

THE EVALUATIVE RELEVANCE OF SOCIAL STUDIES OF TECHNOLOGY¹

Eduardo Aibar, University of Barcelona and INVESCIT

During the closing session of the 1991 conference of the Society for Philosophy and Technology, which took place in Puerto Rico, Langdon Winner gave the audience a very interesting and somewhat provocative address on recent work in Social Studies of Technology, focusing mainly on the so-called social constructivist view. This new area of study has emerged during the last decade and has become a very active field of research on technology, involving the work of sociologists, historians, and philosophers of technology. It is quite obvious that some of the main notions and claims made by this new school undermine the standard view of technology, dominant in former approaches and in several fields. Winner starts his article by saying that "to ignore the central claims of this important school of thought . . . would be to overlook an important challenge" (Winner, 1991: 505). The ending remarks of his work, in contrast, seem to give us the opposite advice. Something like: do not spend much time reading their stuff and do not follow their path. What follows is a critical—although quick—examination of the argumentation that leads Winner to such a negative conclusion. I will not deal with all the issues mentioned by him, but only with the ones I consider more important. I do not think, for instance, that the accusations made against social constructivism of being too disrespectful to the old "popes" of technology studies, or too theoretically imperialistic, are worthy of an answer.

According to Winner, the most important weakness of social constructivism seems to be its lack of concern about the evaluative consequences of its own analyses. It is true that this kind of issue has not been the main subject of interest in most of the social constructivists' work. In fact, Winner has not been the only one to make this type of remark recently. Some other authors (e.g., Chubin and Restivo, 1983; Chubin, 1992; Radder, 1992) have emphasized in the last few years the need for a more explicit treatment of the practical or political implications of social studies of science and technology, although there is no clear agreement on how, and along what paths, this should be done. It remains an open question.

With regard to that, it is also important to point out that, in spite of Winner's negative assessment of the present situation, among the core group of social constructivists there is increasing awareness of the importance of the practical problems related to science and technology studies. For example, the most recent work of Wiebe Bijker—one of the main figures in the technological turn in social

studies of science—has been partly aimed at dealing with them and searching out possibilities for further work along this line (Bijker, 1993). Therefore I would not seek for any sinister explanation or conspiracy of silence in social constructivism over these issues. The question of the possible political or evaluative implications of social studies of technology is meant to be focal in the near future of this research program.

Anyway, Winner's criticism is not only about the present situation but also about social constructivism's potential for future developments concerning evaluative or practical issues. In his opinion, there are some intrinsic features of the social constructivist approach that prevent useful implications in the realm of practice or political action. What follows is intended to question the adequacy of that conclusion.

Broadly speaking it seems to me that the very core of Winner's criticism is not specifically linked to social constructivism but also applies to any school of thought sharing a relativistic point of view. Since the old dispute between Plato and the Sophists, this has been an unending matter of controversy among philosophers and political authors. Critics of relativism like to stress the point that as far as one does not embrace a substantive form of truth or rationality, one is just forced either to sit down and see the world passing by or, still worse, to act randomly. According to this idea, meaningful action is hardly possible from a relativistic point of view.

Anti-relativistic authors have sometimes adopted a quite apocalyptic tone. Remarkably, this has also happened in the field of philosophy of science. Some years ago I had the unforgettable opportunity to listen to Karl Popper linking relativistic views of science to the future decline and fall of Western Civilization!

Although for reasons of time I cannot argue in a definitive way against Winner's criticism of relativism, his general idea is clearly based on a misunderstanding of the nature of the relationship between action, judgment and rationality, as well as on a mistaken view of the kind of relativism assumed by social studies of technology.

It has been argued repeatedly in the past (Knorr-Cetina and Mulkay, 1983; Collins, 1985; Bijker, 1993) that the pleas for relativism, in both social studies of science and of technology, are primarily methodological and do not imply any normative or political form of relativism. The methodological relativism used in current technology studies emphasizes the view that the history of technology cannot be explained as a mere succession of more effective machines. That is, traditional "purely technical reasons"—commonly gathered under the concept of "efficiency"—do not in any simple way account for particular episodes of technical

change. Efficiency, and thus success or failure in technical change, is relative to other factors. This idea in no way commits the methodological relativist to the view that therefore all forms of technology—or more precisely, of socio-technical ensembles—are equally right or acceptable to everyone. Nor does it follow that we cannot discriminate between different forms of technologies in regard to specific goals. It is just that we cannot any more do that by invoking purely technical reasons.

Therefore, concepts like *interpretive flexibility* or *relevant social groups* that lie at the core of the methodological relativism characteristic of the social constructivist perspective,² do not imply, in any sense, the moral or political indifference that Winner argues against in his paper. Furthermore, related concepts such as *frames of meaning* (Collins and Pinch, 1982), *technological frames* (Bijker, 1987), or *scripts* (Latour, 1992), have been very useful in revealing "which decisions never land on the agenda at all" and "which possibilities are relegated to the sphere of non-decisions"—subjects that Winner wrongly includes in a list of matters untouched by social constructivism (Winner, 1991: 511).

Close to the problem of relativism is Winner's accusation of agnosticism as regards the ultimate good or ill attached to particular technologies. In the first place, it should be pointed out that social constructivists remain primarily agnostic as regards the *working or non-working* of artifacts or particular technologies. That means that the concepts of working and non-working should not be used to explain the success or failure of a particular technology because they are a final outcome of the process—what is to be explained—and not its original cause. As I said before, allegedly "objective" efficiency—which by the way is the equivalent of "objective truth" in the standard image of science—is what this agnosticism is mainly about.

In the second place, it is undeniable that social constructivist studies tend to undermine Winner's belief in such a thing as an ultimate good or ill attached to any particular technology. Unfortunately, it seems that the situation in which technology issues arise and develop can hardly be reduced to such a rigid and simple scheme. Technologies are not *per se* good or bad, democratic or authoritarian (see Bijker and Aibar, 1992). And although some people may see this last claim as another version of the old idea of technology as neutral, it certainly is not.

According to the neutrality thesis, technology is essentially independent of any social factors. These social factors (including political or ethical values) can only play a certain role in the use of ready-made technology once it gets to the diffusion stage. In other words: any particular technology can be used for good or bad purposes.

Social constructivism defends a quite different point of view that clearly runs counter to the neutrality thesis. First of all, technology is embedded in society from its very first stages of development—and not only in the diffusion stage. Secondly, and as a consequence, values and other social constraints do play an important role in the shaping of technology as well as the use of new artifacts, and the course of events in controversial technology issues can also influence values in significant ways. Finally and most importantly, as opposed to what Winner seems to defend, the relation between values and technology must not be seen in terms of necessary links but as constructed and contingent associations that can change (and do change in many cases) as a product, for instance, of the involvement of other social or technical actors.

Related to this last issue is another of Winner's points. According to him one of the more important aims of social studies of technology should be to provide a "standpoint or core of moral concerns from which to criticize or oppose any particular pattern of technological development" (Winner, 1991: 515). In my opinion that is the wrong way to pose the problems we are now facing when confronted by technology issues. Either Winner is under the philosophical illusion that a marvelous magic wand can be found in a privileged theoretical position, or, worse, he thinks that social groups involved in technological controversies need expert advice about their moral or ethical concerns.

As for the first idea, I think we have enough evidence—coming not only from social constructivism—supporting the view that what is at stake in technology controversies is not a conflict between truth and falsehood, or rationality and irrationality, but one between different rationalities. This is not to plead the cause of postmodern philosophers. In the field of technology, this point of view supports the idea that controversies are caused mainly by the existence of some technical uncertainties about the possible risks involved, that in turn allow only weak reasons into the game. On the contrary, some authors describe some of the controversial issues surrounding technology as situations in which contradictory certainties—even among different technical or scientific experts—are at stake (Schwarz and Thompson, 1990). We therefore face a world of plural rationality which is especially apparent in technology issues, and the present challenge of any serious attempt to make evaluative or critical claims about technologies has primarily to face that fact.

As for the second point, it is also apparent that what weaker or less powerful groups need is not so much advice on moral concerns (proclaimed by privileged judges or neutral assessors) but rather more practical tools and resources to put their own ideas and interests (which they usually know quite well) to work to

assure a better and more democratic interaction between the different contradictory certainties involved in technological controversies.

In fact, the more basic political or practical implications that can be drawn from social constructivist studies point to a different level of problems and go far beyond what Winner sees as "the only helpful insight these studies offer," i.e., "that choices are available and that the course of technological development is not foreordained by outside forces, but instead a product of complex social interactions" (Winner, 1991: 516).

One of the main achievements of this new sociology of technology has been to show that it is not only engineers or scientists who participate in the construction of technology, i.e., in the shaping of artifacts. Analyses of the available alternatives, mentioned by Winner, have shown that these are not the product of purely technical constraints. In fact, in the social constructivist view, traditional distinctions between technical and social elements are not stable or fixed, but, on the contrary, show a fluid character. In the process of construction, technical factors can be transformed into political issues, or the other way around. The technical and the social only gain a certain degree of stability when closure is achieved, that is, when the social groups involved in designing and using the artifact decide that the problems around it are solved. A new *black box* is then on the way.

The obvious implication of this situation is that, as long as some non-technical social groups can be seen to play a relevant role in the shaping of technology, there is nothing in principle that prevents other social groups (the less powerful, for instance) from intervening in the same way. On the other hand, it is also clear that it is not possible to identify one key actor who plays a priority role in the construction process, and therefore there is no privileged position from which an objective assessment of technology can be carried out. Of course, this does not mean that all relevant social groups contribute with the same degree of success to the construction of a particular technology. Not all social groups are equal and in most cases closure is not the product of a democratic agreement between them. Winner misses this last point in his review of social constructivism. Differences in power or the resources needed to set up successful strategies are apparent in most cases, and any attempt to develop more democratic forms of control over technology will have to deal primarily with this issue.

Another important practical conclusion that can be inferred from social constructivist studies has to do with timing; there is not a privileged moment in the development of a technology to exercise democratic control. The social construction of a technology is a continuous process which covers all the traditional stages of development, from design to diffusion. Democratic control should not be restricted

to a single period of the story. There is not a final way to characterize a particular technology in order to assess it; closure is never reached in a definitive way. Black boxes can always be opened again, provided that enough work is done to achieve that purpose.

Most of these points clearly go against the so-called thesis of *technological determinism*, and an important point should be made here. Technological determinism might be, as Winner says, a mere straw man for social constructivism, but it still is a quite strong and powerful one indeed outside the academic arena. Brian Wynne put it in a clear way when he claimed that "the main ideological pillars of the social alienation of innovation in modern technology are the myths of technological determinism and of expert objectivity" (Wynne, 1983: 27). In fact the technocratic way of dealing with science and technology issues is still dominant in most countries—Spain is a good example—and is usually legitimated by means of technological deterministic arguments.

The last of Winner's points I want to comment on is the accusation against social constructivism of disregarding the social impacts or consequences of technical change.

First of all, the social constructivist view does not imply in any sense that the question of the technological impacts on society is not worth asking any more, as Winner seems to suggest. Nevertheless, as soon as we stop thinking of society and technology as two different—although interconnected—entities, and adopt instead the new view proposed by social studies of technology (which is sometimes expressed by the "seamless web" metaphor), the question of impacts has to be reconsidered. In order to understand the particular nature of the technological culture in which we live and the possibilities of moving towards a more democratic method of dealing with its problematic issues, we also need to face the other side of the coin—that is, the way in which society influences technological developments. This is what the new sociologists of technology like to call "the social shaping of technology."

The meaning of this significant turn is neither a plain rejection of the fruitful insights supplied over the last decades by the literature on impacts, nor the labelling of the impact questions as irrelevant. Instead, a jump is made to a more comprehensive level in which both kinds of approaches can complement each other, offering new perspectives for intervention.

In fact, this move has already taken place in other domains such as economics and technology assessment. In the last field, for instance, there is an increasing agreement on the essential weaknesses of the standard model of

technology assessment, in which the identification and smoothing down of technological impacts has been the main concern. The new alternative models, including the so-called constructive technology assessment partly based on the recent findings of social constructivism and similar perspectives, are trying to develop programs of positive change in which the emphasis is placed on the opportunities for influencing and steering the internal development of technology (Schot, 1992). In order to achieve that purpose, the standard technology assessment perspective, characterized by drawing a dividing line between technology on the one side and the effects or impacts of technology on the other, has to be abandoned.

To sum up Winner's criticisms, his points can be placed along two basic lines. On one side Winner identifies those things that social constructivists do which they should not be doing. On the other side Winner refers to things they do not do but which they should be doing. My claim, using the same phrasing, has been that they basically do not do what Winner says they do, and that, in a sense, they are already doing what Winner says they should do.

Finally, I must admit once more that at present there is not enough explicit concern about political or evaluative issues among the community of the new sociologists of technology. I have tried to explain, however, that I do not think this should be attributed to any essential features of their perspective or to the particular methodological tools they use. If the present situation regarding those issues does not improve in the coming years—and improvement does not necessarily have to follow the directions proposed by Winner—social studies of technology will run the risk of anchoring themselves in a purely academic arena in which the questions of practical or political implications will be increasingly regarded as odd and irrelevant. I fully agree with Winner on that.

In the meantime, I think that social studies of technology must be taken into account by anyone concerned with the problems of technical change and, in broad terms, with the nature of the technological culture in which we live. Of course that does not mean that everyone has to give up her own particular discipline and methodology to devote herself to the development of social constructivist analyses. In fact, one of the main achievements of this orientation has been to show the possibility of fruitful interplay and cooperative work between different disciplines. Philosophy of technology must not be adamant in a plain refusal of social studies of technology. Analytical philosophers of science made a similar mistake when they fiercely opposed the strong program of sociology of scientific knowledge in the late seventies—among other reasons, because they saw it as a dangerous interference with their own realm of study.

NOTES

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2. For the sake of brevity I am using here a rather general image of social constructivism. I do not mention, for instance, important features of this perspective, such as the explicit avoidance of social determinism or the symmetrical treatment of human and non-human actors (in the so-called actor/network approach).

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