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VAIHINGER ON FICTIONS IN SCIENCE

1. The recent image of instrumentalism or fictionalism has been shaped mostly by the presuppositions of logical positivism with its static approach to scientific theories and its dichotomous conception of the language of science. According to this image, concepts not referring to observable things (i.e., theoretical concepts) are best construed as fictions in the sense of uninterpreted or only partially interpreted symbolic devices for organizing empirical data given in the observation language but not themselves factually referring. To be a fiction is not to refer to observables, to be a non-fiction is to refer to observables. Instrumentalism in this sense may be identified with any doctrine accepting the theoretician's dilemma according to which fictions in the above sense can be dispensed with (this is done in Tuomela 1973).

This ordinary image, as it stands, cannot be

very attractive after the anti-positivistic turn in the philosophy of science. The approach after the turn is more dynamic, the old semantic dichotomy between observational and theoretical language hardly finds support any more, the involvement of theories - whether factually representing or not - in shaping empirical knowledge is recognized.

All this makes Hans Vaihinger's largely forgotten version of fictionalism - as one somewhere between Kantianism and positivism - very topical, because, firstly, the anti-positivistic turn has not eliminated anti-realism. And secondly, Vaihinger's theory of the role of fictions in science is very dynamic, it stresses the indispensability of fictions, and although there are some perceptual givens (see Vaihinger, 1920, p. 286), he seems not to hold the linguistic version of the myth of the given: all concepts alike are free creations of our mind and there is no dichotomy between, e.g., observational and non-observational parts of the language of science one of which would be ostensibly linked with experience.

2. Vaihinger characterizes his concept of a fiction by means of four distinctive features that also serve to distinguish fictions from hypotheses (ibid., pp. 172-174). *Contradiction* is the first characteristic; and contradictions are of two sorts,

let me call them 'external' and 'internal'. Semi-fictions are only externally contradictory, they contradict reality by being inconsistent "mit anderwärts bekannten Tatsachen, Gesetzen und Erscheinungen". Genuine fictions are both externally and internally contradictory in breaking the law of contradiction. The idea of totally egoistic action exemplifies the former kind of a fiction (see pp. 341-357), the concept of a dimensionless atom exemplifies the latter (see pp. 429-451). Indeed, contradiction is the bearing incentive of fruitful thinking (p. 192), and progress in science both generates and presupposes conflict (p. 161).

But, ultimately, contradictions are to be eliminated. This makes fictions *provisional*, which is their second characteristic. Genuine fictions are provisional mainly in a logical sense, semifictions in a historical sense (p. 127). In spite of this, they are indispensable means in a process leading to hypotheses that are externally and internally free of contradictions. It is important to see that the indispensability of fictions can be accounted for only from a dynamic perspective of the whole research process.

Ideally, fictions are thirdly characterized by "das Bewusstsein der Fiktivität, ohne den Anspruch auf Faktizität". That is, they are based

on consciously false assumptions. In some sense scientists know and they should explicitly state that "fiktives ist falsch" (p. 193).

Fourthly, although fictions are arbitrary, this arbitrariness is restricted by their *expediency*. Fictions are just subjective instruments for achieving some ends or other. Without this expedient, instrumental character a fiction is not to be counted as scientific. While hypotheses should be *verified* through experience, fictions are *justified* by their usefulness. Hypotheses are more or less probable, fictions are more or less expedient. (See pp. 150, 609-610.)

Thus, a fiction in the Vaihingerian sense "ist ja nur ein bewusster, praktischer, fruchtbarer Irrtum" (p. 165). We know it to be false. Contrast this to our positivistically inspired image of an instrumentalist, whom we might expect to answer that fictitious (i.e., theoretical) expressions are neither true nor false. Vaihinger's concept of a hypothesis, in its turn, implies that we do not yet know whether a hypothesis is true or false.

3. What then is the linguistic form Vaihinger gives to a fictitious sentence? It must capture two things: a comparison and a denial of the possibility or reality of that to which something is compared. It is by means of the 'as if' that we

identify a case with the consequences from an unreal or impossible case. The comparison or identification finds expression in 'as', while the unreality or impossibility finds expression in 'if'. A fictitious sentence is of the form:

'A is to be considered as if it were B' (even though we know it is not).

In a logical analysis, the space between 'as' and 'if' is to be filled with a third sentence, namely 'it would be considered'. Now the complete sentence reads as follows:

'A is to be considered as it would be considered if it were B'.

Here are two examples: 'Matter is to be considered as it would be considered if it were composed of atoms' and 'Social relations are to be considered as they would be considered if self interest were the only motive of human action'. (See pp. 162-165, 589-595.)

Again, it is interesting to compare Vaihinger's notion to that of a more ordinary positivistic fictionalist. Sellars (1963, p. 174) labels as 'positivistic' the view which refuses to admit that a distinction between

X behaves as if it consisted of Y's and

X behaves as it does because it does consist

of Y's

makes sense in the case the Y's are scientific objects, i.e., objects postulated in scientific theories.

Vaihinger is not a positivist in this sense.

As a matter of fact, he emphasizes the importance of making the above distinction. It is the distinction between fiction and dogma in his terminology.

REFERENCES

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Tuomela, Raimo: 1973, *Theoretical Concepts*, Springer-Verlag, Wien.  
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