The *Trumpeter*
ISSN: 0832-6193
Volume 21, Number 1 (2005)

A Plea for Pluralism in Philosophy and Physics

1970

Arne Naess

This article was originally published in *Physics, Logic and History* edited by W. Yourgrau and A. D. Breck, New York, Plenum Publishers, pages 129-139. This article is also reprinted in *SWAN* Vol. 9.

The impact of science upon society and upon the individual is today of such an order that any view called *unscientific* by authoritative scientists or philosophers of science has a rather reduced chance of being studied seriously within the intellectual environment that they dominate. Among such views I have particularly in mind philosophies, including life philosophies, generally classed as not empirical or not rational. I include here Spinoza, the Pyrrhonist skeptic, and the trends inspired by the Dane Søren Kierkegaard and by the Germans G. W. F. Hegel and Karl Marx.

Hegel has been a particularly favoured *Prügelknabe* of scientists and "tough minded" philosophers, in the terminology of the pluralist William James. And even staunch admirers and careful students of Hegel, at the moment I have especially J. N. Findlay in mind,[1] will concede that Hegel made incursions into scientific discussions, writing enough mythology to fill volumes. But an open-minded, slow reading of the preface to *Phenomenology of Spirit*, especially pages 19–26 in the *Philosophisce Bibliothek* edition of 1952, now easily available, convinces us that Hegel had a strong, very original, and very comprehensive *vision* of the basic relation between man, the universe, and history. There is nothing unscientific in this vision or in any other of comparable primordial status, because it in no way supports or contradicts scientific hypotheses. It is ascientific; it is beyond science and not antiscientific. It is a great task of the philosophers to verbalize and conceptualize such visions so that others can see humans, the universe and world history with the colouring that is specific to a particular vision. Philosophers must invade all major fields of science, not in order to back up certain hypotheses and ridicule others, but to help us see how the colouring also covers or applies to our scientific knowledge. Even Hegel seems sometimes to have had the intention to "keep off" evaluations of particular scientific hypotheses but, alas, his inhibition seems to have frequently left him. This, however, should not prevent one from trying to enjoy his vision. It, indecently, suggests a kind of priority of "historical reality" and of "the

natural world" (*Lebenswelt* in opposition to *Welt der Wissenschaft*) that must be understood if logical, physical, and historical reality are somehow to be compared.

The world of personalities, of consistent personal perspectives, is today still a colourful world, immensely satisfying to contemplate for its unbelievable variety. It would be disastrous to use the prestige of science to lay down limits and exclude some worldviews, for instance religious, or squarely antireligious, as being refuted by science, or to call them irrational or intellectually dishonest because they do not fit in with the definite *philosophy* of science. After all, the carefully formulated *results* of genuine scientific research are largely neutral toward differences in comprehensive worldviews. (And why should philosophers of science be less modest than the scientists whose work they exploit?)

It has been predicted that it will be difficult to build bridges, for instance between discussions among logicians where "existence" is a key term, and discussions involving the same key term among scientists and philosophers influenced by Heidegger, Sartre, or Marcel. Such bridges will be and *are* today built in environments where admirers of Sartre, Heidegger, and others take advanced courses in symbolic logic, empirical semantics and read with steady delight and occasional approval the works of Sir Karl Popper—environments where, too, some representatives of the toughest sciences have successfully mastered the labyrinth of Heideggerian terminology. It is, after all, not so bad when helped along by friends who are very well acquainted with empirical and rational approaches.

I know one such environment intimately, and am convinced that if all fundamental views or theories about physical reality were to be considered in a critical atmosphere, it could be done only in such an environment. As regards top achievements, I am more pessimistic. They stem often from centers of learning showing great dogmatism and narrow mindedness. (Hegel, Heidegger, and Wittgenstein did not know empirical trends from the inside!) Our problem today, however, is not so much to push for great academic achievements, as to assist in the integration of knowledge in personal outlooks, to stress inwardness and colourful multiplicity of views and attitudes. Creative imagination must be taken as good care of in environments of empirical and rationalist philosophy of science as in the cosmological environments of a Gamow or Bondy.

In what follows, I invite you to consider a conceptual framework adapted to a very liberal attitude toward various philosophical approaches, provided they start from a sufficiently deep and comprehensive level and refrain from trafficking in particular scientific hypotheses.

All non-contradictory fundamental (philosophical, metaphysical) positions (systems, points of view) *have the same non-zero status of validity* (are equivalid, are acceptable at one time).

Open-minded, constructive research having such positions as an object consists of clarifying and increasing the scope of them, rather than trying to reduce their number.

The terms “validity” and “fundamental” need (even in this preliminary discussion) some elucidation:

Truth (as agreement with reality) is *a kind of* validity. The kind of validity of a fundamental position is not truth, it belongs to the class of validities such that *p* and not *p* may both be valid, though *p* may not be both valid, and not valid.

The degree of fundamentality of a position is relative to the status of the discussion and research at any given moment. Roughly, those propositions, rules or norms will be ultimate which make up the last links in argumentations. If mathematics, as suggested by Lakatos, has no foundations outside itself, certain purely mathematical propositions and rules will be fundamental to any comprehensive position.

I shall next introduce some further conceptual tools that I and some others have found convenient to use in analysis of positions, and which have also been used in empirical research. They cluster around two concepts “definiteness of intention” and “preciseness.”

If somebody utters a sentence T_0 with truth—or validity—claim, the definiteness (not necessarily the “depth”) of cognitive meaning is limited by the set of discriminations he makes. The network of discriminations in the form of distinctions in meaning is not a stable one. Thus, if I say that this ship is of 10,000 tons, or that *pi* and *h* (Planck) are constants, I may have a very crude idea of what I intend to say, but it may be definite enough for the purpose at hand. An expert at Lloyd’s Register of Shipping for example, will have a high or sharp definiteness of intention that can only be conveyed to outsiders by means of perhaps 500 words. As regards the term “constant,” my network or grading of discriminations may be at least temporarily refined by reading articles such as those of Professor Yourgrau about different usages of the term “constant,” or by trying to compete with Quine, Chruch, and Mates introducing mathematical logic, or by trying to prove some fairly general theorems about constants. Degrees of definitions of intention may be, and have been, experimentally measured and compared, but that is a complicated affair.[2]

Economy of thought requires that we work with a definiteness of intention commensurate with the requirements of the task or the problem confronting us at any time. Problems in quantum physics confronting physicists, who do not aim at making radical advances, do not require a high definiteness of intention regarding the significance of the symbols in, let us say, the Heisenberg equations. It is therefore misleading to say, as many do, that most physicists

subscribe to the Copenhagen interpretation. Insofar as the so-called Copenhagen interpretation is formulated as a scientific interpretation, only a small fraction of researchers and teachers in physics in Western countries seem to make the discriminations necessary to single out different interpretations.

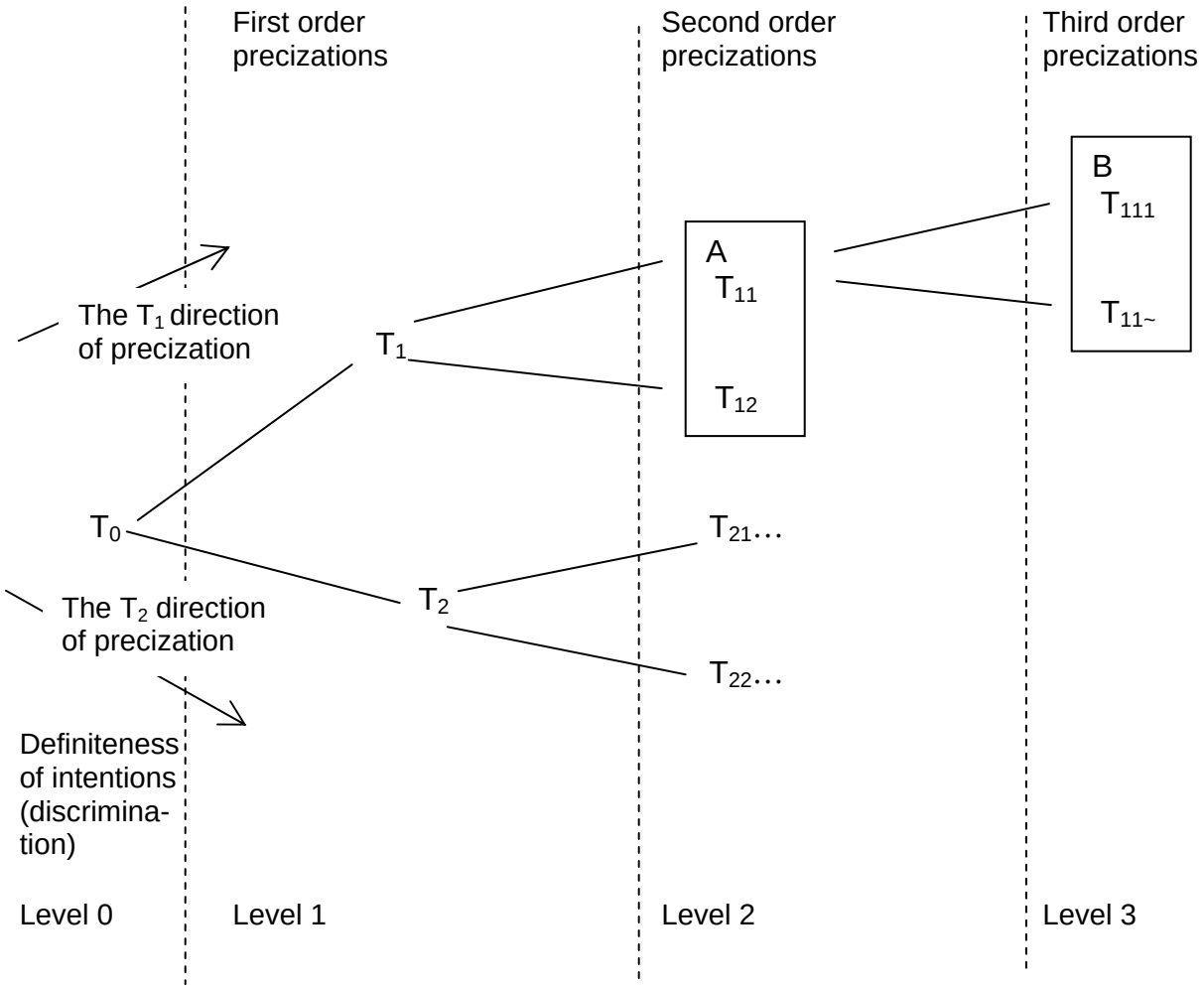
So much about the concept of definiteness of intention. The other concept, "preciseness," can be introduced as follows: A sentence T_1 is more precise than a sentence T_0, if there is at least one interpretation to which T_0 admits, but T_1 does not, and there is no interpretation admitted by T_1, which is not also admitted by T_0.

Preciseness thus defined is a transitive relation and definiteness of intention can be measured with reference to chains of "precizations" T_0, T_1, T_{11}, T_{111} . . ., (and T_{112}, T_{113} . . .) are more precise than T_{11} (and T_{12}, T_{13} . . .) and T_{11} more precise than T_1. If a person fails to discriminate at the level of T_{111}, but succeeds at the level of T_{11}, then T_{111} is said to be a transintentional precization to his set of discriminations.

The following diagram illustrates the various concepts introduced.

If an intention can be located in the area *B* (of the diagram), but not in *A*, another in *A* but not in *B*, the first is more definite than the second. The level of (verbalized) definiteness of intention is proportional to that of preciseness. The *B*- field of discrimination is more precise than the *A*- field.

Levels of preciseness and definiteness of intention



Applying these concepts to the pluralism thesis, or view, I suggest that we place the talking about systems, the metaphilosophical utterance at the T_0-level. It is a philosophically relatively neutral level because of its low level of discriminations (in relation to philosophical conceptualizations). Any sufficiently vigorous effort to exact a delimination of the pluralism thesis inevitably plunges it into the arms of a definite system or family of systems. This is easily seen considering that the above formation of pluralism includes the words “non-contradictory,” “fundamental,” “position,” and “validity.” Any fairly precise account of what might be intended by these vague and

ambiguous words must reveal the philosophical idiosyncrasies of the author, and therefore ruins communicability of the pluralism, making it only understandable within a definite philosophical camp. Pluralism is in some sense only an *ad hoc* and rough position, "exposed to wind and weather" and awaiting its ultimate destruction. But what is not *ad hoc*?

Pluralism does not *rule out* that ultimately there must be one truth. But except in matters of little concern, or in practical affairs, many of us are never able to satisfy ourselves for any reasonable length of time with any definite solution to even one major theoretical question. And why not let this colour one's stand toward ultimate positions?

It is a near universal belief among philosophers that non-philosophers or more specifically, ordinary men, men of common sense and youngsters who have not yet heard of philosophy, are naïve realists in ontology, that they think truth consists of agreement with reality, and so on.

If empirical evidence is considered of any importance in this field of easy speculation, it supports an opposite conclusion. When they are directly or indirectly stimulated toward formulating philosophical opinions, I have found that youths from 14 to 18 years old express in a crude way, with low definiteness of intention, very different ontologies, epistemologies, and other positions of fundamental import. If "It is true that the earth is round" is taken as T_0, some will discriminate between precizations of "true" at the T_1-level, but the T_2-level will be transintentional. Thus they do no more that *suggest* different theories of truth, they do not (of course) work them out in a precise fashion.

But under suitable experimental conditions, for instance by bringing the philosophically innocent youngsters together in groups for prolonged and repeated discussions, their opinions on fundamentals are gradually expressed more precisely and in greater detail. There is little tendency toward the adoption of one single basic view as long as adults representing authority are kept at a distance.

In environments where certain trends of philosophy dominate, gifted young students tend to adopt the current opinions and attitudes, although an impressive teacher may induce some of the students to accept his views, even if they are looked down upon within the dominating circle, but that is an exception. In any case, the *narrowing down of variation* is *not* due to any intellectual inferiority of certain basic views, and certainly not to clear-cut falsification. Intellectually, there seems to be a decline in variation due to absence of systemic development of various intensively incompatible views on the professional level (the "monolithic" tendency). The "amateurs," kept isolated from authoritarian adults, show a far greater tolerance of ambiguity

(as this term is used in psychology), and also the courage to leave debates on fundamentals open.

These are, of course, empirical hypotheses, and they have only in part been subjected to research. But results obtained point in that direction.

Finally, what is the relation of philosophical pluralism to the contemporary discussion on physical reality?

Listening to what some physicists authoritatively tell us, pluralists get into trouble: to accept as pure physics what they tell us *must* today be accepted—and not as conceptions derived from some basic conceptions, entails accepting certain fundamental positions as the only possible ones. Thus, Leon Rosenfeld *insists* that the development of physics entails certain views in the logic of concepts. If this logic, which is more akin to ontology in the usual sense, is expanded, it fits Hegelian basic positions, not others. Those of us who are not physicists are used to and inclined to accept at face value what we are told is pure physics, and we are tempted to look at certain philosophies as falsified by physics. This means giving up pluralism. Listening to other physicists however, we begin to suspect that physicists have succumbed to a gigantic *non-sequitur*, and are offering us positions on false grounds. We shall look with interest for evidence that different groups of contemporary physicists, all presumably very competent, have incorporated different positions in their so-called physics. This is happily the case. We should therefore be in a position to discriminate "pure physics" from "philosophical physics," looking for pure physics in what is common to all physicists today. Philosophical physics would be physics explicitly developed within the frame of reference of a fundamental position.

Pure, unphilisophical physics is, of course, strictly speaking nonexistent. It is a fiction. However, a position akin to Pierre Duhem's may well be developed. (*Akin* to Duhem, because his doctrine that the succession of good physical theories makes them approximate to a natural classification of real objects cannot, if accepted at face value, avoid colouring the physicists' criteria of a good theory. And this makes him take a kind of realist, philosophical position, thus leaving his "pure" physics.)

The pluralist in me is interested in the further elaboration and clarification of the early Copenhagen interpretation, still retained by Heisenberg, and its radicalization in the direction of Berkeley's idealism. Of value to pluralism, too, is the idea of Leon Rosenfeld and others, that there is something dialectical, in the Hegelian or Marxian sense, in the doctrine of complementarity. In his famous Tokyo lecture (1960) this eminent, but vehemently antipluralist physicist, Rosenfeld made quantum physics part of a far from trivial metaphysics.[3] Rosenfeld there said, among other things: "Complementarity denotes the logical relation of quite a new type, between concepts which are mutually exclusive, and which therefore cannot be considered at the same time because that would lead to logical mistakes, but

which nevertheless must both be used in order to give a complete description of the situation." Logicans have not, as far as I know, been inspired to work on this quite new type of logical relation. The main reason, I think, is that the environment of logicans (in the West) is unHegelian or even antiHegelian: The conception of "concept" and of "logic" implicit in Rosenfeld's views does not belong within the mainstream of formal logic. The conception belongs to the Hegelian framework of Rosenfeld's philosophical physics.

Neither the Heisenberg nor the Rosenfeld philosophy has today the preciseness required for univocal location within the network of fundamental positions. However, I hope that some philosophically trained Copenhagen people will take up the problem of how to find careful, precise formulations.

But what, now, has the development of physics in the last decades to do with philosophical pluralism?

The developments have convinced me, firstly, that fundamental advances in physics are made by physicists for whom physics is not a formidable set of tricks of the trade, but whose thinking proceeds within the framework of ultimate positions and philosophical interpretations of the terms and formulae used in physics. In time, the philosophy of these physicists is "rubbed off," because physical practice does not require preciseness in fundamentals.

Secondly, that the positions among creative physicists are and will continue to be mutually inconsistent, and that efforts to narrow down the sources of diverse philosophical inspiration constitute not only a methodological but a general cultural evil. The fight between idealist and realist conceptions is barren except for increasing the explicitness, comprehensiveness, and consistency of each kind of incompatible conception.

Thirdly, recent development convinces me that certain members of the Copenhagen School, notably Leon Rosenfeld, have argued in an antipluralist way which illustrates all the dangerous aspects of the narrowing down of such sources of inspiration. The early Bohr, the late Bohr[4] (after discussions with the Russian physicist Fock), Heisenberg, and Rosenfeld, have suggested five different interpretations of certain formulae. What is needed is not so much a reduction of the number but a deepening and clarifying of issues. It is doubtful that as much as five fundamental positions are involved, but there are at least more than one.

Certain physicists have started on the pluralist road—I am tempted to refer to the little book by Bernard d'Espagnat, *Conceptions de la Physique Contemporaine*. (Hermann, Paris 1965). It does not go very far towards making positions precise, but the atmosphere is sufficiently detached and unauthoritarian to give each position a chance of an at least initially sympathetic hearing.

Let me append to this propluralist sermon a remark that might (mistakenly) be taken as antipluralist:

Dr. Vigier embraced the idea of a theory of hidden variables before he could describe a single possibility of experimental confirmation. He has been unjustly criticized for this among some physicists, but on behalf of all pluralist philosophers of the world, I would thank him: we have, as philosophers, little or no chance at all of creating alternatives in physics, and are thus rather helpless when physicists point to certain interpretations as inevitable and definitive. Courageous physicists who suggest new paths even before it is seen what they might lead up to, experimentally, are therefore especially welcome. Vigier was inspired, however, by a form of dialectical materialism, in a way that would scarcely be possible if he were a pluralist in philosophy. This underlines the curious fact that it is next to inconsistent to wish both for pluralism and radical advancement in science.

Endnotes

[1] J. N. Findlay's *Hegel, A Re-examination*, Allen & Unwin, 1958, is herewith recommended to colleagues who feel strongly anti-Hegelian, but who would like to find out why Hegelian thinking (in a wide sense) has a greater following than any other today. See also Findlay's "The Contemporary Relevance of Hegel" in his *Language, Mind and Value*, Allen & Unwin, 1963. A direct confrontation of Hegel's conception of knowledge with Bohr's (early) interpretation of quantum physics is carried out by A. Kojeve in his *Hegel. Versuch einer Vergegenwärtigung seines Denkens*, transl. Kohlhammer 1958. –After this piece of propaganda for the reading of Hegel I ought perhaps to mention that I *personally* have never found anything of value in Hegel, although sometimes I have assisted young Hegelians in getting a foothold in my own environment. No pluralist milieu without Hegelians!

[2] The concepts of "Definiteness of Intention" and "Preciseness" are introduced and discussed in my *Interpretation and Preciseness*, Oslo University Press, Oslo 1953. Now Vol. 1 in the *Selected Works of Arne Naess*, Dordrecth, The Netherlands: Springer, 2005.

[3] See p. 6 in the mimeographed version, 1961.

[4] See "Niels Bohr in the darkness and light of Soviet philosophy," *Inquiry*, Vol. 9, 1966.