may tend to look at every act of ours through an epistemological prism but this is exactly the reason why there is so much posturing on both sides. Staking for the authenticity of lived experience should not be seen entirely as an epistemological project.

### **The Domain Problem**

There are many overarching concepts in Nanda's paper which by their very unification of diverse elements make possible her conclusions. Let me list some of them: Science, India, Left, Truth, Knowledge, Modernization, Oppressed, Culture, Reality, Fascism and so on. Many of these 'unified concepts' are predicated on her homogenous view of 'science', 'scientific knowledge', 'scientific temper' and so on. I am perfectly willing to buy the argument, if she holds it, that science stands for sciences and the unification of plural sciences into one 'science' is to facilitate

communication and removing needless qualification. I am in much sympathy with this communication praxis but am afraid that this first step already hides structures which will question the conclusions reached later. If these structures are exposed at every step, I see no easy way out for her as far as her conclusions are concerned.

To expose the multiplicity inherent in science, I shall first address the 'domain problem'. I would like to view this in two parts: 1. Domain of Application and 2. Domain of Action. Epistemology is concerned with the domain of application, that is the set of statements over which epistemological structures can be brought to bear. This does not constitute 'science' in full. There is also a domain of action where science converts epistemological statements into principles and agencies of action. Many times it is not easy to find a simple link between these two domains for the reason that technology plays the surrogate to science in this programme. Neglecting to not only mention technology but also not explicate it is part of Nanda's view of science as an homogenous entity whose different activities are linked together through its own canons. One doesn't need a sociology of science to realize one cannot hold such a nice picture of science.

Let us see the problem of conflating domains in Nanda's project. Her basic view of science is this: it is a project which allows us to generate a set of culturally-neutral, valid statements about the world. Nanda's comment about its 'ability to tell us something that is valid across cultures' (916), is merely an assertion. The statements of science tell us something about particular things. These things, as we well know, belong to the 'natural' world, in the sense that they are mute towards what is said about them. I am sure Nanda appreciates this well-known point but her disinclination to qualify this allows her to validate across domains which are not part of the scientific project. Scientific epistemology is about nature and the role it would like to play in understanding individual and social activity of humans should be carefully examined before assuming its validity in these domains. As we know quite well, epistemological structures cannot be easily carried over from one incompatible domain to another.

Consider these quotes from Nanda: 'scientific knowledge ... served as a vantage point for critical evaluation of our social context' (916) and 'the necessity of a scientific world view for the advancement of equality and justice for all in our country' (919). How does an epistemology related to 'things' get transformed into an



epistemology of social action unless society and its human constituents are to be seen as 'things'? Even granted that, at this level of approximation, one could 'objectify' society and its peoples and generate some kind of scientific knowledge about them and their social interactions, how does it allow for the link to social change which is not a product of 'thing', per se. Things don't act. That is, it is *not* epistemology which is the ordering force for social relations and cause for its inequalities. This is a most important point which she neglects to understand.

The domain problem is important because Nanda continuously rejects traditional systems of knowledge because they don't fit the scientific criteria for knowledge. This too is well known - science functions by exclusivity, by definition. As has happened innumerable times, non-science has been kept out of science but this does not imply a negation of epistemology. Let me clarify further.

'If there is anything that is absolutised by scientific reasoning, which the critics ridicule as big R-Reason, it is this demand for a scrutiny-by-doubt, a demand that we subject our beliefs to tests not under the control of these same beliefs' (Nanda, 918). This is surely a tall claim, even for scientific reasoning! Let us say I believe in electrons. How do I subject this belief to 'tests not under the control of these same beliefs'? I don't know how nor do the scientists. To test my belief in the existence of electron, I begin with concepts like charge, mass etc. Then I design experiments whose outputs I interpret within the space of these beliefs I hold about the electron. This is the case with a majority of scientific claims about things. Beliefs do not get justified in a vacuum. They are intrinsically linked with the nature of beliefs itself.

This insensitivity to the domain of application continues in her paper. '... believe that dispassionate striving for the ideal of objective truth ....is the best epistemology for the left' (919). Down the line, she places 'cultural introspection' implicitly on par with scientific methodology as a way to combat the 'rising cultural and religious chauvinism' (919). Relentlessly she continues with the same mistake. Science is 'capable of empirically testing the effects of social bias' and scientific knowledge puts 'increasing distance between its theories and the social context from which they admittedly arise' (919) and so on. In the closing parts of her paper she compounds the mistake irretrievably. 'The historic role of scientific ideas has been to replace metaphysics with physics, to demolish the closed, hierarchical world and



reveal the pre-social equality of all human beings, and to free the mind from fear of gods and djinns' (922). Phew! This really puts the pressure on science and seeks a status to science which it itself is fast recognizing as difficult to attain. It is really being more Roman than the Romans themselves or more appropriately in the context of Nanda's attack on the Indian intellectuals, more American than ...

The problem with the last statement exemplifies the problem with her other statements: 1. 'Replaces metaphysics with physics' - a non-starter, especially in the context of modern physics. What science effectively does is to be blind to the shadow of metaphysics clinging to the statements in it. Everything in physics is metaphysics - causality, properties, laws, relations, qualia, states etc etc. What she views as replacement is what some of us would consider as forced exclusion.

At a micro level this also means that since science, in her view, will demolish caste structures then the practitioners of science would first and at an individual level not follow caste hierarchies. At a macro level science as a tool for emancipation implies that scientists are agents of emancipation or at least lead their lives according to the tenets of science. I don't even have to argue against this absurd view. Scientists, for long and surely in the future, make a distinction between *doing science and living science*. That is because they understand something which Nanda apparently doesn't: domains of applicability are very different. Their families and children are not objects which become mathematical symbols ready for manipulation nor can they find universal laws which their spouses and colleagues obey. Not that they expect this! Just because one believes in the efficacy of scientific methodology which allows us to make claims about electrons does not imply in the efficacy of these methodologies to make claims about Ram or Rahim.

Now if Nanda wants to claim that although the transformation of scientific methodology from domain of objects into domain of people is done at a macro and not individual level, then she has to explain how such a thing happens across a sea of incompatibility. Of course, I do accept that science has had an impact on society and sometimes for social emancipation. This is possible because science could function as an imposed ideology and for reasons which are not necessarily scientific in character. More importantly, Nanda's view neglects the fact that the action of science on societies is not a singular cause. Changes in societies are a product of

many causes, some which have to do with science, technology and modernization. There are many other factors besides these.

### **Domain Of Action**

There is a way in which science has manifested itself in society and culture. This is through technology. It is not a surprise that Nanda ignores technology. This is not surprising because people who have an ideological stake in creating a particular image of science have routinely done this. The most charitable view one can take here is that Nanda means science and technology when she refers to science. But in this conflation of meanings, there is the genesis of the problem, that which illuminates her ideological perspective.

There is a good reason why technology is not explicitly invoked by those who talk only in terms of science. It is because technology, many if not most times, does not pay obeisance to the scientific canons of behaviour. It plays truant to rational, scientific epistemology. It is technology which predominantly mediates between scientific epistemology and societies. But emphasizing technology as an agent of science will cause unnecessary problems for Nanda's conclusions. I do not intend to take the view that technology is not based on scientific knowledge. But I also do not intend to take the simplistic view that technology is a direct byproduct of scientific epistemology. Not only have technologies, in their own right, contributed to the furtherance of scientific knowledge but also have not adhered to the 'scientific temper' in their own formations. Technologies are messy. Many times they are not products of rational step-by-step process. They are also not amenable to control like scientific objects, numbers, functions and so on.

Subsuming technology within science is to silence its truancy in order to exhibit science as a rational method. Even if one acknowledges technology to be 'quasi-science' there still remains the question of agency. How does technology stand for science in forming social beliefs? Is there a nice picture for us here? Science is objective and rational, technology is a byproduct of science and so is objective and rational; technology brings about change in societies which therefore make societies objective and rational. Some argument like this underlies the belief that scientific epistemology can entail social change. But how is this link possible?



Let me grant, keeping my earlier skepticism aside, that technology does embody scientific objectivity and rationality. Now how does one transform the objective and the rational present inside machines and products to objectivity and rationality in individual and societies? How does one transfer methodologies and world views through commodities of use? How is it that we become more caste conscious, or see the evils of sati (or even become a leftist) through technology or through canons of science as applied to objects like electrons? How can Nanda argue for their link and the possibility of transmission of 'scientific values' while being fully within the scientific discourse?

Nanda is betrayed by science itself, that which she so much wants to save from other predators. Science can't handle the burden put on it by her. Science doesn't have to make these strong claims. Caste structures are not demolished by each one of us taking an oath to have the scientific temper. That is not only to reduce sociology and 'politicology' to a few methodological do's and don'ts but also to reduce the rich tapestry of science to an outdated scientific temper.

### **Scientific and Cultural Chauvinism**

'The need for a critical introspection was never more acute than it is today, when we are faced with the rising cultural and religious chauvinism' (Nanda, 919). Nanda is clear about the need to come together, at least the leftists, in the defence of science, in order to combat the rising cultural chauvinism. Sokol's article, the EPW theme note and Nanda's paper continuously stress the point that postmodernism has not only contributed to this disturbing trend but also has helped to validate cultural and religious chauvinism.

There is something worrisome in this position. That somehow in the cultural dynamics of our societies, cultural and postmodernist discourses have suddenly been formed almost as if in a vacuum. There are many reasons to be wary of such a simplistic 'Big Bang Theory' of postmodernism and cultural chauvinism. I shall mention only one reason centrally relevant to this claim: if before the postmodernists and postcolonialists (early 1980's according to Nanda) there was an acceptance of a general spirit of scientific temper, at least by the intellectuals, why was there a



sudden shift voiced by people like Nandy, Vandana Shiva and so on? The easiest answer is that they followed the current fad at that time in the West and many Indian intellectuals jumped on the rolling wagon. But this is purely an argument of denigration, whether in part true or not. To understand the sudden shift in India (and earlier among their Western counterparts) is to understand scientific chauvinism and see cultural chauvinism as a response to it.

This is the heart of the problem. The scientific discourse has been reduced to very convenient, neatly packaged epistemological sachets with elements like objectivity, rationality and so on. With State backing, especially following the Nehruvian vision, these catchwords have developed their own momentum and threaten to intrude into all areas of the society. This would even have been welcome if not for their highly exclusivist strategy. The worrisome part in this is that the exclusivity is not a byproduct of the scientific methodology but arise from personal or group agendas. Already the nature of the scientific discourse is highly exclusivist and to compound it individuals and groups appropriate the catch-terms of this discourse for their own ideological ends. It is not at all difficult to see if this is so: an ethnographic study of the scientific community throughout the world, including India, would generate multiple meanings for science, objectivity, rationality and so on! Science coupled with an ideological fervour reminiscent of Nanda's, has built a new Indian society and in building this, through primacy of neatly packaged epistemological picture, has attempted to keep all non-science out of its purview. By reducing all epistemologies into one epistemology (that of science), it has negated the epistemological foundations of other systems of knowledge<sup>2</sup>.

Thus cultural chauvinism did not arise in a vacuum where a set of people aping West or given to anti-scientific temper (real temper, this!) suddenly decided to revolt against the epistemology inherent in science. *Cultural chauvinism is a direct response to scientific chauvinism.* Nanda's language in her paper is a good example of this chauvinism. To say that not only is there a cohesive epistemology of science but also that it is a privileged one and adding to it statements like 'against gods and djinns....' is an extreme example of chauvinism. Not to expect a response to this chauvinism would not be scientific at all!

There is another historical route towards addressing the concerns of chauvinism and their 'link' with postmodernism and/or denial of the primacy of scientific epistemology. This is to do with the fact that fascism has been prevalent in many forms in our modern societies, much before postmodernism came on the scene. In fact, many fascist societies were strong scientific and technological societies. *It may even be argued that science and technology has contributed much more to the growth of fascist societies than any other ideological system.* It is also not an accident that the communists have used science and technology as an important component of their ideology, for there is something intrinsic in science and technology which makes it very user-friendly for fascism, especially since the notion of 'control' lies at the heart of scientific epistemology. It is very simplistic to make a one to one connection between postmodernism and fascism especially while claiming that scientific temper will help eradicate it without first seeing what has been obvious to the whole world: that fascist communities have had very strong links with science and technology.

Nanda also makes a fundamental mistake in conflating issues of religion and science. I shall not go into this debate in detail except to make three short points.

1. As mentioned before, scientists themselves (and many of them good scientists at that) have learnt to differentiate between being religious and being scientific because they understand, however vaguely, boundaries of the discourse and domains of application.
2. The link between science and religious chauvinism is once again at odds with each other. Fascism has routinely manifested itself in societies which are strongly scientific in character as well as in societies which are strongly religious in character. This means that to understand fascism is to understand ideology and not epistemology.
3. The link between postmodernism and growth of religious chauvinism is completely misplaced, especially in the Indian context. There has been an increasing growth of religiosity, which of course is not equivalent with religious chauvinism, during the last decade or so. At least in parts of the south, I do not see a link between this growth and the political or philosophical discourses in mainstream India. The reason for this growth is obviously multi-causal including the changing patterns of the families, changing economic and social values and so on. The growth in religiosity is not a product of some kind of epistemological stand arising from the postmodern discourse. Although increasing religiosity may increase religious chauvinism, there are also a



host of other reasons including the dynamics of growth of communities and the political voices which arise in such a growth. To ignore these complexities and to posit a solution through some kind of acceptance of scientific epistemology is not only naive but is by itself also fascist in nature! The growth of religiosity during the last decade is a strong argument that this is the lived response to all the products of modernization and not an explicit reflection of postmodernity. Confusing religiosity with Hinduism or religious (or cultural) fascism is to make a serious category mistake.

### **Modern Science With Apologies: Science and the Postmodern**

In a section titled Modern Science Without Apologies, Nanda argues against constructivist theories of scientific knowledge and also against the claim that there is no hierarchy among epistemological systems. What should be validly accepted as knowledge is the scientific one. As I argued in the last section it is precisely this lack of 'apology' in staking claims of legitimacy that creates and stimulates chauvinism of various kinds. It is important for science to be able to find a self-articulation of its boundaries of discourse. There cannot be science without apology; especially in these days when science wants to have a say in all disciplines.

Why do Sokol, Nanda and a host of others target the postmodernist discourse? What is it within the voice of postmodernism that disturbs them so much that they take it seriously in order to dismiss it? I find it hard to understand that Sokol's 'proof' seriously impinges on the substantive nature of postmodernism. Nanda continuously attacks postmodernism and postcolonialism because she sees them primarily as questioning the primacy of scientific epistemology. In contrast, Sokol, Nanda and others of their kind would like all of us to accept the 'universal truths' of science and its story about the natural world. But it is not surprising that nowhere in her paper can Nanda show, in the scientifically rigorous manner which she privileges, that scientific epistemology and the story of reality as written by science are true *independent* of the epistemological system one is in.

Herein lies the mystery behind the fact that much has been written about the danger of relativism, especially to do with knowledge claims, but very little has been done to concretely 'prove' the 'superiority' of scientific epistemology by using science's own systems of justification. Unable to find the structures of justification



which can justify their belief about the primacy of the scientific epistemology, the proponents of science take recourse to claims of fascism which relativism (and postmodernism in general) supposedly engenders. There is an important lesson which we should have learnt well from many previous debates between competing systems. This is that when one side charges the other with inciting fascism you know they have already lost the debate. This charge of fascism and anarchy has been the last attack when other 'reasonable' tools fail. All that Nanda does is to continuously *insist* that alternative epistemologies cannot be on par with scientific epistemology; that science has its own special methods to take care of removing subjective elements in it and so on. But nowhere is it possible for her to exhibit convincingly within the scientific tradition or otherwise why we should take her insistence at face value. And at the end of her paper when she runs out of steam after repeating this same assertion, she resorts to a picture of science as saving us from 'gods and djinns' and postmodernism as leading to cultural fascism. I think the moment she restores to this charge she has lost her case.

But there is something substantial in her concern about the danger of proliferating systems of knowledge, all or many of which may be as valid as scientific knowledge. Science, in her view, seems to have the right epistemology and has a lesson for all of us about running our life or our society. She doesn't want to give equal weight to different knowledge systems - one which talks about ghosts and the other about electrons. Her concern about the constructivist theories of knowledge are also germane but her tone betrays her lack of constructive engagement with these positions. I think this question is still very open but all that I am convinced of is that it is not epistemologically possible to compare different epistemological systems. I also believe that she and Sokol are mistaken about the connection between postmodernism and science.

Is there any relevance of postmodernism to science? At the level of practice there is obviously very little postmodernism can contribute to science. But this has to do with the nature of discourse itself and does not reflect particularly on the postmodern discourse. Many scientists believe that philosophy of science, for example, has contributed little or nothing to progress in science. The central relevance of postmodernism towards understanding science lies in the fact that postmodernism makes us reflect on science not merely in terms of its own praxis but

also in terms of discourse formation. Postmodernism is a means of opening up discourses and it is through this that its impact in understanding science will be seen. We can then situate the problem regarding scientific epistemology versus other epistemologies in a proper discursive structure.

The first fall out of doing this is an awareness that science is more than neatly packaged epistemology. You don't need social constructivists to tell you that progress in science has rarely worked on the basis of its idealized scientific epistemology, including ideas of rationality and so on. More important, focussing on this idealized image of epistemology closes our vision to other important, perhaps equally important, structures which go to constitute science. Knowledge is understood as justified (true) belief. This prevalent view of knowledge makes comparing different epistemologies a genuine problem. Because justification is itself a normative term, different systems of justification only embody different norms. And the fight between the different systems of knowledge end up being quarrels about whose norms one should accept. At this level of argument the scientific realist like Nanda cannot stay within epistemology and still argue for the primacy of scientific knowledge. The argumentative point at which she cannot sustain this occurs the moment she invokes fascism to rebut the critics of science.

If science is not just epistemology what else is it? In fact I would argue that even before epistemological questions arise, there are other structures which make justification possible. Prominent among this is the ontological structure. The ontology of science commits one to a plethora of entities, real and abstract, objects in the world and theoretical entities. Much of epistemology in science is intrinsically linked with an inherent ontology. Many, if not most, of these entities are not open to scientific epistemology in the way Nanda's arguments seem to imply. There is very little of the scientific temper which will make one believe in these entities. There is first a sphere of ontology which, many times, is pre-epistemological! This strong commitment to a particular kind of ontology distinguishes science from other activities, notably humanities. Acting as if epistemology is the foremost and most important member of the scientific activity is to ignore a fundamental aspect of science.



There is yet another problem, even if one sticks to epistemology. It is a myth that scientific epistemology has to do entirely with objectivity, rationality and so on. Look at the kinds of epistemological structures present in scientific epistemology. The justification for different kinds of beliefs manifest in different ways. For example, there can be foundationalist theories of knowledge whose assumptions are that there are a set of beliefs which do not have to be justified and on which other beliefs are based upon. There are also apriori and intuitionist theories of knowledge which are intrinsic to scientific epistemology. For example, the question about how we can have knowledge about abstract mathematical objects have been answered by saying that such knowledge is possible because we know intuitively about these objects. This position that the truths of mathematics are open to us (or at least to 'good' mathematicians) intuitively has been held by very prominent mathematicians like Godel, Hilbert and a host of others. Other kinds of intuitive knowledge have also been strongly privileged in scientific epistemology. But when one accepts these apriori and intuitive categories of knowing then one also has to allow for different kinds of intuitive knowing.

One immediate response, essentially in order to control the proliferation of intuitive knowledge, is to claim that even if one has intuitive knowledge it becomes a part of science only after it is open to verification and so on. This is a picture which is only partly right. Many more intuitive truths may have to be jettisoned compared to others which have been incorporated into science. But this too is not as simple a conjecture. The case of mathematical truth, not open to verification other than self-consistency and obeying identity conditions, is a classic example. Equivalently, even in 'knowledge' claims about our lives there is always a tension between intuitive knowledge and its acceptance.

So, my main argument is that epistemology in science is not as simple and straightforward a creature as Nanda and Sokol make it out to be. This should be factored in any discussion of science especially when contrasting it to other systems of knowledge. There is a lesson in both the strong scientific position regarding the primacy of scientific knowledge and the sometimes muddled arguments of the social constructivists. This is a simple lesson: You cannot compare and hierarchize different systems of knowledge based on epistemology alone. This has repeatedly failed because you cannot be in one epistemological system which can address the



different systems of knowledge and can thus help to prioritize and validate these systems. You always run into the problem of incompatibility and differing norms of justification. This does not mean that different claims of knowledge cannot be judged in a way which accommodates these different systems of knowing. All I am saying is that crowing about scientific epistemology is not going to do the required trick.

Reducing social interactions and beliefs to a set of epistemological statements also does disservice to the complexity of society. It is not epistemology or its agent that lies at the root of social problems. A host of factors, including economic mobility, urbanization, power structures, institutionalization and so on, play leading roles in creating and sustaining various beliefs. The situation is quite analogous to that in science. The main difference being that in science beliefs are open to change depending on the development of theoretical and experimental sophistication. To believe that social beliefs do not change is to overlook the obvious. Social beliefs also work in similar ways; their time scale of change may be much longer but they are always open to change. And when they are not, it is not due to somebody holding an epistemologically inferior position but due to power structures which make individuals or groups continue to hold onto certain positions. So invoking epistemology and prioritizing scientific epistemology is to shift the focus and thereby negate the possibility of action and emancipation. The fight against oppression of women and the oppressed classes is not to be done at the level of epistemology but at the level of demolishing existing power structures. It may be believed that power structures lie on a base of knowledge but this is to oversimplify the issue.

### **Conclusion**

The three papers in EPW try to argue that postmodernism is essentially a flawed discourse and appeal to us to see the 'obvious' power of scientific epistemology. Nanda goes further and claims that postmodernism and postcolonialism generate and consolidate fascist tendencies in our society. She claims this by arguing against alternate epistemologies as on par with the scientific one and critiquing the social constructivist theories of knowledge. She also believes that a society which bases itself on scientific epistemology will eradicate oppression and irrational beliefs in gods and djinns. Her vision for our society seems to be that if we all accept the epistemology of science then our society will be a far better place to live in.

The flaws in these positions have been set out in detail. In particular, the problem of trying to use scientific methodology across inapplicable domains and the question concerning the link between scientific epistemology and social action were highlighted.

I have also argued that there are no such neat pictures of epistemology available to us, including in science. Science is not a homogenous creature. Epistemology is just one part of scientific activity. Science is also distinguished by an ontological domain which is also of importance in any cross-systemic understanding of knowledge systems.

Arguments regarding the superiority of one epistemological system over another without finding a common epistemological basis are doomed to failure. They invariably take recourse to ideological positions in order to uphold one epistemological system over another, like the repeated charge of fascism in Nanda's paper. To effectively understand this debate is to begin at the level of discourse formation, both for science and non-science. This will dilute the excessive importance given to epistemology. This will also allow for common points of agreement and disagreement. There is enough ammunition in such a discursive study to critique naive social constructivist positions even as it allows ways to enter the scientific discourse in order to loosen its hold on itself! *This is possible only through postmodernism because as a discourse it is the one which has found voices to speak about discourses, including a self-reflectivity which is very important.* Both Sokol and Nanda trivialize postmodernism, essentially equating it with certain strains of social constructivism, in order to re-stake their leftist agenda. All that they say could have been said from the vantage point of the leftist ideology without invoking the superiority of the scientific epistemology at all!

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### Notes

1. Unfortunately, almost all the examples given by Sokol and Nanda are statements taken out of their systemic context. Their arguments also use another technique: to choose the most exaggerated statements of a discourse to condemn the discourse



itself! This is also a worrisome way of arguing. Since their position is to show the 'emptiness' of postmodernism vis a vis science, we must look to see whether we would like to understand science only through hyperbolic statements. All discourses, including the scientific one, use hyperboles, metaphors and ample use of universal quantifiers. So one must tread with care when choosing certain provocative statements to pass a judgement on the discourse itself for it may rebound with as much ferocity!

2. Thanks to the inculcation of science and State support, the 'best' students in India, at least a disproportionate amount of them, have shifted to studying science subjects. The impact of this shift is felt by teachers in humanities today. Their constant refrain has been: 'we get so few good students in humanities'. Unfortunately for Nanda, even though the quantum of scientific temper must have increased the social problems have not correspondingly decreased. The only way out of this dilemma is to invoke a new ghost - that of postmodernism.

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