

## ZURÜCK ZU FLECK

*Dimitri Ginev*

Sofia University “St. Kl. Ohridski”, Sofia, Bulgaria

e-mail: dimiginev@abv.bg

### **Abstract:**

What Ludwik Fleck has really written about is the cognitive life of communities which constitute their worlds of specific entities. Fleck’s subject is intellectual history, but history seen as changing horizons of cognition projected by certain practices. His ideas have proliferated, so that some of them are attributable to the reception of his work in constructivist programs of cognitive sociology, historical epistemology, comparative historiography of science, and cultural studies of scientific research. Fleck’s philosophical assumptions cover a broad range. Some are responses to debates in which he was involved; others derive from his penchant to examine theories of knowledge in the interwar period through a historical and sociological lens; still others arose from his critical attitude toward those who interpreted science through their own narrow ideology, as well as the violence toward the academic ethos in National Socialism and Soviet Communism. The present paper tries to do justice to the major interpretations of Fleck’s work. It puts special emphasis on the kind of “trans-subjective hermeneutics” that is inherent in this work.

**Key words:** thought styles, constitution of scientific facts, trans-subjectivity.

In his book *The Problem of Style* (originally published in 1922), John M. Murry suggested an approach to the aesthetic concept of style that is still influential in literary criticism. According to Murry, style is a quality of the linguistic thinking which “communicates precisely emotions or thoughts, or a system of emotions or thoughts... Style is perfect when the communication is exactly accomplished; its position in the scale of absolute greatness, however, will depend on the comprehensiveness of the system of emotions and thoughts to which the reference is perceptible” (Murry 1960, 65). Fleck applied the same approach – albeit enriched with a peculiar transcendental flavor – to the cognitive styles of

scientific research ten years after the appearance of Murry’s book. By communicating “collective moods of cognition,” thought styles form communities in science. It is this idea that allows transcendental arguments to mediate between comparative sociology of scientific knowledge and social epistemology.

On the one hand, a thought style imposes restrictions concerning acceptable topics of research on the members of the (scientific) community. Fleck is inclined to define this concept by putting more emphasis upon its negative, inhibiting function. A thought style serves this function, however, not in a normative-epistemological manner. It constrains the thought collective’s research by integrating its members into a “mood of thought” (*Denkstimmung*) as a prerequisite for their “mental readiness” (*Denkgewohnheiten*) for producing knowledge and establishing scientific facts of a certain kind (Fleck 1986, 66). Thus considered, a thought style (starting from the stylization of observations) “makes possible” the directedness of the research process which takes place in the routine practices of a scientific community. Yet the reverse formulation is also valid: a thought collective (characterized by its inclination to stylize cognition) comes into being when researchers become immersed in practices whose routine performance is required because of a single-minded restriction on the choices or possibilities for research. (The immersion in practices warrants, as it were, the irreducibility of the communal subject to a set of individual knowing subjects.) Due to this symmetry between the trans-subjective profile of routinely interrelated scientific practices (their potential to create an irreducible communal subject) and the constraining mentality of thought collectives, these thought styles (as empirical entities manifested through the symmetry in question) allow one to compare them in several respects, thereby delineating the framework of a comparative cognitive sociology.

On the other hand, the historical evolution of thought styles in science provides the initial refer-

ence framework of developing social epistemology. The point here is that the stylization of scientific knowledge essentially informs the propagation, distribution, consumption, and legitimization of this knowledge. Fleck begins the transition from comparative cognitive sociology to social epistemology by making a distinction between esoteric and exoteric circles of the production of scientific knowledge. He argues that the members of an esoteric circle – who have been initiated into the secrets of a domain of research – are more or less dependent upon the opinion of the relevant exoteric circle. At the same time, Fleck observes that the circulation of insights within exoteric circles facilitates transmission of the outcome of scientific research into extra-academic circles of society, guided by “public opinion” and common sense. Thus, the question he addresses in this regard is how the circulation of insights (*Denkverkehr*) within various thought collectives becomes a circulation of knowledge in exoteric academic circles and non-academic circles of “educated laymen.”

Applying the concept of thought styles helps to answer this question. Fleck’s construal of the concept makes it akin to the later concept of application in Gadamer’s philosophical hermeneutics. In both cases, application cannot be separated from the constraining interpretation. Imposing constraints interpretatively on cognition (and inquiry) is a continuation of the “communal perception” that constitutes and stabilizes scientific facts and objects of inquiry. Through “the harmony between application and thought style,” thought orientations, cognitive habits, and attitudes towards other styles are put into play. A thought style never exists in itself, outside its possible range of application. Phrased differently, a thought style has no being except within interrelated practices which are entitled to appropriate possibilities of doing research. It is the practical being of a thought style that requires differentiating between a small esoteric and a larger exoteric circle of a thought collective (Fleck 1979, 104-105). The line of demarcation between the two types of circles is defined by the change of regimes of stylization due to the different application of constraints, norms, standards, etc. This change takes place when contextually produced scientific knowledge starts to take shape as a homogenized whole in specialized handbooks. If such knowledge was not read in exoteric circles, homogenization would be impossible. Moreover, scientific knowledge has to be read by the non-initiated in order to become a social force. The exo-

teric re-interpretation of esoterically-produced knowledge implies an inflection in its stylization: the esoteric circle’s knowledge becomes re-stylized by the thought styles of various non-initiated thought collectives.

Notoriously, Fleck treats the question about the circulation of cognition by mapping the distinction between esoteric and exoteric circles to his fourfold differentiation between “journal science,” “vademecum science,” “textbook science,” and “popular science.” At issue in the socio-epistemological context is the transmission and migration of scientific knowledge from a journal to a textbook, and further, from being a possession of experts to being distributed to a wide range of non-initiated academics and educated laymen. During this process scientific knowledge becomes not only de-contextualized and re-contextualized, but also *de-stylized* and *re-stylized* as it is being read by experts with different thought styles and by laymen who represent the “public opinion.” The crucial stage in the migration (and re-stylization) of scientific knowledge is its popularization, at which point laymen communicate their “specific epistemological confidence” to the experts, who find themselves unable to control the “spin” (Fleck 1986, 86). Popularization is inevitably intertwined with a politicization of scientific knowledge. Once the popularized knowledge has begun to circulate in the public sphere, it is doomed to be amenable to political application. The public use of scientific knowledge is always a political use that involves various forms of legitimating the practical adequacy of knowledge. “Legitimation” here refers to the re-stylization of scientific knowledge in order to meet the expectations of its potential consumers.

Fleck is interested most of all in the stylized forms of knowledge that become constituted in his four types of science. Textbook science constitutes knowledge that is necessary for didactic initiation into science. By creating “artificial simplifications,” popular science is instrumental not only in the ways in which laymen assimilate scientific knowledge, thereby furnishing the contemporary worldviews – it also supplies the specialized experts with conceptual figures, possible comparisons, and “even general viewpoints” (Fleck 1979, 112). In addition, popular science is the place where the conventional formulations of epistemological standards and norms originate. In *Genesis and Development of a Scientific Fact*, Fleck tries to specify the conditions under which “specialized esoteric knowledge” gets trans-

formed into “popular exoteric knowledge.” Yet he predominantly examines the specialized forms. Expert scientific knowledge – so his argument goes – is constituted by the mutual reinforcement of journal science and handbook science. The former (though constrained by a collective thought style) is still distinguished by idiosyncrasies of the individual researchers. It also preserves indications of the particular contexts in which scientific knowledge has been produced. Journal science cannot be presented as an organic whole freed from contradictory and incongruent fragments. It is impossible to produce a handbook by compiling scientific papers that have appeared in specialized journals. The formation of a standard handbook becomes possible through the circulation of knowledge within the esoteric circle, combined with regulation of feedback from the exoteric circle. As a result of this regulated circulation, non-additive scientific reports become standardized as additive, impersonal portions of an organic whole. Handbook scientific knowledge takes the form of a “critical synopsis in an organized system” (Fleck 1979, 118). The “death of the individual author/scientist” occurs in vademecum (handbook) science. It is the strongly anonymous character of this type of science that erases not only any personal style of research, but makes possible the trans-subjective voice of scientific authority, thereby transforming science into a social force. To sum up, Fleck identifies the conditions for the possibility of impersonal (and additive as an organized system) scientific knowledge as the cooperation of intra- and inter-collective interpretation/communication of stylized (but still non-additive) fragments of knowledge.

Against the background of the general orientation of Fleck’s doctrines thus described, I should like to turn now to issues of the significance of his work in present contexts. Initial reception of his work was not only a failure due to deficiencies of interpretation, but also because of the politically inappropriate context in which the work was placed, a far greater disaster in reception than any of the individual misinterpretations. In other words, the initial reception was predicated not so much on a misunderstanding, but first and foremost on an incorrect contextualization. Fleck was praised by reviewers for his efforts to develop a relativist epistemology of science that joins the “new German style of thought” (an expression coined by a reviewer) which denies the objectivist-absolutist claim for the allegedly presuppositionless character of scientific research. Some of the

reviewers went on to appeal to the integration of “racial factors” in Fleck’s scenarios of the origin of thought styles. Thus “enriched,” the ideas from *Genesis and Development of Scientific Fact* would have become completely relevant to the task of working out a theory of knowledge for National Socialism. In fact, however, Fleck’s book “offers a critique of science under National Socialism which goes beyond an evaluation by moral standards” (Borck 2004, 455). The positive reviews of the book in German medical journals of 1936, inspired partially by Nazi and racist ideology, testify to the veracity of the hermeneutic observation that temporal distance in the process of reception is *sine qua non* for a contextualization that would not distort the received work. The temporal distance between the book’s original publication and its reissue in 1979 helped to place it in appropriate contexts.

Doubtless Fleck had no illusion that the initial reception of his work placed it in the wrong context. He recognized the political misinterpretation of his ideas as early as in his debate with Tadeusz Bilikiewicz. In this debate on science’s situatedness in cultural milieus and the concept of thought styles, Fleck used the opportunity to respond indirectly to positive reviews which had given the impression of a suspicious intimacy between Fleck’s anti-objectivist and anti-essentialist approach to scientific research and the relativist denial of science’s culturally unconditioned character, as this denial had been supported by those who looked for a “transformation” of the scientific worldview in line with Nazi ideology. In making the case that the unavoidable stylization of scientific research is by no means a precondition for political ideologization of science, Fleck countered the positive reception of his ideas. The need to prevent political distortion of the research process is a central motif in Fleck’s rejoinder to Bilikiewicz. The unfolding of this motif provides the best way of undoing ideological misinterpretations that have been brought about by the dominant *Zeitgeist*.

In countering (and ridiculing) both types of “demagogical-mythical” doctrines in the midst of the 1930s – the programs of “proletarian science” as subjected to the goals of planned economics, and the ideas of scientific theories in which the “spirit of a race” gets embodied – Fleck argued that the dependence of scientific cognition on cultural-historical milieus is to be sought in the ongoing configuration of *Gestaltsehen* and the use of rhetorical figures in linguistic descriptions of phenomena (Fleck 2011,

329-331). No doubt selective perception, combined with symbolization and metaphorization of phenomena, transmits cultural values and tendencies which influence the research done by thought collectives. Once established within scientific communities, however, thought styles inform and shape entirely the research's cognitive values and orientations, as well as the regimes of constituting facts and objects of inquiry within scientific practices. The whole process of research runs within what Fleck calls the "collective mood of cognition" (*kollektive Erkenntnisstimmung*). Being implicated in practices that are entangled with this mood in complex ways, a thought collective is critical towards accepting aims and values that are imposed externally and are not inaugurated by the community's thought style. Thus, a thought style armors a scientific community with resources for resisting external ideological and political manipulations. Defending the freedom of doing research (i.e. defending the traditional academic ethos within a non-traditional epistemological framework) was Fleck's only possible response to the initial misinterpretation of his work.

Interestingly enough, Fleck's ideas became (upon their rediscovery) highly instrumental in critical studies of the bio-political ideology and policies of the Nazi regime. Thus, for instance, by complementing Fleck's concept of thought style with a concept of work style, Jean-Paul Gaudillière (2004) shows how symbiosis of racial hygiene occurred during this regime, thereby providing a discourse of justifications for natalist and racial policies. Another example in this regard is Veronika Lipphardt's (2005) Fleckian reconstruction of the roots of Nazi racial policies in the racial studies during the time of Weimar Republic. Generally, Fleck's conception proves to be especially relevant to the studies on the changing styles of thought during the so-called "molecularization of the human body" which took place in the first three decades of the last century.<sup>1</sup>

<sup>1</sup> The phenomenon of the "molecularization of the human body" is especially interesting with respect to the formation of thought styles within the biomedical sciences that have responded to the cultural-theoretical sex-gender distinction. It was the endeavor not to reproduce the traditional division between the social sciences and the biomedical sciences through this distinction that promulgated the new thought styles. Thus, Nelly Oudshoorn (1994, 2), a brilliant exponent of such a style, brought forward the argument that "the sex-gender distinction did not challenge the notion of a natural body. Although the concept of gender was developed to contest the naturalization of

Since this molecularization has been used for devising new eugenics policies in which an amalgam of politically and scientifically motivated thought styles has been put into play, the case studies which make use of Fleck's ideas demonstrate the critical relevance of his work. These studies adopt his concept of thought style in a peculiar way. They put emphasis upon the double status of thought styles that at once promote and are promoted by the molecularization of the human body. Because of the resilience of these styles, the transition from theoretical science to eugenics policies was accomplished quite easily, especially in Nazi Germany.<sup>2</sup>

Fleck's path as a theorist of thought styles can be most generally summarized as a search for a socio-epistemological alternative to "the fictitious 'human mind' as an ahistorical and asocial representative of the minds of human beings" (Fleck 1986, 80). The limits of co-understanding, the types of misunderstanding, and the ways of reaching agreement in spite of mutual non-understanding are among the themes Fleck handles on various occasions. By treating the coexistence of "physical meaning" and "figurative meaning" in a thought-style (Fleck 1986, 91), he approaches a problem that will occupy a central place in post-war philosophical hermeneutics. His close attention to the use of metaphors in scientific thinking should be mentioned here as well. The way in which Fleck spells out the

femininity, the opposite has happened." Not by accident Oudshoorn (1994, 11-13) draws on Fleck's work in exposing the myth of the natural body. Her study of the cultural constitution of the natural body is essentially inspired by the search for those proto-ideas, which play a crucial role in shaping the endocrinological theories about the "hormonal male and female bodies."

<sup>2</sup> The reception of Fleck's work in the historiography of medicine contributed essentially to the reorientation of the traditional history of medical ideas towards a history of medical entities. Fleck analyzed the cultural history of syphilis in accordance with changing thought styles. The investigation of how diseases have been historically experienced by various human populations belongs to the thematic scope of what today is called "medical anthropology" as a branch of historical anthropology. Medical anthropology deals, in particular, with important re-descriptions of whole types of diseases (e.g. the re-description of metabolic diseases as dependent on nutrition in endocrinological diseases which occurred in the first three decades of the 20<sup>th</sup> century). The re-descriptions took place not only because alternative etiologies have been discovered, but first and foremost because a new vision of the human body's essence has been established (see, in particular, Sinding 2004).

distinction between esoteric and exoteric thought collectives makes this distinction a hermeneutic issue. A further case in point for a hermeneutic topic is his discussion of the phenomena of propaganda, popularization, and legitimization (Fleck 1979, 85–88). His point of departure in this discussion is the assumption that “thought products” (*Gedankengebilde*) change their meanings in the the course of the repetitive interpretations they receive during social circulation, whereby the new content they acquire is produced not by individual acts, but “originates *a motu sociali*.”<sup>3</sup>

Notoriously, Thomas Kuhn admits that Fleck’s epistemology implies a transcendental subject hidden in each thought collective which is instrumental in each thought style. However, a Kantian interpretation of Fleck’s epistemology would be only possible if one admits that there is an invariant kernel of rules inherent in each particular kind of styled thinking. Fleck strongly repudiates this idea, and there is no room for constitutive apriorism in his epistemology. Thought styles are predicated on a cultural genesis, and they are constantly exposed to contextually conditioned changes. Nonetheless, the spirit of searching for conditions of possibilities is palpable in all of Fleck’s writings. Though his program is not to be recast in terms of Kantian epistemology, it is essentially characterized by a transcendental dimension.

It would be justified to say that Fleck attributes this dimension first and foremost to the thought styles in their flexibility and plasticity. In other words, one can assume that the thought styles are characterized by something like Foucault’s “historical a priori” (the historical conditions of operation of the “enunciative function” and corresponding to “positivity of a discourse”). Indeed, Fleck stresses the strong individuality of each style as providing a specific standard for singling out the problems that deserve attention, and precludes one from appealing to a universal “unity of apperception.” The transcendental for him is by no means a common denominator of all styles. Yet, like Foucault’s approach to the “positivity of a discourse,” Fleck regards a thought style as providing a limited space of communication in which entities of a special kind get articulated.<sup>4</sup> A

<sup>3</sup> A special topic in Fleck’s program is the hermeneutics of epistemic uncertainty and that of errors in scientific research. Fleck’s “harmony of illusions” is another hermeneutic topic that should be mentioned.

<sup>4</sup> Foucault’s (1972, 126) definition of the “positivity of a discourse” bears a strong resemblance to Fleck’s historical totality of a thought style. The positivity of a discourse

thought style’s constraints make possible this articulation that refers at once to the discursive knowledge and the objects of this knowledge. Finally, like Foucault’s historical a priori of the positivity of a discourse, the thought style’s constraints function as a “transformable group.” Yet one should not push the analogy with Foucault too far. Fleck is not after the archaeology of thought styles, and he would not have considered a thought style (even the most global one) as epochal episteme. He does not look for the transcendental dimension in the intrinsic structure of the styles; what he is interested in is the way in which a thought style situates a thought collective in history in a manner that allows the collective to continually transcend each particular situation of cognition and knowledge production.

Fleck’s concept of the transcendental is to be related to the situated transcendence of thought collectives’ cognition and the trans-subjective character of their sociality.<sup>5</sup> Interestingly enough, the emphasis on social cognition in his approach to science avoids any hypostatization of thought collectives’ mentality (and its normative structures) and again appeals to what constantly transcends the allegedly rigid structures of mentality. The formula of this approach is a “relativization of cognition without relativism,” but not in the same sense in which the contemporary “standpoint epistemologies” make use of this formula. On another reading of this concept, the thought-style simultaneously reveals and conceals

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defines a “relatively small space of communication, since it is far from possessing the breadth of a science with all its historical development, from its most distant origin to its present stage; but a more extensive space than the play of influences that have operated from one author to another, or than the domain of explicit polemics.”

<sup>5</sup> For Fleck (1979, 38), cognition is not “an individual process of any theoretical particular consciousness” but a product of a social activity “since the existing stock of knowledge exceeds/transcends the range available to any one individual.” Yet this does not imply that cognition is produced by inter-subjective relations. Fleck focuses on sociality that transcends the individuality, including that of the epistemic subject. The way of transcending the normative-objective position of the epistemic subject in the process of cognition is another connotation of the concept of transcendence. Fleck’s radicalization of cognitive sociology is based precisely on the universality of situated transcendence. As the pioneers of *Wissenssoziologie* assumed, with regard to science’s objectivism there is no privileged epistemic position that can escape situated transcendence.

possibilities for doing research. This is why it has the character of a horizon.

Fleck's epistemology admits a kind of sociality in scientific research that "exceeds" the actual inter-subjectivity understood as continuous cooperation and mutual interaction among the members of a thought collective. This sociality allows the collective's members to achieve communal experience and the perfection of practices in "communal anonymity" (Fleck 1979, 78). I call it a *trans-subjective sociality*, defining it as the tendency to form thought collectives by appropriating possibilities revealed by a thought style's horizon. (Fleck admits that in most cases the very appropriation is guided by vaguely formulated and opportunistically changeable rules.)

Trans-subjective sociality is always in a certain mood of thinking. The mood is the readiness to follow the style's tendency and choosing and appropriating possibilities in the interpretative constitution of scientific facts. A certain social mood (*Stimmung als soziales Phänomen*) always accompanies each particular thought style. It contributes essentially – so Fleck's argument goes – to the reflexive integration (undertaken by a thought collective) of the thought style in an established intellectual tradition. On his account, the "collective mood" is the force which maintains the community and unites its members. Like trans-subjective sociality, this force "embraces" the community's whole cognitive life, and is not generated by the intrinsic dynamics of social relations within the collective. Changes in the collective mood provoke shifts in the possibilities of doing research. The force of this mood works on a par with the situated transcendence of the thought collective's existence. Fleck (1986, 88) writes that when "transferred to another collective, the idea undergoes various vicissitudes." What is most important to him is not the change of meaning but the loss of the original mood's aura. At stake here is the issue of the collective emotional readiness to re-interpret an idea or a scientific result that is already interpretatively shaped by the community which created it. Furthermore, this readiness is a necessary state of mind for interpretative reception in the communication between thought collectives.

The unity of the horizon-like thought styles and the trans-subjective sociality of thought collectives provides a rationale for introducing the concept of *trans-subjectivity*. Like the hermeneutic approach, this concept is omnipresent, but remains implicit in Fleck's work. Yet it brings together all of the basic

features of his historic-epistemological and comparative cognitive-sociological program.

It might tentatively be said that the concept of trans-subjectivity involves the aforementioned transcendental dimension. The analysis of this dimension requires that one acknowledge the fact that the formation of trans-subjective sociality is inextricably tied up with the appropriation of possibilities for observing phenomena, seeing patterns, carrying out and repeating experiments, formalizing, conceptualizing, and theorizing. The thought style constrains this appropriation by specifying the range of possibilities that can be chosen, thereby necessarily hiding some possibilities from the thought collective. Yet the horizon of possibilities is constantly open, and accordingly always transcends the present situation of doing research. The transcendental function of the horizon of a thought style comes to the fore in the first place as an elusive standard for determining the relevant problems in a thought collective's cognitive life. I make use of the word "elusive" since the thought style indicates what should be qualified as illusory problems (*Scheinprobleme*), but it cannot draw a firm line between these problems and the genuine ones (exemplified by the line which Carnap draws between questions which are either internal and external to a linguistic framework).<sup>6</sup>

The place in Fleck's writings where the distinction between inter- and trans-subjectivity is perhaps most clearly palpable is in the paper "The Problem of Epistemology." In introducing the distinction between momentary and stable thought collectives, Fleck observes that the stability of the latter is due to their interactive social structure. Furthermore, it is the structured inter-subjectivity (including institutionalized statuses and roles) that enables the initiation rituals of neophytes, their education (and indoctrination) in the collective's thought style, and the transmission of this style from one generation to another (Fleck 1986, 99). Yet this picture of the inter-subjective sociality of a thought collective solely concerns the regulative aspect of the thought style (i.e. the style as a system of rules). But the style serves a heuristically normative function in the cognitive life of a thought collective by being bound up with a tradition, prejudices, "proto-ideas," moods, and beliefs.<sup>7</sup> All of these phenomena (to-

<sup>6</sup> To a great extent, Fleck's criticism of strong demarcation here anticipates Quine's criticism of Carnap.

<sup>7</sup> The thought-style's percepts determine the direction of research (the tendency of choosing research possibilities) and "connect it with a specific tradition" (Fleck 1979, 64).

gether with trans-subjective sociality and the horizon-like character of styled thing) together create the trans-subjectivity of cognition and knowledge production.

Fleck's debate with Izydora Dambaska sheds additional light on the implicit distinction between inter- and trans-subjectivity in his epistemology. I would not say that this debate exemplifies a controversy between the position of normative (or in Dambaska's case, "naturalist") inter-subjectivity and that of hermeneutic trans-subjectivity. My claim is rather that the position Fleck takes in this debate clarifies the concept of trans-subjectivity which he tacitly appeals to. According to Dambaska, there is a biological (perhaps phylogenetic) basis of intersubjectivity. Due to this basis there is a set of elementary, intersubjectively shared, empirical propositions. They express the "naturally appropriate mode of human beings' ways of reacting to the surrounding world." Dambaska (2011, 315-17) contrasts this view with two kinds of conventionalism which she ascribes to Poincaré and Popper on the one hand, and with Fleck's claim that all cognitive processes (including those of elementary perception) are specified by thought-styles on the other. Natural science does not need – so her argument goes – a special philosophical argumentation and justification for its inter-subjectivity (the inter-subjective validity of its

results), since the latter is a continuation of something that is inherent in *conditio humana*.<sup>8</sup>

On Fleck's (2011, 320) counterargument, "a common basis of empirical propositions is only to be achieved/constructed by instructing and teaching people." In other words, such a basis does not precede the diversity of thought-styles. It is rather created by forging a common thought-style. A corollary of this view is that commonsense experience and its formulation in empirical propositions is by no means free of the constraints of style. It is not in agreement with the styled technical experience of a certain scientific discipline. "The 'acting people' (*die Tatmenschen*) see the world in a different manner as compared with the scientific seeing of it." (Fleck 2011, 321) However, Fleck does not dispute the translatability and communicability even between the most distant and conceptually incommensurable thought styles within science. Indeed, he never explained how this translatability/communicability is to be addressed. But his considerations make it clear that the unity of a thought collective and a thought style never forms an enclosed world. The translatability draws on an open and common horizon of possibilities. Trans-subjectivity rests on the open horizon-like character that transcends each particular thought-style. It is this translatability that paves the path to a *comparative* cognitive sociology of thought styles.

The way in which the horizon transcends each situation of a thought collective's cognitive articulation of facts allows one at once to reveal possibilities and constrain the choice and appropriation of possibilities. To reiterate, it is in this way in which the horizon serves a transcendental function. Because of its horizon-like character, the thought style never gets a closed structure with respect to the codex of its constraining rules. Accordingly, cognition guided by a thought style is at any stage of its development open to appropriate new possibilities of visualizing, experimenting, designing and making use of instruments, modeling, conceptualizing, etc. The horizon in its constant transcendence of the present situation "makes possible" the potential infinity of cognition guided by a thought style (and the potential infinity of the constitution of meaningful facts within the collective's "whole cognitive life"). Note also that this is the argument for the claim that a thought style

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The tendency (the "direction of research") is the intertwined revealing and concealing of possibilities. Fleck argues that the formation of a styled tendency of research implies the integration of the thought collective in a tradition. A thought style cannot operate without being embedded in a tradition. The change of a thought style in a domain of research necessarily entails a break with a tradition. Trans-subjectivity is the thought-style as embedded in a specific tradition. Thus characterized, it forms (through constraining possibilities) an appropriate sociality that takes the form of a thought-collective – "the entirety of intellectual preparedness or readiness for one particular way seeing and acting and no other" (Fleck 1979, 64). Tradition is not something from which those who are involved in it can create epistemic distance, thereby transforming it into a pure objective presence. All objectification takes place in a tradition understood as the place where the situated transcendence becomes the effective history of constitutive interpretations. The tradition is what gets handed down as interpretative resources for the constitution of scientific entities. Among these are culturally inherited forms of *Gestaltsehen*, proto-ideas, prejudices, and established beliefs.

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<sup>8</sup> Erich Otto Graf (2008) draws attention to the abstraction of "normal man" (whose normality is already there before any indoctrination in a certain thought style) which is behind Dambaska's line of argumentation.

through its transcendence serves a transcendental function. Now, the reconstruction of Fleck's concept of thought style carried out so far is in need of a broader contextualization. As an initial step in this regard I will take into consideration his non-epistemological (hermeneutic) concept of truth.

A clearer idea of how Fleck assigns a horizon-like character to thought-styles should illuminate his approach to the "event of truth." In *Genesis and Development of a Scientific Fact*, the emergence of this event is described as the outcome of two intertwined processes. On the one hand, this is the process of introducing effective rules for the selection of the best solution among a plurality of alternative solutions to a problem (or, the process of "maximizing thought constraint"). On the other hand, the event of truth is conditioned by the process of minimizing the range of possible interpretations of what is under inquiry. This second process also shows the way in which a scientific fact becomes constituted by a thought collective. The fact comes to the fore originally as "a stylized signal of resistance" sent to investigatory cognition. This resistance is the most extreme point in the correlation of maximizing of thought constraint and minimizing the range of interpretation. Furthermore, it is a resistance that takes place in the horizon enacted by a thought style. The theoretical formulation of a fact (in a domain of research) which reflects the styled signal of resistance (recast in terms of the epistemic conditions of fact's existence) is truth.

Truth as a style-dependent event is "an event in the history of thought" because it reveals something that is projected on a historical horizon. Put differently, truth is the socio-historically stabilized being of a fact. Finally, truth is the way in which the fact gets revealed, and thus meaningfully constituted. The fact is revealed because the horizon conceals possible "alternative facts" (or, possibilities of constituting such facts) that might be revealed by other thought styles and thought collectives. Furthermore, Fleck (1979, 100) argues that truth is the only "stylized solution" of a problem formulated by a given thought collective. The truth-about-a-fact is the extreme minimizing of a horizon's possibilities, thereby reducing them to only one, which is presented as the final solution. (It is another question whether the actualization of this sole possibility would open more leeway for possible interpretations of that fact. A scientific fact is never statically given, and the truth about it never becomes a pure presence at hand.)

Fleck's concept of "creative human truth" is not epistemological at all. Truth takes place in the "cognitive life of a thought collective" as a result of the interplay of revealing and concealing, and the way that this interplay is regulated by confronting the resistance. Thus considered, truth is an "event in the history of thought," and not a dynamic relation between an epistemic position and reality out there (as this relation gets devised by the proponents of "standpoint epistemologies"). Therefore, truth has nothing to do with the relativization of a cognitive product to the circumstances and conditions under which it is created. Indeed, Fleck insists that his concept of truth is a sociological one. However, the concept has such a character because it is bound up with the idea of trans-subjective sociality, and not because truth is socially constructed as events in the history of thought.<sup>9</sup>

Fleck's epistemology owes its potentiality to relativize (or, to situate historically and culturally) science's cognitive outcomes (without admitting cognitive relativism) to its interpretative resilience, and not to the appeal to chimerical entities like "dynamic truth" and "dynamic objectivity."<sup>10</sup> This resilience, insofar as it is bound up with the figure of situated transcendence, brings to naught any reading of Fleck's concept of thought style according to the

<sup>9</sup> In trying to answer the question of how it is possible that Fleck at once proposes a relativist interpretation of truth and denies that truth is relative, M. Seidel (2011, 224) reaches the conclusion that "Mannheim's description of his purported relationist solution is not just similar to, but in its basic idea nearly the same as Fleck's treatment of the issue." On my reading, there is a difference between the programs of Mannheim and Fleck that has to be conceived as a matter of principle: Mannheim tries to overcome cognitive relativism by means of epistemic relativization, whereas Fleck develops his argument against relativism by referring to the figure of situated transcendence.

<sup>10</sup> It seems to me that Fleck was fully aware of the meaninglessness of the concept of dynamic truth developed in the framework of a dynamic-relationist epistemology. (The latter was originally defended by Mannheim, and today it is represented by adherents of "standpoint epistemologies"). Being in touch with the great logicians of the Lvov-Warsaw school (or at least with Leon Chwistek), Fleck had to have known that the "relativization" in question by no means changes the semantic definition of truth, or (in case of coherentist theory of truth) its syntactic characterization. This is why he has never sought an epistemological-logical alternative to the concept of truth as established in the versions of traditional epistemology.

terms of a structural code. A thought style (qua a tendency of appropriating possibilities in which “creative truth” gets brought into being) is not amenable to a logical reconstruction just because of its plasticity as a horizon of thinking. By analyzing Fleck’s debate with Tadeusz Bilikiewicz, who has been strongly influenced by the art-historical and cultural-historical concept of style, Claus Zittel (2012) convincingly points out that Fleck does not borrow Wölfflin’s morphological concept of style as a general characteristic of an epoch in the history of art. Rather, he develops a dynamic concept of style that distinguishes the working everydayness of a thought collective as consisting of routinely repeatable and contextually circumscribed practices.<sup>11</sup> Fleck’s ways of introducing and unfolding the concept have nothing to do with the search for the cognitive structures which ground worldviews. The style-constraint everydayness of a thought collective engaged with scientific research discloses the social micro-world of a domain of scientific research. Just because of its dynamic nature, Fleck’s thought styles are not codified. It would be wrong to think of a thought style as a diversity of cognitive operations that is fixed with regard to some (invariant) group of rules.<sup>12</sup> To sum up, the distinction between the morphological concept and Fleck’s concept of style is to be highlighted in terms of an opposition between cognition based on a formally invariant group of rules and cognition that constitutes meaningful (for a thought collective) facts by restricting maximally its horizon of interpretative possibilities.

Fleck’s picture of science’s historical dynamics is essentially informed by the implicit hermeneutics of trans-subjectivity. The rejection of the idea that history of science is characterized by an increase and an accumulation of scientific knowledge (measured by elaborated criteria for a cognitive progress) should not be disentangled from the potential infinity of thought styles’ horizons. The history of science in general and of each particular scientific domain does not consist in a diversity of enclosed thought worlds (Rheinberger 2002). Being predi-

cated on constant breaks, ruptures of the “direction of research,” and shifts in the horizon of collective research work, the history of science does not give leeway to unsurmountable semantic barriers between thought styles, regardless of how deep their differences are. (This is the argument against historical relativism, which is again based on the figure of situated transcendence.)

From a global historical viewpoint, the situated transcendence of cognition and knowledge production must be extended from the transcendence of particular situations in research guided by a thought style to a transcendence of whole thought styles when a radically new direction of research (characterized by its own tendency of appropriating research possibilities) takes place. Notoriously, Fleck anticipated all the significant ideas of Kuhn’s conception, with the exception of the idea of scientific revolutions as being predicated on a *Gestalt*-switch and provoking semantic incommensurability between pre- and post-revolutionary thought worlds. In Fleck’s socio-historical epistemology, such revolutions are most definitely excluded. More specifically, he excludes syntactic and/or semantic incommensurability between thought styles.<sup>13</sup> However minimal it may be, there is always a shared horizon of understanding between two allegedly incommen-

<sup>11</sup> The debate with Bilikiewicz testifies to the plasticity of Fleck’s concept of thought style. At the same time, however, the misinterpretation of this plasticity provoked a strange and unexpected political reception of Fleck’s book in Germany. See Borck (2004).

<sup>12</sup> Fleck’s dynamic concept of thought style invites further hermeneutic and phenomenological considerations. Patrick Heelan (1986) made an interesting use of this opportunity.

<sup>13</sup> From the viewpoint of epistemological relationism, this claim is untenable. Claus Zittel (2007) assumes that Fleck surmounts semantic incommensurability by conceding the possibility for a meta-position with respect to the conflicting positions in the history of science. It is comparative sociology that allegedly ought to contribute to the achievement of this meta-position. This assumption, however, is in conflict with Fleck’s intentions. I also cannot accept Markus Seidel’s (2012, 231-34) proposal that relates Fleck’s overcoming of incommensurability and his anti-relativism to a kind of synthesis of thought styles achieved through David Bloor’s principle of reflexivity. Fleck writes: “Scientists, philologists, theologians, or cabbalists can perfectly communicate with each other within the limits of their collectives, but the communication between a physicist and a philologist is difficult, between a physicist and a theologian very difficult, and between a physicist and a cabbalist or mystic impossible” (Fleck 1986, 81). In fact, he distinguishes between different degrees of shared horizons in the communication between thought collectives. He admits that a scientist and a non-scientist (cabbalist in this case) can fail to communicate to each other. But the communication (and the translatability of cognitive results) between communities in science is always possible due to the transcendence of the normatively styled situatedness of each community.

surable scientific thought styles. The transcendence of a whole thought style in the history of science results in the style's horizon becoming fused with other horizons. Consequently, the thought style as constraining rules may cease to exist, but the "rest of the style" in the form of possibilities that the style's horizon has revealed remain: these possibilities are re-inscribed in other styles' horizons. The remains of such lost thought styles provide proto-ideas about possible facts and entities. Proto-ideas constantly migrate into living thought styles, thereby opening other avenues for an inter-collective dialogue.

The concept of trans-subjectivity brings into play a specific type of historicity as well. Fleck's view of science's historicity and historical temporality follows from his way of overcoming epistemic and historical relativism. From his analysis of situated transcendence he draws several conclusions about the historical temporality of the "genesis and development" of scientific facts. A scientific fact (and more generally, a scientific object of inquiry) is not only "in history." Fleck lays a stronger claim: a scientific fact is intrinsically historicized, i.e. it is distinguished by its own temporality. The way in which a thought-collective constitutes a scientific fact through its thought-style brings into play the temporal regime of the scientific fact's existence. The thought-style ascribes to the constituted fact a relevant past, a procedural present identification, and a range (though extremely minimized) of future possibilities of its further interpretation, whose appropriation and actualization might change it. Recasting or re-describing this fact in a new thought-style also implies a total re-structuring of its intrinsic temporality. Fleck's epistemology is preoccupied with the temporal regimes of the constitution of scientific facts. Regarding the general idea for such a regime, the "invention" of a scientific fact proceeds to its own future of open possibilities, whose appropriation envisions past trajectories whereby the unity of future possibilities and past trajectories makes the fact present. It is not the quasi-Hegelian, unitary and eschatological historicity that makes Fleck's epistemology a historically-oriented enterprise. There is no immanent logic of science's historical development. The historicity of science consists rather in deferring regimes of temporalization of scientific facts. The transitions from one regime to another do not form a teleological process. Yet in contrast to historical relativism, Fleck does not repudiate such transitions.

The distinction between inter- and trans-subjectivity as discussed so far implies an opposition between (social) construction and (hermeneutic) constitution which is at the bottom of the divergence between social constructivism and philosophical hermeneutics. There are several arguments against the widely accepted view that Fleck is a forerunner of contemporary social constructivism in science studies. According to the most decisive among them, Fleckian epistemology is unavoidably a transcendental enterprise, whereas social constructivism in all of its versions is a radically empirical program. To be sure, Fleck does not ignore the importance of the social-cognitive processes of construction, a fact documented by the attention he often pays to intra- and inter-collective communication and interaction.<sup>14</sup> Nonetheless, his main concern is the meaningful constitution of scientific facts and the meaningful articulation of domains of inquiry. He analyzes the processes of cognitive construction as processes taking place in a domain that is *trans-subjectively disclosed*, with its meaningful constitution and articulation already in progress. According to his transcendental position, cognitive construction in science becomes possible only when a domain of research is disclosed and a horizon of articulation of scientific facts and entities is established. The thought style's horizon lays bare what in the subsequent research process will be meaningfully articulated as a disclosed domain of inquiry. The very disclosure determines a tendency to articulate facts and entities whose stabilization through heuristic rules becomes the thought style's regulative function.

To sum up, within a reality that is constantly evolving, scientific achievements prove to be inescapably inventions. Yet a scientific fact is an artifact, not because it is a social construction, but because it is meaningfully constituted in various contexts and (to make use of Hans-Jörg Rheinberger's expression) "spaces of representation." The argument for this claim can be seen by analyzing Fleck's criticism of logical empiricism: the formulation of "protocol-sentences" about pure facts is impossible, because facts cannot be isolated from the horizons in which they are revealed. Since each disciplinary thought style constitutes its own factuality and empirical basis within its own horizon, the search for a "united science" that presupposes the absolute presence of independent factuality is untenable. How-

<sup>14</sup> See Hacking (2009).

ever, this claim does not contradict the fusibility of different styles' horizons as discussed previously.

Fleck carefully avoids any hypostatization of normative structures (related either to the social production of knowledge, or to the internal methodology of inquiry) in epistemology. To this effect, he regards the factual articulation of a scientific domain as regulated by a kind of heuristic normativity. The latter is an intrinsic phenomenon in the interplay of horizontal understanding and articulating interpretation. Heuristic normativity also plays a significant role in his approach to science's cognitive autonomy and other political issues concerning academic freedom. The debate with Tadeusz Bilikiewicz illuminates Fleck's vision of heuristic normativity.<sup>15</sup> For Bilikiewicz (2011, 350-51), it is in principle possible to devise a methodological normativity that can guarantee the cognitive independence of scientific research. Yet he acknowledges the difficulties in coping with this task. Fleck for his part supports the thesis that the rigor of a methodological codex cannot assure the autonomy and freedom of research, but aids in the successful transformation of a milieu's impact into a heuristic strategy of reformulating the socio-pragmatic tasks intruding from outside. Accordingly, these tasks will become "inscribed" in the thought style's intrinsic horizon as research possibilities. The very reformulation may cause shifts in research topics, but it prevents the thought collective from succumbing to external-political manipulation. This is a strategy for incorporating a milieu's impact without distorting the research process as it is designed by the collective thought style. This is the only way to avoid a dangerous politicization, and a political finalization of the research process. (Fleck 2011, 329)

The heuristic strategy of reformulating external tasks (imposing political pressure upon the thought collective) to solve internal problems of a research program corresponds to a heuristic normativity, as opposed to the algorithmic normativity of a methodological codex. Fleck goes on to assert that there

is no normative-methodologically justified objectivity of science. Yet the heuristic defense of science's cognitive autonomy is possible under all political circumstances and in all cultural milieus of scientific research.

Fleck's socio-historical epistemology has a clear political engagement. His final position was epitomized in the unpublished paper "Crisis in Science" from 1960. It indicates his commitment to the values of academic freedom and his advocacy of science's cognitive specificity. In opposing the tendency to transform science into a "servant of politics and industry," Fleck (1986, 153) argues that science's "cultural mission" is to make room for the autonomous search for truth, freed from the naiveté of epistemological objectivism. Scientific truth as a complex historical-mental event that is inseparably connected with investigative techniques, statistical interpretations, and manifold conventions has its locus only within the cognitive life of science's thought collectives. If the internal milieu of achieving scientific truth gets destroyed by external political pressure, modern societies would no longer have the chance to use science for their practical purposes. Only scientific research that is free of external constraints in searching for truth may produce results that could be practically applicable and instrumental in social life. Socio-historical epistemology and comparative sociology of scientific thought-styles must occupy themselves with tasks that will enhance what ethnomethodologists and sociologists of scientific knowledge call scientists' "endogenous reflexivity." Central among these tasks for Fleck is the need to integrate interpretative critiques of research's epistemic assumptions. He goes on to treat such integration as a kind of humanization of the natural sciences. The interpretative critique would facilitate the formation of scientists' evaluative attitude towards the cultural conventions and social customs that they tacitly adopt or develop in the research process. Fleck also makes the case that the diversification of thought-styles does not distort or deform the research process. On the contrary, it is *sine qua non* for science's cognitive autonomy and the academic freedom of doing research.

I would like to conclude with a short discussion of a hermeneutic issue. Formulated as a question, it reads thusly: Might the effective history of reception confirm or disconfirm the historical success of the received theoretical work? From the viewpoint of philosophical hermeneutics, there are two undisputed criteria for success here. First, the work is

<sup>15</sup> Ilana Löwy (2009, 81) argues that what is at stake in this debate is not the philosophical way of getting rid of relativism, but the cognitive resistance of scientific research to the impact of its cultural milieu. She describes Fleck's position as a search for science's cognitive autonomy that is not based on a normative demarcation between scientific research and its cultural milieu. Autonomy will be advocated much more successfully if scientists are committed to contextually relevant heuristic rules of investigation.

successful if the story which used as a case study can be continued in an innovative manner through new, re-contextualized interpretations. In Fleck's work, the story of the discovery of the Wasserman reaction is the case study which supposedly has to support his theoretical views. On the first criterion, a Fleckian continuation of Fleck's reconstruction of the story of the Wassermann reaction would attest to the historiographical significance of his theoretical conception. Ilana Löwy (2004b) demonstrated cogently that the very continuation (in a Fleckian manner) of Fleck's story of the discovery of the antibody test for syphilis provides an excellent example of a re-contextualized interpretation that illustrates the aforementioned criterion. Fleck ends his story about the diagnostic specificity of this particular serological test with comments on events from the mid-1920s. On Löwy's argument, the continuation of the story of how the scientific fact (presumably confirmed by the success of this test) has been constituted is to be placed in the context of legal and administrative-regulative measures, like the introduction of mass screening for syphilis via legislation. In the period of approximately fifteen years that followed the publication of Fleck's book, these measures will play a leading role in recasting the fact about the specificity of the Wassermann reaction. The latter will become a medical technology regulated by the state and incorporated in legal dispositions. At stake in Löwy's study is not the constitution (i.e. the genesis and development) of a scientific fact, but the transformation of a scientific fact into a legally and politically governed technology. The reconstruction in a Fleckian manner of the development of the regulatory devices (based more or less on the Wassermann reaction) testifies to the historical success of Fleck's research work.

The second criteria for the success of received work concerns the macro-historical significance of the work's effective reception history. If the history of re-contextualized interpretations succeeds in showing the role the work has played in a macro-historical constellation of theories, programs, approaches, ideas, etc., then the work is to be regarded as a contributing ingredient of an episteme. The studies of Fleck's works devoted to comparative analysis with the works of Kuhn (Brorson and Andersen 2001, Babich 2003, Mößner 2011), Foucault (Braunstein 2009), Metzger (Löwy 1990), Canguilhem (Sinding 2004, Sinding 2009, Löwy 2004a), Mannheim (Seidel 2011), Husserl (Rheinberger 2005, Rheinberger 2010a), and Michael Polanyi

(Hagner 2012) have unveiled not a shared paradigm, but rather a macro-historical episteme. Despite all divergences, the works of these authors epitomize a historical a priori on the level of problematizing the practical constitution of scientific objects. In particular, these authors put into question the classical modern interpretation of the epistemic relationship, and conceived this relationship "no longer as analytic and contemplative, but rather as synthetic and constructive, accompanied by phenomena of emergence that would become characteristic of entire series of discoveries" (Rheinberger 2010b, 29).

Fleck approaches some claims of conventionalist epistemology by stating that the thought styles necessarily imposes conventions (theoretical claims that are saved from empirical refutation) on cognition. Like conventionalists, Fleck argues that descriptions of the same phenomena constrained by different thought styles are not always incommensurable. More specifically, Fleck addresses translation-equivalent theoretical descriptions that are incompatible because no model of the one is a model of the other.<sup>16</sup> Accordingly, there is room for choosing between alternative (but equally acceptable) theoretical means in conceptualizing the research's procedural experience.<sup>17</sup> The conventionalist thesis of underdetermination plays a prominent role in Fleck's comparative cognitive sociology. And like Poincaré's followers, Fleck subscribes to the view that the choice between different (but equivalent with respect to the observable consequences) theoretical schematizations of an empirical domain is very often a matter of convenience (but not of arbitrariness). The whole experience of a thought collective ultimately decides which one is the most convenient schematization. (To be sure, however, in this formulation the term "experience" is much broader than the same term as it is used in conventionalist epistemology.) Furthermore, in his criticism of logical empiricism Fleck makes use of conventionalist arguments against drawing a sharp distinction between theoretical and empirical ingredients of scientific experience. Nonetheless, Heelan (1986) shows that Fleck cannot be regarded as a conventionalist.

<sup>16</sup> See the analysis of Ben-Menahem (2006, 9-12).

<sup>17</sup> In this regard, Fleck is much more a conventionalist than a pre-Kuhnian philosopher of science who insists on a version of the incommensurability thesis. Following Ben-Menahem, one might say that Fleck (in a manner similar to several conventionalists) built his argument around translatability, whereas Kuhn (and Feyerabend) focused on untranslatability.

He stresses, in particular, that the consensual character of scientific inquiry is constrained not only by theoretical conventions, but also by factors that are not reachable by logical-epistemological analysis. Yet the most important difference concerns alternative approaches to truth. Fleck categorically denies any attempt at creating truth by fiat, even in the formal disciplines.

No doubt, inasmuch as Fleck's social epistemology and comparative cognitive sociology treat scientific facts as invented rather than discovered, they are to be characterized as constructivist initiatives. Fleck advocates a kind of non-relativist social constructivism informed by his views about the trans-subjective nature of science. True, he strongly opposed the doctrine that nature has joints, and accordingly, the task of scientific theories consists in providing correct accounts of pre-existing natural kinds. He is the author who for the first time foregrounds the instrumental, cognitive-intervening, performative, and material dimensions in the making of scientific facts and artifacts, thereby anticipating several developments in STS and cultural studies of science. Yet social constructivism is only a means and not the goal of Fleck's work. He clearly follows the line of reasoning that all theoretical and empirical procedures and practices of construction always take place in an interpretative medium. This is why they function as readable technologies. The enactment of constructive procedures is a meaningful event, since all elements and agents (or "actors," in Latour's sense) that get involved in these procedures are always already situated in a meaning-constituting interpretation. To sum up, because of the priority of the constitution of meaning (in particular, a meaningful domain of inquiry) over social construction of facts, it is much more germane to read Fleck's work in terms of hermeneutic phenomenology than in terms of constructivist sociology.

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