

# Gierasimiuk, Jerzy

---

## Logos in Science. Some Remarks in the Margin of Ludwik Fleck's Genesis and Development of a Scientific Fact

---

Kwartalnik Historii Nauki i Techniki 28/3-4, 561-568

---

1983

Artykuł umieszczony jest w kolekcji cyfrowej Bazhum, gromadzącej zawartość polskich czasopism humanistycznych i społecznych tworzonej przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego.

Artykuł został zdigitalizowany i opracowany do udostępnienia w internecie ze środków specjalnych MNiSW dzięki Wydziałowi Historycznemu Uniwersytetu Warszawskiego.

Tekst jest udostępniony do wykorzystania w ramach dozwolonego użytku.



*Jerzy Gierasimiuk*  
(Lublin)

LOGOS IN SCIENCE.  
SOME REMARKS IN THE MARGIN OF LUDWIK FLECK'S  
GENESIS AND DEVELOPMENT OF A SCIENTIFIC FACT

*Wir suchen überall das  
Unbedingte und finden  
immer nur Dinge*

Novalis

Any description of science as a specific form of culture will not be complete if we do not take into consideration the part language has been playing in the formation and development of science. Furthermore, our attitude towards the word, our handling of it, determines to some extent the character of our period. We do not mean by it a highly abstract 'meta-considerations' on the relationship between language and reality. This is not a merely academic question. Indeed one cannot discuss the nature of the word (or language) without taking into account its social, cultural and intellectual background, what we usually call unprecisely an attitude towards the world. That is why the way we use the word has far-reaching practical implications, it is related to the general strategy of human activity. This unprogrammed ('transparent' as it were) way the word functions in society does determine — although not always according to the 'inner consistency' of logic — the theoretical sense of all semantic conceptions. The word is today — as it has never been to such an extent before — a stake in the game we call the progress of science and technology.

As the title of this essay suggests I should like to point in it to — perhaps secondary but still, I think, important — epistemological motive in Ludwik Fleck's considerations, that is to say to the role the language plays in the shaping of our knowledge of the so called objective reality. This is, however, a rather delicate question in that it strikes at the

deeply-rooted, although historically unfounded, convictions about the nature of knowledge, both the common and philosophical one. This particular phenomenon, unseparable from science, may be briefly described as the ideologization of knowledge. Although it might seem that this area of 'pure' cognitive activity — 'pure' science — is not the place in which myths and prejudices should be cultivated. And yet they have been appearing in science in various forms, although most of them can be reduced to the myths about the disinterestedness of 'pure' knowledge (science). This dogma, sanctified by a long-standing tradition and still deeply-rooted today, was professed, at the time Fleck's monograph appeared (1935), both by the phenomenologists and neopositivists, and apart from that it was supported by the speculative epistemology and logic. Moreover, these two disciplines found — almost literally — a common language and embarked, within the framework of the so called logical positivism, upon a new intellectual offensive. 'Speculative epistemology — wrote Fleck — is taught (today — J.G.) as a science in which its speculative investigations are almost limited to a few symbolic examples and logical connections, preferred over and above other connections between the objects of investigation' <sup>1</sup>. And that is why the sociological-historical point of view was regarded as a heresy, or at least as being unproductive. To use Fleck's words, it was simply at variance with the prevailing intellectual *Stimmung* (mood) of the period.

So let us take a look at the objections Fleck advances against the modern science of *logos*, that is against formal logic. 'Purely' cognitive situations, he says, do not exist and are even impossible because there is no such thing as the *generatio spontanea* of notions. The absence of notions *in statu nascendi* — if that expression has got a positive sense at all — makes it impossible to describe the initial, raw observations of the researcher (in the theoretically unprepared empirical area). So while describing the discovery of Wassermann's reaction Fleck does it with an objection that may appear somewhat strange in a representative of empirical sciences:

"This field is a little world of its own and therefore can no more be fully described in words than any other field of science. Words as such do not have fixed meanings. They acquire their most proper sense only in some context or field of thought. This delicate shading of the meaning of a word can be perceived only after an "introduction", whether historical or didactic' <sup>2</sup>.

<sup>1</sup> L. Fleck: *Genesis and Development of a Scientific Fact*. Chicago—London 1979, p. 173, (43), note. Number in brackets refers to the first, German edition of the book, *Entstehung und Entwicklung einer wissenschaftlichen Tatsache. Einführung in die Lehre vom Denkstil und Denkkollektiv*. Basel 1935.

<sup>2</sup> *ibidem*, p. 53 (60).

So words as such do not carry an autonomus meaning? Earlier, while considering the origin of 'primal ideas', Fleck says after the psychologist Wolfgang Metzger: 'Words and ideas are originally phonetic and mental equivalent of the experiences coinciding with them'<sup>3</sup>.

Of these words-equivalents we can in fact say nothing, except that they are always unique and always 'belonging' to a particular person. When looked at from outside and out of their psychological background of expression they, strictly speaking, cease being words (unless some external meaning has not been applied to them). So it is obvious that in a situation when there is an evident, total absence of words one cannot speak of knowledge (unless it is, in a trivial sense, individual knowledge). This absence of words may be overcome only by a reference to a knowledge that is already somehow established and common, or to a tradition, cultural archetypes, worked-out methods, accepted general convictions, a hierarchy of values, acknowledged authority, myth or religion. If this does not happen, the language and knowledge remain in a schizophrenic stage of their evolution. To put it somehow metaphorically: in acquiring knowledge one must, on the one hand, keep a distance from the surrounding world, loosen original links between words and objects, and — on the other — subject oneself to the norms of a given culture.

However, already at the psychological stage of acquiring knowledge there sets in a two-way process, that of getting familiar with and of absorbing, of trying to get at what is visible and provokes a reaction. Man — as Humboldt wrote in his celebrated work — 'surrounds himself with the world of tones so that he may acquire and adapt to himself the world of objects'. As one may not detach science from other forms of culture, similarly one cannot reduce language to its purely expressive and communicative functions. These functions are essential but derivative. Indeed all semantic conceptions assume a system of objects independent of language (an established reality), or at least a possibility of a non-linguistic articulation of a meaning — as if one could think of an objective existence of a reality without words, notions, language. If therefore language is a means, it is a means first of all by which the refractive reality may be subjected to man. In this sense language has a creative function, although — paradoxically — it does so outside the science of language for which the perfect language is the one consisting of a collection of expressions and syntatic rules. The fact that one cannot speak of it without being accused of cultivating metaphysics, and that it is difficult to discuss it at all, is due among other things to the neo-positivism and the related schools of thought.

In a cognitive situation in which there is an acute 'shortage of words' (and correspondingly a chaos and fluidity of 'objective structures') the

<sup>3</sup> *ibidem*, p. 27 (35).

word assumes a singular importance. And it does so not because it reflects the image of an object, but because, in a selective way due to its nature, it seizes a particular aspect of it and so it does participate in creation. By means of words man gets into contact with the world and this precisely means that he creates and develops a culture, including science of course.

It is the inherent purpose of any empirical science — says Fleck — to find or establish a 'hard foundation of facts', that is to say to overcome the elasticity (stylelessness) of the 'initial perception'. The epistemological rule, which is obligatory here, is *Kulturtreue* (fidelity to culture), a cultural deformation or apperception of what is perceived. In this way even the simplest relevant (i.e. reproduced) observations are conditioned by a definite style of thinking, the main element of which is a mood, meaning here 'a readiness both for selective feeling and for correspondingly directed action'<sup>4</sup>. Knowledge is here acquired under a steady, didactically organized (and occasionally even institutionalized) pression of cultural factors. Only some time later *Wirkung der Reihenfolge des Erkennens* (the pression of the existing cognitive order) makes itself felt<sup>5</sup> and is then experienced by particular researchers as *Denkzwang* (intellectual compulsion).

An absolutization of these socially consolidated structures of human thinking and acting — the starting point of the speculative theory of knowledge — has been the first step on the road to rational axiology and to the timeless idea of the scientific, i.e. the rational. To prove a new idea (*Begründung*) means here to justify it (*Rechtfertigung*) on the basis of the timeless principles of rationality. So for instance the idea of the Earth being spherical could not be accepted as long as the absolutization of the notions 'downwards' and 'upwards' seemed to be well-founded. For the same reason Husserl, while advancing the idea of a strictly scientific philosophy (*Philosophie von unten*), could claim with conviction that 'the decisions of science bear an imprint of eternity'<sup>6</sup>. The method of acquiring knowledge is in the speculative theory of knowledge a passive contemplation of reality, immovable in its truth, from which the researcher removes a covering of illusions by means of his intellectual power. According to this conception the words we use are only a wrapping in which the timeless truth, ideas, problems, are

<sup>4</sup> *ibidem*, p. 99 (105).

<sup>5</sup> L. Fleck: *Zur Krise der 'Wirklichkeit'*. 'Die Naturwissenschaften' Vol. 17: 1929, 23. In the monograph of 1935 Fleck analyzes closely the role of that social-cultural factor, and he does it within the framework of his *pre-ideas* conception, regarded as *entwicklungsgeschichtliche Anlagen* (developmental rudiments) of contemporary scientific conceptions.

<sup>6</sup> E. Husserl: *Philosophie als strenge Wissenschaft*. Frankfurt am Main 1965, p. 67.

preserved. One can easily detect in this ideology suggestions deriving from the Platonic-Christian explanation of the world with its attitude towards reality: an attitude towards the world which practically bears no responsibility for the way the world is seen as a consequence of that attitude.

At the level of *Gestaltsehen* the status of words is changing radically. They begin functioning at it as a sort of *modi significandi* which have acquired the social-cultural guarantee of validity as being names to which more or less stable meanings are ascribed in advance, independently of the context. Being 'charged' with a definite significance they can become — as Fleck puts it — *interkollektives Verkehrsgut* (an inter-collective exchange good)<sup>7</sup>, although their value does change according to the associations they provoke in a given community. Anyway, their adaptation is more of an active than passive nature<sup>8</sup>. It is thus taking place not beside the cognitive process but inside it: it is its inseparable part and influences everything that is subsequently perceived. Fleck has drawn attention to yet another interesting, sociological aspect of the 'exchange of thoughts': the transformation of thoughts that are in circulation is as a rule somehow determined, although it remains uncontrolled from outside. But it seems that this bias must be ascribed not only to sociological influences in thought exchanges but also to the very nature of language.

In everyday life the same words are usually said in a variety of situations (contexts) which complete their meanings. Indeed the word as such functions entirely in the earthly dimension. The unique, un-recurring situations are its original element: without them the word will sound hollow. But as a name for a class of objects the word can live simultaneously within two dimensions: in the social one and in the world of variously understood meanings, that is to say in a single non-social standard situation which lends stability and generality to its meaning: a notion becomes in that shape the representative of all the objects (or cases) it does cover, becomes their pure content. Accordingly, particular objects become pure carriers of the objective properties ascribed to them. A common sentence, say, 'it is raining', when trans-

<sup>7</sup> The American translators of Fleck's book translate that phrase, in my opinion, not in accordance with Fleck's intention but very much so in the spirit of the day, as 'a special medium of intercollective communication' (p. 109). Indeed, word is for us today only a (physical) medium, an instrument of 'translocation' of pure information. However, something like *nastrój* (mood) does exist as well.

<sup>8</sup> According to the principle: what I am saying is always different from what I am thinking. And what has been understood is always different from what I have said, etc. L. Fleck: *Jak powstał odczyn Bordet-Wassermann'a i jak w ogóle powstaje odkrycie naukowe?* (*The Origin of the Bordet-Wassermann Reaction and About the Origin of a Scientific Discovery In General*), 'Polska Gazeta Lekarska' Vol. 10:1934, p. 181—182, 202—205. Cf. L. Fleck: *Genesis* [...] p. 42 (49).

ferred to a standard situation irrevocably becomes a purely predicative sentence. Yet when considered in the context it was expressed in it could as much state an objective state of things as convey the mood or disposition of the person saying it. So there is no definite meaning given in advance before the actual utterance. The reason for it is simple: we are first of all humans and only then subjects of knowledge. In order to help in acquiring knowledge words must therefore be adapted to that purpose. Then τὰ πράγματα will cease hampering us in our manoeuvres, they will lie open before us. And this is the task of logic. Hans Lipps (by the way, also physician by training) describes briefly and aptly that pragmatic aspect of logic: 'Logic fits the word into the efficiency of the Aussage (statement) in which it was expressed and made known. The word "signifies" something provided it can be exchanged for a thing (Sachliches). The term is a paradigm of the word, thus independent, being of course "responsible" for something and being able *ex definitione* to be "realized", the way a bill is redeemed [...] The systematic replacement (of words) by signs, as Leibniz wished to do it and as it has been achieved in the calculus of sentences, is only a further step along the same road'<sup>9</sup>. 'The school logic approached *logos* from the side which was the nearest to scientific business'<sup>10</sup>.

It is noteworthy that in describing logic Lipps is using expressions taken from the sphere of business ('exchange', 'draw a bill', 'redeem a bill') suggesting thereby probably that science is a sort of 'business' and that logic remains at its service. And yet there has been a commonly accepted view that at least formal sciences are neutral, unengaged, disinterested towards the empirically accessible world<sup>11</sup>. And even more than that, there are after all such statements as: 'Technology is in itself neither positive nor negative. Technology is a possibility of achieving results' (Adam Schaff). So there is neutrality and 'only' possibility. True, it would be senseless to say that technology is positive or negative, but this is due to the fact that it remains an inseparable and active element of contemporary culture, that it modifies man's activity and determines his attitude towards the world. Concrete technologies which are currently being worked out are proving a major contribution to our culture. So what about their immunity to being 'committed'?

<sup>9</sup> H. Lipps: *Untersuchungen zu einer hermeneutischen Logik*. Frankfurt am Main 1976, p. 73.

<sup>10</sup> *ibidem*, p. 52.

<sup>11</sup> Some logicians and philosophers, while writing about the laws of logic, use a sleep-inducing slang which excludes any external (e.g. historical) reflection on logic. For instance, A. J. Ayer writes in this way: 'Earlier on I said that what was logically possible was what was consistent with the laws of logic. It follows that the negation of a law of logic is logically impossible and consequently that the laws of logic themselves are logically necessary'. *The Central Questions of Philosophy*. London 1973, p. 184.

Just this question has been the subject of Fleck's penetrating considerations, based on an extensive factual material. Without going into details they can be interpreted, as far as this question is concerned, like this: the immanent purpose of each intellectual system is to achieve its logical consistency and universal validity at the cost — or rather by way — of 'a magic realization of ideas', that is to say be the realization of *petitio principii*. To put it otherwise: when one is perceiving, thinking and acting not according to the active elements of the 'thought style', but according to the sphere of passivity these elements cover, i.e. according to the reality that has been, both materially and intellectually, transformed in this way. In his introduction to his *Phänomenologie des Geistes* Hegel wrote: 'Das Resultat ist nur darum dasselbe, was der Anfang, weil der Anfang Zweck ist'. This Hegel's abstract idea about the beginning being the same as the aim can be effectively treated as the most general principle in the activity of culture. We may refer to objective reality, to nature, only because culture is so prevailing and ever-present in our lives (in those of primitive peoples as well). Indeed, science is only one — though most important today — of the ways people's social requirements are met at a given stage in the evolution of Western culture.

It would be naive to claim that present-day science has rid itself completely of the 'burden' of tradition and culture. But at the same time we must observe new phenomena and processes (e.g. autonomization of logical structures in science, unification of culture) which obscure the historical conditioning. The tendency towards objectivity has led to the situation in which the signs are dominating over the objects they denote. To put it in the terms of the semiotic culture: more importance is attached to the 'plane of expression' than to that of 'content'. This probably explains the state of the present-day science in which there is an over-production of notions: the process of absorbing and understanding numerous notions is distinctly slower than the process of their production, in spite of the fact that the exchange of thoughts is now much greater. To this situation are also conducive the theoretical models in science, so much in use now. And most of the notions, being currently introduced, have been formed far from (or independently of) the reality we perceive empirically. An articulation of the empirically accessive world is taking place in an universe of theory. And even when newly formed notions refer to intuition or to the notions already well known, they do acquire after all a new social status of knowledge being thus something more than notions in the classical sense. The common empirical world is no longer in them the object of knowledge and is replaced by an 'universe of discourse'. Nature is no longer described by means of a quasi-mechanical system of bodies, events and processes but by a formal structure which only occasionally, here and there, is inter-



preted in physical terms. Mathematics and logic are putting us now into a closer contact with nature. So we must not wonder that the 16th century anatomists — instead of carrying out dissections of corpses — preferred to browse in ancient views and assumptions: they did it the way we do now; they too thought that what they considered true was actually true. Contemporary science proves faithful to culture when it lays emphasis on method (priority of method over the object of cognition), objectivisation and depersonalization (formalization) of intellectual structures. If we forget about it then — as Fleck wrote ironically — we begin proclaiming the views reminiscent of 'the theory of a French philologist of the eighteenth century who claimed that *pain, sitos, bread, Brot, panis* were arbitrary, different descriptions of the same thing. The difference between French and other languages, according to this theory, consisted in the fact that what is called bread in French really was bread' <sup>12</sup>.

A language which would reflect reality in itself or describe something like its timeless essence is unthinkable as is also a specific human action without words, language (but not a production of sounds or of linguistic statements). Word has always been an instrument (and the most important one) in the activity of a definite culture, used by those who create and develop that culture. The 'logic' in the evolution of logic is that of the evolution of Western culture. When Heidegger said: 'Metasprache und Sputnik, Metalinguistik und Raketentechnik sind das Selbe' <sup>13</sup> it was just this he had in mind. Contemporary logic has to do with logos only to the extent contemporary cosmology has to do with what the Greeks used to describe by the word *κοσμος*. Logos and the world are two well-balanced variables of history. In the times when word was close to things an effective knowledge was impossible. Today, as we are moving away from 'naked' reality its resistance is getting less strong and the effectiveness of knowledge is growin — the world is changing as a result. Is that a paradox? No, it is more of an indication what a powerful and decisive tool for man is *logos*.

*Translated from the Polish by Ludwik Wiewiórkowski*

*Reviewer: Zdzisław Cackowski*

<sup>12</sup> L. Fleck: *Genesis* [...], p. 50 (57).

<sup>13</sup> M. Heidegger: *Unterwegs zur Sprache*. Pfullingen 1959, p. 160.