

# The dangerous misconceptions of Sir Karl Raimund Popper

Karl Svozil\*

*Institut für Theoretische Physik, University of Technology Vienna,*

*Wiedner Hauptstraße 8-10/136, A-1040 Vienna, Austria*

## Abstract

Insofar as Sir Karl Raimund Popper's writings deal with political statements, they are evident; yet insofar as they deal with scientific issues, they are incorrect and misleading. If applied to the concrete implementation of science, such as distribution of research funds and (peer) review, they would seriously hamper progress.

PACS numbers: 01.60.+q,01.70.+w,01.65.+g

Keywords: Biographies, tributes, personal notes, and obituaries;Philosophy of science;History of science

arXiv:physics/0207115 v1 29 Jul 2002

---

\*Electronic address: [svozil@tuwien.ac.at](mailto:svozil@tuwien.ac.at); URL: <http://tph.tuwien.ac.at/~svozil>

There is no doubt that Sir Karl Raimund Popper is one of the most prominent figures in the philosophy of science of the past century. Many people, from politicians to scientists, pay lip service to his theses, and numerous television shows, conferences and books have been organized in his honor. But while Sir Karl Raimund Popper has emphasized a lot of things which are undoubtedly important, his thoughts about the induction problem [1], his criterion of demarcation between science and “pseudo-science,” at least if taken naively and at face value, may be an impediment to scientific research programs, thereby resulting in a waste of efforts and money.

Let me start with very brief remarks on his views on politics and his criticism of psychoanalysis. The main subject of this article is a polemical review of Sir Karl Raimund Popper’s “solutions to the problems of induction.” Concrete implementations of these “solutions” may severely hamper the scientific progress, imposing too heavy and detrimental criteria on science proper. Finally, I shall try to discuss the question of why Sir Karl Raimund Popper is so highly honored in certain circles; mainly in politics and in the natural sciences.

Most of what I say here has already been expressed many times by philosophers of science such as, for example, Imre Lakatos [2] or Paul Feyerabend [3, 4]. But many of these critical issues are not mentioned in the almost frenetic, uncritical praisals and reviews of the work of Sir Karl Raimund Popper which accompany the 100 anniversary of his birthday here in Vienna and elsewhere. Hence there is a need of more critical reviews, even if they repeat previous arguments, mostly to prevent the dangers to the scientific pursuit from erroneous advises.

Sir Karl Raimund Popper’s thinking was deeply rooted in the spiritual life of post-war Vienna in many ways. He first felt attracted by some major schools of thought which flourished in or even originated from this city, but afterwards became one of their strongest opponents.

Having been a marxist, he disguised marxism as a metaphysical, nonscientific ideology which brings misery to the masses. Indeed, this fact must have appeared rather obvious, in particular at the end of the World War II, given the developments in the Bolshevik dominated Soviet block under Stalin. The same holds true for a criticism of Nazism and its various totaltarian conservative offsprings, also in Austria before the German invasion. Undemocratic ideologies had just rampaged through Europe and the Pacific. (I personally think that, in view of the atrocities and inhumanities committed, a lack of falsifiability is one

of the less malign deficiencies of these kinds of totalitarianism.)

Back in his old Vienna days, Sir Karl Raimund Popper also became fascinated by the psychoanalytic theories of Freud and Adler, under whose aegis he engaged briefly in social work with children. He later on denounced the psychoanalytic theory as nonscientific and useless, mainly because it appeared to him to be difficult to falsify (or if falsifiable, had been falsified). This shock struck the psychoanalytic community, in particular its academic sections, hard. I still remember joint sessions of the two main Vienna psychoanalytic societies a couple of years ago, which tried to cope with this criticism, which at that time had been mainly put forward by Adolf Grünbaum [5]. It is not too unjustified to claim that Sir Karl Raimund Popper managed to academically discredit psychoanalysis up to this date, at least what its influence in the academic world is concerned. In academic psychology, phenomenologically oriented and “falsifiable” theories such as behaviorism flourished; which were “scientifically sound” and reasonable according to Sir Karl Raimund Popper’s criterion of demarcation. I have strong doubts if this was beneficial for practical clinical psychology. On the contrary, my feeling is that this development has hampered or even stopped in-depth, sustainable, treatments and cures of mental illnesses of epidemic proportions such as depression and neurosis.

Sir Karl Raimund Popper’s main contribution to the philosophy of science has been his “solutions to the problems of induction.” This was conceived against another Viennese invention: against the “verification principle” of the Vienna Circle (which included Moritz Schlick, Rudolf Carnap, Otto Neurath, Viktor Kraft, Hans Hahn, and Herbert Feigl). He turned the verification principle upside down and introduced a “falsification principle” as a demarcation criterion between science proper or “quasi-science,” or, as he sarcastically used to call it, “blablabla.”

While it is quite obvious that no operational verification can ever prove a scientific theory to be “true,” it is not totally clear why a necessary criterion for any thought to be considered scientific should be its falsifiability. Indeed, Imre Lakatos repeatedly pointed out [2] that such a demarcation criterion assumes that there are critical tests, which are able to conclusively falsify a theory. But history tells us that many operational test of a theory could be interpreted in one way or the other—either as corroboration of a theory or as a falsification.

Moreover, a theory or research program *in statu nascendi* is almost always handicapped

by a badly developed formalism and most of the time lacks the experimental credentials of its soon-to-become predecessors. A historical example which is often mentioned is the Copernican system, putting the earth in rotation around the sun, which was at first competing against the older Ptolemean system.

Sir Karl Raimund Popper himself has conceded these and other problems with the demarcation criterion. And he seemed to have constantly revised and adapted the demarcation criterion to cope with the historic facts.

One may quite justifiably ask if some principles of scientific conduct which claim to be able to differentiate and decide between what is reasonable science and “blablabla,” itself should not also satisfy the very principles it requires from proper science. In other words: is Sir Karl Raimund Popper’s theory of induction a scientifically sound theory by its own standards, or mere “blablabla?”

While I shall let the Reader decide the case, I would only like to mention my impression that Sir Karl Raimund Popper seemed to have applied the same kind of “immunizing strategies” which he blamed other “quasi-scientific” constructions to his own theories. In short, the demarcation criterion may just be an ideology according to its own judgements, after all!

It is interesting to note that Sir Karl Raimund Popper’s very few and almost forgotten papers in physics (e.g., Refs.[6, 7, 8]) avoid concrete predictions and statements which could be falsified. Should they therefore be considered as “blablabla?” I think not; they contain highly original speculations about the consequences of Gödel’s incompleteness theorems for physics.

If the demarcation criterion is an ideology, then the old Roman dictum “*cui bono?*” applies; i.e., who are the losers and the winners? First of all, one should mention that in practical terms not too many researchers care about it in their everyday professional lives. The following anecdote may serve as an example. A department head once stated boldly, ‘if a student comes to me with a new idea, I first ask the student if the idea is falsifiable, at least in principle.’ If not, the professor concluded, this idea can be dismissed immediately. (Fortunately, he does not react in that way. Otherwise, he would have had to dismiss more than one half of the ongoing research at his own institution.)

In more practical terms, almost every decision has a financial component associated with it. To put it pointedly: if one omits the scientific meaning of a decision for the time being,

then a decision often boils down to money. If a wrong or a misguided ideology is taken as a guideline for decision making such as funding policies, then this boils down to a waste of (mostly taxpayer's) money. Hence, Sir Karl Raimund Popper's claim to be able to draw a demarcation line between proper scientific research and pseudo-science not only may be detrimental to the growth of knowledge, but may also be very costly.

However, as mentioned already, most of the practicing scientists, although paying lip service to the principle of falsification, do not really care about it in their everyday operations. In this respect, "peer review," with its assumed benevolent censorship, or the formation of interests clusters and pressure groups ("gangs") effectively might do more harm and might be responsible for a bigger waste of (mostly taxpayer's) money than the demarcation criterion. This could be the topic of another article. Here, I would only like to mention that I believe it is not totally unreasonable to try to utilize other forms of evaluation of research than just "peer review," in particular an implementation of the grand jury system as it is already practiced in the courtrooms. This has been proposed by Paul Feyerabend, yet another philosopher of science originating from Vienna. But I would also like to propose to distribute a certain amount of money to research programs by a random selection, such as a lottery throwing dices; with a post mortem evaluation of all three funding groups (peer review/jury selected/randomly selected; maybe distributed by 70:20:10).

My impression is that any kind of generally applicable demarcation criterion between proper science and "pseudo-science" eventually will turn out to be a red herring. In the same category are attempts to implement Occams razor as a criterion (c.f. the criticism by Daniel Greenberger [9]), or the radical operationalism of the Percy Bridgman [10].

The question remains open why the thoughts of Sir Karl Raimund Popper have been so highly appreciated? In my opinion, as far as politics is concerned, this esteem comes from the fact that he fitted nicely into the scheme of liberal democracy at a time when western policy makers demanded someone who would firmly stand against communism and for western liberal democratic values, while at the same time had not the faintest touch of Nazism (such as, for instance, Heidegger and Adorno). This may explain some of the fame of Sir Karl Raimund Popper in political circles. But this cannot explain the high reputation among scientists, although he himself claimed not to have been taken too seriously by his fellow colleagues in philosophy departments, contrary to researchers in physics, medicine, biology and other natural sciences. (Maybe the former were too sophisticated to agree and

also suspicious what might remain of their own research after Sir Karl Raimund Popper's demarcation criterion had been applied to their subjects?) I would tend to view much of these ideas as having a high marketing value: it was good to agree officially to these almost undeniable, self-evident statements, while at the same time pursuing many other different goals, both politically and scientifically. Yet, I have to confess not having found any convincing answer so far. The high appreciation Ludwig Wittgenstein (yet another Viennese philosopher) enjoyed in Cambridge is comparable, although this might be explained by the "Nostradamus-like" style of his writings and expressions, which leaves open the doors for many, even contradicting, interpretations, and which sometimes appears to be extremely attractive to philosophers. If one considers Niels Bohr's philosophical emanations on the interpretation of quantum mechanics (and his discussions with Einstein and others on these issues), one is almost inclined to enlarge this group to physicists as well.

I would have been willing to write a more forgiving review (or none at all) of Sir Karl Raimund Popper's theses if he would have been more forgiving to his rivals and to the theories he considered to be "pseudo-science" or simply "blablabla." Unfortunately, this was not the case. Let me conclude this very brief and necessarily incomplete appraisal of the works of Sir Karl Raimund Popper with his statement, "all theories are hypotheses; all may be overthrown," which serves as an almost tautologic motto to an exhibition advertised by the University of Vienna in connection with its recent Karl Popper 2002 Centenary Congress. Or should one better recall Ludwig Wittgenstein's dictum, "Wovon man nicht sprechen kann, darüber muß man schweigen" ("What we cannot speak about we must pass over in silence")?

- 
- [1] K. R. Popper, *Logik der Forschung* (Springer, Vienna, 1934), englisch translation in [11].
  - [2] I. Lakatos, *Philosophical Papers. 1. The Methodology of Scientific Research Programmes* (Cambridge University Press, Cambridge, 1978).
  - [3] P. K. Feyerabend, *Against Method* (New Left Books, London, 1974).
  - [4] P. K. Feyerabend, *Science in a Free Society* (London, 1970).
  - [5] A. Grünbaum, *The foundations of psychoanalysis: A philosophical critique*. (University of California Press, Berkeley, 1984).

- [6] K. R. Popper, *Naturwissenschaften* **22**, 807 (1934).
- [7] K. R. Popper, *The British Journal for the Philosophy of Science* **1**, 117 (1950).
- [8] K. R. Popper, *The British Journal for the Philosophy of Science* **1**, 173 (1950).
- [9] D. M. Greenberger, Occam's Razor. A critical review.
- [10] P. W. Bridgman, *The Nature of Physical Theory* (Princeton, 1936).
- [11] K. R. Popper, *The Logic of Scientific Discovery* (Basic Books, New York, 1959).