The Political Philosophy of Science and the Problem of Rationality

Abstract

The present article offers an introductory vision to the *political philosophy of science*. The political philosophy of science is a new field of study where the philosophy of science and political philosophy converge. We will see the main contents of this field. We will also note that it depends on the construction of a model of rationality where science and politics can meet each other. Finally, the article tries to outline such a model of rationality. In order to do so, we will review the relationship between Karl Popper's scientific and political philosophy. I suggest to read Popper's critical rationalism in terms of a kind of prudential rationality.

Keywords: Rationality, Karl Popper, science, politics, prudential rationality

1. Introduction

When science is reflected upon just in terms of language, as a collection of statements, the philosophy of science only contemplates logical-linguistic issues. However, when science is envisioned as a human action, the philosophy of science becomes a practical philosophy. It is then when we begin to consider, for instance, the ethics of science, the political philosophy of science or the poetics of science as fields pertaining to the philosophy of science. In the following pages I would like to sketch the contours of a possible *political philosophy of science*.

Before proceeding any further, it is important to note that such an expansion of the philosophy of science calls into question the rationality of science itself. Any attempt to fit moral philosophy into a supposedly scientific method has begun by idealizing –maybe falsifying– science itself. In other words, in order to do ethics in a geometrical manner (*more geometrico*), it is first necessary to idealize geometry and its methods, even to the point of ignoring how human and fallible they are. And if this is true of geometry, more so is it of all the other sciences. However, as soon as we notice the fallibility of science, its humble condition as a human action, irrationalism emerges: if –as some proclaim– not even science is rational, how much less politics. Thus, postmodern mistrust in reason has spread to all realms of human life. In like manner, trust in reason will be restored by way of an opposite movement: our goal should not be to idealize the scientific method and apply it to ethics, but rather to explore the advantages of applying a genuine practical reason to science as well.

Many authors have contributed to the creation of this new model of rationality; yet, if we were to single out one of them, that would be Karl Popper. Throughout his work, it is possible to ascertain the painful evolution of a model of common rationality for science and politics. No one besides him has had such a great impact both on the field of political philosophy and on the field of the philosophy of science.

This being the case, in this paper I will present the reader a panoramic and introductory view of this field of study we have called *political philosophy of science* (section 2). We shall see how it depends on the construction of a model of rationality where politics and science may meet each other. We will attempt to outline the contours of this rationality model by reinterpreting Popper's works, as well as the relationship between the scientific and political aspects in Popper's work (section 3). Lastly, I will

present some concluding remarks pointing in the direction of a prudential model of rationality (section 4).

2. Political Philosophy of Science: An Introductory View

There are some explicit references to a political philosophy of science in the work of several contemporary authors, such as Carlos López and Ambrosio Velasco (2013), Bruno Latour (1999), Joseph Rouse (1987), James Brown (2001) and Thomas Uebel (2005). Of course, many other works and research lines that do not appear under the label "political philosophy of science" can also be included in this field. In this sense, the works of English-speaking authors such as Philip Kitcher (2001), Stephen Turner (2003), Steve Fuller (2013) and Carl Mitcham (Mitcham and Frodeman, 2013) can be singled out. Some science and technology studies (STS), some bioethics and biopolitics research, as well as many studies about science and gender, about sociology and the history of science, about environmental ethics, about rationality, modernity and postmodernity, about scientific policy or about the philosophy of technology embrace some elements pertaining to a political philosophy of science. Furthermore, there are some classic works in the field of the philosophy of science, like, for instance, Paul Feyerabend's *Science in a Free Society* (1978) and Evandro Agazzi's *Il bene, il male e la scienza* (1992), that fully belong to this area of knowledge.

Moreover, we must not forget how many philosophers of science were also involved in political issues and it is difficult to establish a neat distinction between their scientific and political interests. The cases of Otto Neurath and Karl Popper may be two great such examples. On the other hand, some authors we usually see as political thinkers –Jürgen Habermas, for instance– are also particularly interesting for the philosophy of science. In addition, a close connection between epistemology and

political thought turns up repeatedly in the history of philosophy. Plato and John Locke are the most obvious examples, but the list could be extremely long.

In some sense, therefore, the political philosophy of science is a very recent field of study, more a project than a reality; yet, in another sense, its intellectual roots go very back in time and can be traced to some of the best-known philosophers of today and even of the past. This is a rather familiar phenomenon in philosophy: every time that a new thematic field appears, we start to retrospectively reread the classics under a new light, thus finding several precedents of topics we deemed new. However, this does not deprive them of their novelty; indeed, it manifests precisely the newness of the approach we now adopt.

Such is the case with the political philosophy of science. It is not a new super-specialization of philosophy; it is rather the opposite, an attempt to create a new interpretative focus in those areas where old philosophical disciplines –that can no longer stand apart– overlap and meet. There are two reasons for it. On the one hand, the traditional topics of political thought (justice, freedom, legitimacy, democracy…) are nowadays unavoidably linked to science, depending on how science is regulated, on the access to the goods science provides and also on the distribution of the risks it engenders. On the other hand, science is increasingly understood as a human action, thus expanding the philosophy of science toward practical aspects. Consequently, classical questions about rationality are beginning to be considered under the notion of practical reason.

Given the present circumstances, and using López and Velasco's words, "it is essential for philosophy, and particularly for the philosophy of science, to take responsibility for the critical analysis of the conditions that make the progress of science

and technology compatible with the strengthening of democracy" (López and Velasco, 2013, p. 9; my translation).

Next, we shall expound some of the contents pertaining to the political philosophy of science. There seems to be two large areas within the field. First, we have *internal sociopolitical questions*, typical of scientific communities. Here it may be suitable to retrieve the old expression of the "republic of science". As any other republic, it must be socially and politically organized in a way that may foster its legitimate ends, the proper goals of scientific activities, that is, the production of rigorous and objective knowledge and its dissemination and application, contributing to the common good.

In light of such considerations, *the question of values* will no doubt come up. We might ask ourselves whether epistemic and practical values are somehow connected or even whether one can be reduced to the other. In my view, there are intimately related and are mutually dependent; yet, reducing, for instance, truth or objectivity to a just consensus is not correct. Although a fair consensus –in the conditions indicated by theorists of the communicative action– must be seen as a signal or marker of truth, it cannot be accepted as an infallible criterion of truth, and much less as a definition of truth.

If social and political practical values, such as equal opportunities, a just distribution of resources and merits, freedom of speech and criticism, a communicative rationality that allows for an equal exchange of opinions… if such values –I insist– are secured and fostered within the scientific community, it is probable that epistemic values such as coherence, simplicity, precision, objectivity and even truth are favored. Inversely, unless there are solid epistemic bases, judgments on practical issues hardly

can be just. This calls for a certain conceptual distinction between both sets of values, although in practice they are mutually dependent.

The other large field of research for a political philosophy of science refers to the *relationships between the scientific community and the whole of society*. Whereas the image of the republic of science may result attractive, it also has defects and shortcomings. For a start, the scientific community is not –and cannot be– a true sovereign republic; it is rather part of a complex network of social relations, a subsystem within the whole of society (Agazzi 1992). Therefore, theorizing about the relationship between science and other social subsystems is an appropriate task for the political philosophy of science. We are talking about the relationship between science and the education system, the health system, the economic system, the mass media, the legal system, the political system and so on. All these aspects posit relevant questions requiring the attention of the philosopher. Once again the issue of values come up; now, however, seen from the angle of the coexistence of values from different fields. In this sense, while science must demand respect for its own values, it must also respect the values of other subsystems.

In this context, the problem of the insertion of science within a democratic society arises, particularly the thorny problem of autonomy and control. We know that in the relation between science and political powers there have been –and still there are– some extremes to be avoided, from the partisan manipulation of science to the conversion of science into an ideology colonizing all the realms of life. The political philosophy of science has developed to a large degree as a critical approach to such phenomena.

In connection with such criticism, some authors have argued for an equal political treatment of all the respectable –insofar as they are respectful– traditions that

exist in a free society, science being one of them. This proposal would have immediate effects on the education, health and economic systems, among many others. The challenge has been strongly and provocatively posed by Paul Feyerabend (1978), who uses traditions as analysis units. Thus, science would be one such analysis unit, and from a political viewpoint it should not be treated differently than the rest. It is hard to respond to Feyerabend's challenge if the *tradition* is accepted as the basic analysis unit, pushing the concrete person and the whole human family to the background. However, if we think about science not as a tradition closed in itself, but rather as an activity rooted in common sense, and if we acknowledge the right of every person to have access to the most valuable of the heritage of humanity, then, it becomes possible to respond to Feyerabend's challenge. This approach to the debate already delineates one of the most significant controversies in today's political philosophy, that between advocates of communitarianism and supporters of individualism.

Lastly, the interest of a joint historical study of political and scientific thought should be pointed out. There is some debate on whether science and democracy have supported each other in different historical periods. In this sense, historical interpretations on this issue greatly vary. By way of example, I shall mention some of them. According to Geoffrey Lloyd (1987), the relevance of political debate among Athenians both favored and was favored by the development of science and philosophy. Likewise, Karl Popper argues that there has been some parallelisms and a mutual strengthening between science and an open society (1945). Other authors, such as the members of the Frankfurt school, have emphasized the political risks derived from an uncontrolled expansion of an instrumental rationality, linked, in their view, to technoscience (Habermas 1968). And Vaclav Havel (1992) has denounced the support given to totalitarian regimes by a scientist mentality. This wide variety of positions, not

necessarily incompatible, since some of them refer to different historical periods and to different ways of doing science, reveals the enormous philosophical interest that such historical perspective may hold. Furthermore, a historical viewpoint allows us to see the evolution of concepts such as *cause*, *law*, *nature*, *natural law* or *human nature*, concepts that have moved back and forth between the realm of political reflection and the realm of scientific thought.

3. Toward a common model of rationality: the contribution of Karl Popper

Karl Popper's thought, with the notion of critical rationalism, seems to be a promising source of inspiration in the construction of a common model of human rationality, where science and democracy may meet. A clear indication of such possibility is the fact that the work of the Viennese thinker has exerted a strong influence both on the field of the philosophy of science and on the field of political philosophy. Now, the relationship between both realms is unclear even in the works by Popper himself. According to a rather pervasive interpretation, Popper would be above all a philosopher of science attempting to project onto politics the rationality model he devised for science.

However, such an interpretation poses several problems. Instead, and particularly in light of some statements by Popper himself in the final years of his life, an alternative interpretation can be more accurate: Popper is a political thinker, deeply committed in the search for peace, freedom and justice, that finds in the fallibilist attitude of some scientists a model of rationality useful to think about democracy. Now, this model is far closer to a prudential practical reason than to a supposedly logicist scientific reason. Popper leaves open the possibility of founding both the political and

the scientific action in a same model of prudential rationality. It is true that Popper did not walk this way, but he made it possible for us to walk it now.

3.1. The standard reading of Popper: one rationality, two rationalities, no rationality…

To put it simply, we would have, on the one hand, some authors (such as Plato and Descartes) who defend a single rationality, oriented toward certainty by a universal method, whose application to all human realities is desirable; on the other hand, we have authors (such as Aristotle and Kant) who admit two kinds of rationality, one applied to science and another one governing human affairs, and particularly politics. Accordingly, we could assign Popper to the tradition of the one rationality, the scientific, whose application is desirable also in the political arena. Indeed, the standard understanding of Popper's thought is based on the chronology of his major works. The German edition of *The Logic of Scientific Discovery* goes back to 1935 (*Logik der Forschung*), whereas *The Open Society and Its Enemies* was first published, in English, in 1945. Therefore, it is inferred that Popper was basically a philosopher of science who proposed a given portrayal of scientific rationality as *critical rationalism*, and that subsequently he applied the idea to his political thinking. Thus, he would be another case of a scientist philosopher trying to invade and colonize the realm of life –and especially the political realm– with categories pertaining to the scientific method.

However, a significant change has taken place (maybe for the first time since Plato) thanks to Popper. The key change worked by the thinker from Vienna has to do with the ideals of certainty and method, since he devaluates both of them. The tradition of a single rationality was based on the alleged existence of a method leading to knowledge with certainty. This knowledge should then guide human life. However, there is in Popper a repeated denial of *the* method and an explicit renunciation to the

ideal of certainty. Therefore, according to Popper, the rationality functioning in science is quite similar to the practical and fallible rationality. Popper's critical rationalism seems to be inspired by the model of a prudential practical reason rather than by the traditional model of scientific reason.

This has been obscured due to several reasons (some of them attributable to Popper himself). Firstly, as we have seen, the chronology of his works has favored the standard interpretation. Secondly, it was also fostered by the polemical context in which *The Logic of Scientific Discovery* appeared. Popper was engaged in a debate with the neopositivists of the Vienna Circle, thus giving the impression that he was attempting to search for an alternative criterion to the verification principle, as universal and automatic as verificationism purported to be. Thus, falsificationism was seen as a logic of science rather than as a moral recommendation, all it can hope to be. Thirdly, the fact that Popper fell prey to a kind of nostalgia for certainty and spent years looking for a method to measure plausibility hindered the understanding of his global approach. Popper's scarce acceptance of the influence that authors such as Duhem and Peirce had on him also cast some shadows on where his ideas are ultimately headed. All these reasons, and possibly some others as well, have obscured the fact that Popper did not intend to apply an alleged scientific method to human realities, but rather the opposite: to take as a model the prudential rationality pertaining to politics and apply it to science, thus abolishing the separation between both rationalities.

Of course, the weakening of the scientific rationality, transforming it into a fallible practical rationality, has proved unsatisfactory for many. Advocates of method and certainty have seen it as a kind of surrender. In sum, it has caused Popper to be accused of being an irrationalist and the father of contemporary irrationalism (Stove 1982). Some have not been able to understand that the weakening of the ideal of

scientific rationality, separating it from a universal method and absolute certainty, is the only useful strategy to save the rationality of human actions as a whole and, consequently, of science. According to them, in Popper there is not one or two rationalities; there is none.

3.2. Another reading: toward a prudential rationality

As we have seen, there are several reasons behind the misunderstanding of the relationship between political philosophy and the philosophy of science in Karl Popper. However, all his vital and intellectual trajectory is filled with indications leading us to a correct understanding of his views.

For instance, in his autobiography (Popper 2002, ch. 8), Popper talks about a crucial year –1919– in the formation of his ideas, when he was 17. The events he is referring to are evidently of a political and social nature. The violence and poverty of the Vienna of that time left a lasting impression on him. Such an impact can be seen throughout his philosophical work, directed to a large degree precisely toward avoiding violence, slavery and poverty. It can be also perceived in the enormous passion with which he wrote and published his outstanding political work, *The Open Society and Its Enemies*, a book he considered his contribution to the war against all totalitarianisms besieging Europe (Kiesewetter 2001). His intellectual fight against historicism must be accounted for as a political impulse in favor of freedom (Popper 1957). Until the end of his days his interest for practical philosophy, for politics, for ethics and for social issues was kept alive, as his final books show (Popper 1994; 1999).

Even when he speaks about science, politics, or at least practical considerations, echoes in his work. The preface to his *Realism and the Aim of Science* (1983, p. 5) is a

perfect example: "As a rule, I begin my lectures on Scientific Method by telling my students that scientific method does not exist". When he writes these words against the myth of method, he is pointing toward a non-methodic rationality governing scientific research that, in the end, is, according to Popper, "an extension of common-sense knowledge" (2005, p. xii).

If Popper is not awed by the scientific method, what does he admire in science? Undoubtedly, a certain *ethos* present in outstanding scientists like Galileo, Kepler, Newton, Einstein and Bohr. It is the work of such leading scientist what Popper considers the paradigm of science. It is science in this heroic sense what he purports to study (Popper 1974; 977). There is a glimpse of the real foundation of Popper's theory of rationalism in texts such as the following: "But what impressed me most –Popper writes in his autobiography– was Einstein's own clear statement that he would regard his theory as untenable if it should fail in certain tests […] Here was an attitude utterly different from the dogmatic attitude of Marx, Freud, Adler, and even more so that of their followers" (2002, pp. 38-39).

Popper, who in his youth was a member of Marxist movements and worked in a psychoanalytic consulting room, verified the moral poverty of those who blindly cling to their postulates, cladding them against experience. On the contrary, he found in Einstein a model of moral courage: he formulated daring predictions and was willing to face the consequences of a possible mistake. If something characterizes reason in critical rationalism, it is more an attitude than the scrupulous observance of an alleged scientific method. And this attitude does not belong exclusively to the scientist; it is advisable for anyone who wants to act reasonably in any realm of life. It is, of course, the fallibilist attitude that Popper summarizes in these two verses: "I may be wrong and you may be right, and by an effort we may get nearer to the truth" (1945, vol. 2, p. 224).

According to the author, this phrase goes back to 1932 and was first published in 1945, in *The Open Society and Its Enemies*. Toward the end of his life, Popper reproduces it in the introduction to his book *The Myth of the Framework* (1944a, p. xii), stressing its importance and complaining against the null interest it stirred among his critics.

It is noteworthy that Popper does not act here as a defender of scientism; he does not try to impose an alleged scientific rationality on political issues. The maneuver is far more subtle. By setting Einstein as a hero of critical rationalism, he is not contrasting him to any politician. Here the antihero is not, for instance, Churchill. Antiheroes are also scientists, or at least they consider themselves as such: "Marx, Freud, Adler" and particularly "their followers". According to Popper, the problem is that these self-proclaimed scientists are not true scientists. And they are not true scientists because they do not adopt the true rational attitude, that is, fallibilism. Furthermore, misguided politicians that imposed a totalitarian regime on their people, like Hitler or Stalin, were guilty of blindly following some doctrines that seemed to have the stamp of a scientific method, whether eugenic biology or historical materialism respectively.

Now, Popper himself dims his message –and somehow betrays it– in those texts in which he seems to suggest that falsificationism may function as a kind of standard scientific method, as an allegedly infallible algorithm to discard theories failing the empirical test. In fact, Popper forgets to mention that there is no infallible method to warrant the falseness of a scientific theory. First, it is not possible to refute a statement without proposing other statements; and second, the guarantee that the former is false is not greater than our certainty about the truth of the latter. This was something Popper knew because he had read Duhem (1954).

How does Popper respond to this possible objection? He offers an answer in a passage from his *The Logic of Scientific Discovery*: "Thus my conflict with the

conventionalists is not one that can be ultimately settled merely by a detached theoretical discussion [...] The only way to avoid conventionalism is by taking a decision: the decision not to apply its methods" (2005, pp. 60-61). Here he deals with the question by describing Duhem as a conventionalist (2005, p. 57, n. 1) and arguing that conventionalism entails some kind of moral defect, a certain lack of honesty or intellectual courage to face the possible negative results of an empirical test. In front of such a situation, conventionalists hid themselves, protect themselves and shield their own conjectures by reviewing some other suppositions.

It is not true that Duhem was a conventionalist (Maiocchi 1980), but that is not of our concern now. What is truly important is that such a move shows how Popper implicitly suggests a change in the playing field, from logic to ethics. In the playing field of pure logic, both verificationism and falsificationism are tied, and none is able to found a theory of rationality. However, we must prefer the latter –Popper argues– due to ethical, and even romantic, considerations, related to the courage, the fortitude and the character of the scientist-hero, with his or her intellectual honesty. Thus, in Popper, falsificationism appears sometimes as a logical algorithm and some other times as a mere procedural recommendation based on moral choices.

This ambiguity is the source of a number of hermeneutical problems that have beleaguered Popperian studies for years. If we take critical rationalism as a kind of logical algorithm, then, in order to be consistent, it should also be subjected to criticism and considered as a simple provisional conjecture, thus paving the way for a kind of infinite *pan-criticism*. This pan-critical interpretation was supported by some disciples of Popper, and particularly by William W. Bartley, who seemingly devised it. Popper, nonetheless, did not seem willing to follow this route. On the contrary, he abruptly put an end to the debate by explicitly appealing to an "irrational *faith in reason*" (1945, vol.

2, p. 218). It is surprising nonetheless that critical rationalism ended up explicitly resorting to a kind of irrational faith, even if it is limited to the realm of the critical reason. It seems that critical rationalism collapses in both cases, whether as a pan-criticism or as an irrational faith.

A possible way out of the impasse was proposed, even vehemently, by Popper himself in the final years of his life, especially in a 1992 Kyoto contribution and in a book under the title of *The Myth of the Framework* (1994a). In both texts, the Viennese author tries to distance himself from an understanding of his own thought that he deems erroneous. It is the *pan-critical* interpretation introduced by his disciple William W. Bartley. Here we go back to Hume's well-known dilemma: either skepticism or irrationalism. Facing such dilemma, Popper seems to tend toward irrationalism, whereas Bartley tends *de facto* toward the skepticism of the pan-critical return to the infinite. By some reason, Popper never clarified such misunderstandings, maybe in an attempt to avoid a confrontation with a person he had trusted. It is telling that the clarifications by Popper we are now addressing were done after Bartley's death in 1990.

What is interesting for our purposes is that both the introduction to *The Myth of the Framework* and the Japan contribution do something more than just distancing themselves from the pan-critical interpretation. The Popper of the 1990s repeats frequently that what he called faith in reason is not a theoretical thesis, but rather a practical attitude; this changes considerably the terms of the debate. When Popper formulates his critical rationalism, he *does not affirm* it as a thesis; he *recommends* it as an attitude. All intimations spread throughout his work according to which it is necessary to change the playing field of rationality, moving it from logic to ethics, now become explicit and emphatic statements. Therefore, we cannot keep on reading Popper as if he was a philosopher of science simply applying his ideas to political philosophy;

rather, he must be seen as a political philosopher, driven by strong moral convictions in favor of freedom and against violence and poverty, that found in the attitude of the best scientists a model to be followed in all realms of human life.

Let us pay attention to some relevant passages of Popper's contribution at the 1992 Kyoto conference:

> So what I called Critical Rationalism is an attitude […] It is not a thesis, it is not a theory, it is not a dogma. It is the attitude that if we devote ourselves to problems critically we may learn. That is what I call Critical Rationalism. It is very important that it is not a theory, therefore it is also not a faith in the sense of fideism […] This is an attitude which I recommend to my readers in my book […] because I think it is an attitude which we all should at least try […] Fideism doesn't come in. Only my belief that it is a good attitude […] I felt that in all moral matters one should never be abstract, and so I didn't participate in this discussion. The discussion has gone on, as we have seen today, and I am sorry for it because I felt that this moral attitude of Critical Rationalism is important, and the abstract discussion has very much damaged this (cited in Artigas, 1998, 34-37)[1].

Popper insists again and again on the significance of this issue, and uses over twenty times the term "attitude". It is obvious that in the final years of his life he was deeply concerned with clarifying the question of rationality. What he proposes is indeed to move it from the realm of logic and abstract debate to the realm of practice and moral attitudes.

3.3. Perspectives

When he came clean in his old age, did Popper solve the question of rationality? Not fully. We can now wonder whether it is reasonable to recommend, as he does, the

attitude he calls *critical rationalism*. The fact that it is a *good* attitude works in its favor. And it is a good attitude, according to Popper, because it fosters the progress of knowledge and promotes freedom and justice, while at the same time hindering violence, which is indeed a good thing. Yes, but, even though we accept all this, we can ask ourselves why is it rational to choose the good. We immediately see that the answer to this question involves a metaphysical and a practical perspectives. To sum up, I shall use Hilary Putnam's clear and concise words: "Reason is a faculty which chooses ends on the basis of their goodness" (1981, p. 173).

If we assume this perspective, then, since the attitude that Popper recommends is good, choosing it is reasonable. There are no irrational fideism on the basis of his critical rationalism. It is perfectly reasonable to recommend an attitude that in all earnest is deemed good, because it is rational to choose the good. However, Popper still faces a problem: he does not have a theory of practical rationality that allows him to show how rational it is to recommend and to adopt a good attitude.

The problem runs even deeper, because a theory of practical reasons inexorably refers to a certain metaphysics, including a philosophical anthropology. In my view, Popper's metaphysics of the three world has proved unsatisfactory and he does not have an articulate philosophical anthropology. Consequently, resorting to a moral attitude does not solve the problem in the case of Popper; it just displaces it (and delays it). In the 1990s Popper had neither the time nor the strength to address all the research lines his intervention in Kyoto seems to call for. However, the truth is that they remain open for anyone who now wishes to walk that way. By describing critical rationalism as an attitude, he was bringing it closer to Duhem's *bon sens* (1954) and to Charles S. Peirce's fallibilism (1955). Furthermore, he was –perhaps unconsciously– bringing critical rationalism closer to the Aristotelian idea of *phronesis*.

This approximation to a prudential practical reason can advance Karl Popper's political and scientific philosophy and provide them with some foundations which they were lacking, as well as connect them in a suitable and useful manner to deal with all the problems a political philosophy of science faces today.

4. Concluding remarks

We have detected a recent convergence of political reflection and scientific thought. Indeed, during the last two decades a common philosophical field that we may call *political philosophy of science* is being sketched. Science has become an eminently social reality, it has undergone a symbiosis with technique, and both of them together have become capable of modifying both nature and society. Certainly, our society cannot be understood without the techno-scientific component. On the other hand, philosophers of science, particularly Kuhn and Popper, have shown that science is a human action and cannot aspire to certainty. The combined force of such news has led some toward irrationalist positions, while others have tried to sketch a notion of reason that does justice both to the practical and uncertain nature of science. In order to do so, they have sought inspiration precisely in the traditions of the practical reason, in moral and political thought. Accordingly, we have found out that the idea of critical rationality advanced by Popper may be of use to develop a political philosophy of science as long as we interpret it, as the last Popper suggested, in prudential terms.

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[1] The passage is a literal transcription of a spontaneous oral intervention by Karl Popper in Kyoto, on November 12, 1992, first published by Artigas, 1998, 34-37.