

The Perspectivist Conception of Science

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Abstract The paper compares Evandro Agazzi's "*Gestalt* view" with the Perspectivist conception of science developed by the author. What Agazzi means by *Gestalt* or "point of view", as well as what the author means by "perspective", is not something of the subjective sort. It is rather a particular way of *conceiving* of reality—a way that can be *shared*. Agazzi's *Gestalt* view, however, differs in certain respects from the Perspectivist conception. First, on the *Gestalt* view, since theories concretely express their *Gestalt* in declarative sentences, the theories themselves must be true or false; on the Perspectivist view, the paradigm of a scientific thought would not be a true-or-false statement, but a *more or less applicable concept*. Second, Agazzi's legitimation of *truth* on the *Gestalt* view entails realism, while Perspectivism is neutral as regards the empiricism/realism issue. Finally, some differences between both conceptions of science are mentioned as far as the solution of the incommensurability problem is concerned.

Keywords Perspectivism · Agazzi · Realism/antirealism · Idealisations · Incommensurability

Evandro Agazzi's long-awaited *Scientific Objectivity and Its Contexts*, as well as his earlier work, support an aspect of a complete new approach in the philosophy of science, an aspect which he terms "the *Gestalt* view." Particularly noteworthy in this regard is Agazzi's presentation of the *Gestalt* view as leading to his ideas of *the empirical-scientific 'clipping out' of objects, idealisation, and the analogy of scientific theories to maps*.

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According to the first idea, of ‘clipping out’ objects, we can see scientific objects as ‘clipped out’ by their disciplines through the performance of particular empirical operations, each discipline containing just those objects clipped out by its operations. We might

simply consider some ‘thing’ and ask what science is competent to deal with it. For instance, if we take a watch and ask what the area of its face is, we are considering it as an object of topology; if we ask what its mass is, or what the laws are that regulate the motion of its balance wheel, or what its influence would be on the magnetic field inside the room where it is located, we are considering it as an object of physics; if we ask what the composition of the alloy is out of which its case is made, or what the degree of purity is of the rubies that are inside it, we are considering it as an object of chemistry.... (p. 83).

On the contemporary, formalist, view in the philosophy of science, an object is what it is, and different scientific disciplines are thought to provide various sorts of information concerning it. The difference between Agazzi’s approach with his ‘clipping out’ of objects and the contemporary view might be thought to be insignificant, but if looked at more closely his ‘clipping out’ idea reveals an aspect of a conception of science fundamentally different from the contemporary view (the Perspectivist conception). On Agazzi’s view, the operations performed in the ‘clipping out’ of objects are performed according to concepts derived from the categories of the discipline, the discipline itself constituting a *Gestalt*.

I have myself worked extensively with the *Perspectivist* conception of science, which is in many respects similar to Agazzi’s *Gestalt* view. In fact, Agazzi’s and my common holding of this insight with regard to the nature of knowledge lay the ground for a friendship between us that has lasted from 1977 to the present.

What Agazzi means by *Gestalt* or *point of view*, and what I mean by *perspective*, is not something of the subjective sort, as when one *sees* a certain gestalt. It is rather a particular way of *conceiving* of reality—a way that can be *shared*. For Agazzi and me *Gestalts* and perspectives are structured by various *principles* and the *categories* they relate.

On the contemporary view, on the other hand, scientists begin with the assumption-free basis of *experience*, and inductively build conceptual systems (theories) from there. As distinct from this, Agazzi and I say that science begins with certain *a priori* preconceptions as to the nature of reality, and that these preconceptions—or *principles*—themselves *constitute* the scientific perspective.

Agazzi’s *Gestalt* view, however, differs in certain respects from the Perspectivist conception. On the *Gestalt* view, but not the Perspectivist conception, since theories concretely express their *Gestalt* in declarative sentences, the theories themselves must be true or false. When a theory is ‘falsified,’ what is falsified is actually some particular sentence (statement) of the theory, a sentence that turns out to be false according to the referential operational criteria of the theory’s discipline. According to Agazzi, this entails a re-adjustment of the gestalt going from partial retouches to a genuine gestalt switch (Cf. Agazzi, pp. 367ff).

But, given this, one wonders how *idealisation* is to fit into the *Gestalt* view, all idealisations, if taken to be statements, being false. As is in keeping with the Perspectivist conception, the value of idealisation in modern science lies rather

in its ability conceptually to capture the physical essence of a particular situation, such an essence paradigmatically taking the form of a *cause*.

Also according to Agazzi, his legitimation of *truth* on the *Gestalt* view entails *realism*, since a sentence is always true or false ‘of’ something, and in the case of science this something is the sentence’s operationally accessible referents. As a consequence, if a theory is supposed true, it must also be supposed that its intended referents exist.

But as regards *truth*, while it is true that Pegasus has two wings, this does not entail Pegasus’ real existence. Similarly, true or false statements may be made regarding an intended scientific object, without their being meant to imply the object’s existence.

Perspectivism, on the other hand, is neutral as regards the empiricism/realism issue. On the Perspectivist view, while true or false statements may be made with regard to a theory and its application, this does not imply that the theory itself is a entity that may be considered to be true or false. In its application to modern science, however, Perspectivism has shown the endeavour to be thoroughly realist in nature.

For the last hundred years, the philosophy of science has been almost wholly confined to the (formal) *logic* of science, i.e. to thinking of science in terms of the Deductive Model. On this view, the paradigm of a scientific thought is an Aristotelian *statement*, which is either *true* or *false*. On the Perspectivist view, on the other hand, the paradigm of a scientific thought would not be a true-or-false statement, but a *more or less applicable concept*.

On the Perspectivist view, the primary aim of science is not to *know*, but to *understand*. Though the notions of truth and knowledge do belong to science, they belong to its *empirical* aspect. We acquire knowledge of the empirical facts, i.e. of laws determined by measurement. But our higher aim is to *understand* these laws. And this we do using theories to link the laws to the principles of the discipline. The Perspectivist view has many advantages not only over philosophies of science based on the Deductive Model, but over those based on set theory as well.¹

As shown in *Scientific Progress*, the logical empiricists’ and Popper’s attempts to depict science in terms of the Deductive Model fail, the empiricists being unable to account for theory conflict, and Popper having no conception of progress. Further, neither the empiricists nor Popper can capture the notion of incommensurability introduced by Kuhn and Feyerabend. One cannot provide a purely formal account (depiction) of incommensurability. The Perspectivist conception, on the other hand, solves the incommensurability problem by showing incommensurability in the case of scientific theories to be a relation between conceptual perspectives (applied concepts) sharing the same intended domain. And it shows how in science one can have a form of *subsumption* that differs from empiricist *deductive* subsumption, and a form of *theory conflict* that differs from Popperian *contradiction*. And the Perspectivist view shows quite generally how one theory may be

¹As is treated in Dilworth (2008, Chap. 11).

considered to be scientifically more acceptable than another, thereby a consistent conception of scientific progress.²

On the Perspectivist view, the principles underlying science determine its *ontology*, and in so doing also its *epistemology*, the latter including its *methodology*. We can also say that the principles of science determine the *perspective* we call science, which includes science's conceptual *paradigm*.³

Each individual *scientific discipline*, such as physics, chemistry or biology, *refines* the basic principles of science in its own way. These refined principles determine the particular aspect of the scientific ontology (reality) the discipline investigates. In this way, the refined principles set limits on the discipline itself. So, for example, considering reality from the point of view of the categories of matter, motion and force determines the objects of mechanics rather than those of biology, while both disciplines accept the deeper metaphysical principle that no physical entity comes from nothing. In agreement with Agazzi, each discipline also contains more specific concepts, at least some of which have to be *operationalised* for the discipline to make contact with physical reality (ontology). And one and the same part of reality can become the object of a new and different discipline every time a new perspective (epistemology) is taken on it. Thus different disciplines study different aspects of reality, and are incommensurable in this way. Further, each scientific discipline's refined principles serve to distinguish it from other disciplines, and provide it with its own conceptual paradigm.

Each scientific discipline constitutes a specific perspective on precisely the objects picked out by its operations, which are its *intended object*. The perspective constituted by the discipline includes the categories in terms of which reality is to be conceived. Thus, following Agazzi, the concept of area belongs to the topology perspective, the concept of mass to the physics perspective, and so on. Every scientific discipline has its own domain of intended objects; (p. 64); and "one and the same 'thing' can become the object of a new and different science every time a new specific point of view or viewpoint is taken on it." (p. 84).

It is important to note that for Agazzi the same operations (using e.g. measuring instruments) by means of which the objects of a given science are 'clipped out' of reality are those by means of which it is possible to reach empirical-scientific agreement, due to the intersubjectivity of the operations. This provides commonality of *reference* and *intention*, *within* each discipline. On this basis, on the Perspectivist conception, various theories are advanced in each discipline concerning how best to conceive of the discipline's subject-matter so as to *understand* how particular empirical phenomena can be or are manifestations of the refined principles. This is how scientific theories *explain* the phenomena. And not only disciplines but also theories may be incommensurable.

²Cf. Dilworth (2008, esp. pp. 85–88).

³As I try to show in Dilworth (2007), modern science is based on a conceptual paradigm consisting of three particular physically-interpreted principles relating the categories of uniformity, substance and cause.

It is important to note the two senses of *incommensurability* used here. Incommensurable disciplines have different subject-matters; incommensurable theories can have the same subject-matter. As regards the latter, the situation is more that of a gestalt switch, where each conception constitutes an alternative depiction of a common reality.⁴

Thus, on the Perspectivist view, different theories within a discipline can the *same* objects but say different things about them. And if the theories do differ in how they characterise a common reality, there are a number of ways their superiority in this regard might be determined.

This is essentially the view I present in *Scientific Progress*, and develop in *The Metaphysics of Science*. Both books presuppose my latest book, *Simplicity*.

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⁴Cf. the Gestalt Model in Dilworth (2008).

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