

Bernays Project: Text No. 10

**The Basic Thoughts of Friesean Philosophy in  
Its Relation to the Present-Day State of  
Science  
(1930)**

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Comments:

*none*

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<sup>99</sup> Dear school comrades! In having the honor to speak before you in the situation of a convention devoted to the memory of LEONARD NELSON, I would like first to set forth briefly the purpose of my presentation.

NELSON was the competent head of his school not only because of the sharpness of his thought, but also because his overall personality. Such a personality gathers among his devotees people partially differing very widely in their opinions, of whom everyone takes from the whole of the philosophical doctrine that what is for him the essential of this doctrine. This fact becomes

very sensible when the spiritual leader passes away. For the members of the school, and indeed for every single one of them, the question arises, in what manner he preserves and elaborates the given thoughts for himself, and also how to bring them to further bearing outwards. In our case this question arises the more, as the Nelson's edifice of thought is devoted to the reawakening and further elaboration of a philosophy, concerning which one more or less thought to pass on to the agenda—and this the more as in this philosophy already the work of a philosopher has got an elaboration by a thinker, differing in many respects as FRIES did in opposition to KANT. |<sup>100</sup>

Anyone can answer this question only for himself. Allow me to give certain incitations in this respect, not demanding a complete treatment of the topic, if only for that reason, that I will speak here only about questions concerning the critique of knowledge [erkenntniskritische Fragen]. I would like to stress a certain, uniform complex of thoughts of the KANT-FRIESEan school, which, in any case, seems to me to retain its important role in philosophy.

As you know, there are several claims of the KANT-FRIESEan philosophy standing in discrepancy to present-day scientific theories. These discrepancies are very clear and chunky. But it is not that striking, that many things in present-day science develop in such a way, that makes it possible, if stressed in a proper way, to exert the thoughts of the KANT-FRIESEan philosophy,—provided only that one is prepared to make certain modifications to it.

Above all I mean here that thoughts concerning transcendental idealism and the difference between intuitive knowledge and knowledge being conscious only through reasoning.

If we consider several newer philosophical doctrines, we find that most of

them oppose transcendental idealism in principle. It is especially the immanence philosophy of the phenomenism of MACH's school which is spread among exact researchers if not ruling there almost absolutely, which believes to eliminate the notion of existence at all and to be capable of getting by with the notion of a phenomenon. According to this philosophy there is fundamentally no other kind of knowledge as perceiving [Wahrnehmen], remembering, watching the sequence of imaginations [Vorstellungen], and comparing the contents of imaginations [Vorstellungsinhalte]. |<sup>101</sup>

The difficulties of this opinion are known to you. I need not consider them here more closely. I would only like to point out W. FREYTAG in his book: "Der Realismus und das Transzendenzproblem" (Halle 1902) deals very well with the weaknesses of the position of immanence. M. SCHLICK also follows this book in certain parts in his "Allgemeine Erkenntnislehre" (Berlin 1918); he adduct again, however, to the position of immanence in another way when characterizing cognition as recognition from the outset,—thus restricting again cognition to a pure comparison of the given.

Phenomenism received certain refinements. One of these is found today in the RUSSELLEAN school of mathematical logic. Here the domain of the intuitively given is enlarged by certain logical formations. It is characteristic in this connection, that essentially it concerns here only class formations, i. e. only an abstract kind of comparison. That what is united into classes are either matters of imaginations or classes already formed. In principal one doesn't go with this beyond phenomenism; since MACH and his school as well have already considered the formation of concepts as essential besides the direct intuitive imagination.

But not only in these directions that tie to exact sciences, but also in the directions of philosophy counted to the liberal arts a tendency of restricting to the immanent is widely spread. An especially remarkable and gainful form of the standpoint of immanence is that adopted in Husserl's phenomenological school. There <sup>102</sup> the principle of the *accountability of every single phenomenon* is posed as a methodological guideline, i. e. the postulate to justify every concept or term introduced by showing a *phenomenon* fixed by it. If this principle is understood in a sufficiently wide sense, there is nothing to object against it. But there is the obvious interpretation and it is applied by many followers of the school, according to which our reasoning has to remain in the domain of *phenomena*, i. e. the imaginable in content, that therefore nothing can be reasonably thought of at all, what is beyond the given. By the way, it is remarkable that OSKAR BECKER in his book "Mathematische Existenz" (Halle 1927) recently called this standpoint transcendental idealism.

Among the philosophical directions known today there is arguably not a single one, which opposes to the opinions mentioned as fundamentally as the doctrine of FRIES. FRIES just laid stress on *that*, what all these philosophers endeavored to argue away, namely the fundamental transcending of the contentual standpoint by the forms of reasoning. The categorical formation of the judgement can only be understood as the expression of a "demand of cognition [Erkenntnisanforderung]", as expression of a search, guided by a belief being already inherent in a dark form in every perception and generally in every state of consciousness, but which makes itself explicit in a clearer form through reasoning. This belief gives us the conviction that the contents

found in experience is to be related to a *reality*, to a unity of *existing* objects, that is as such real and bound into real connections.

It can be explained why one has problems to make up ones mind to accept this doctrine. First of all one would like to have a standpoint with as less presuppositions as possible, and with the presumption of <sup>103</sup> the belief of reason [Vernunftglauben] too much seems to be postulated in advance. In an exact view this objection doesn't concern the FRIESEan doctrine of knowledge by reason [Vernunftkenntnis] as such, but the opinion that the contents of this knowledge can be rendered in entirely distinct, finally formulated principles. Anyway, I would like to point out that the fundamental idea of the FRIESEan doctrine is by all means compatible with the fact that the way in which we relate by reasoning in natural research the contents of experience to existing objects is not determined in knowledge, but belongs itself to the task of research, given to us by reason.

There is, however, another cause for the resistance against the FRIESEan doctrine. I desist here from the known difficulties tied to the question of the correct characterization of the mode of existence of reason and its representations. It has been very much discussed, especially in our school, whether knowledge by reason has to be regarded psychologically as a faculty or as a persistent activity. These are difficulties and problems, but not really objections; they are objections only for the one who, again on the field of psychology, intends to execute the standpoint of a complete restriction to contents. FRIES thought in this respect more vitally; he didn't want to be content with a theory of psychological phenomena, but aimed at a theory of the vital unit [Lebenseinheit]; and I mean, we have reason to agree to him in this respect.

What forms, however, a more substantial reason for the resistance against the FRIESEan claims, is that after a closer inspection one recognizes that one is thereby already necessarily pushed towards *transcendental idealism*. Because in the fact that knowledge by reason advances a claim in the form |<sup>104</sup> of a categorial requirement in the sense of an only existential, but not closer determined relation to a world of the *existing*, lies already the disrupture of truth. Both, the contentual and the categorial form belong to knowledge as such. According to the position of naive realism we believe to find both united and to have in common perception a complete knowledge before us. Closer inspection forces us in a well-known way to give up this position; it arises to us, that the experiential, uniform perception consists of two distinct parts in regard to knowledge: the being presented of a contentual material and the existential hint on the unity of reality, in which the former has to be integrated in a manner initially not known.

The fundamental imperfection of our knowledge is based on this. We know of the contents of our experience, can talk of it; but how to interpret it as proper truth is only very fragmentarily known, in such an extension, however, that is sufficient for the purposes of our practical standards of life, within which we help ourselves with a general attitude based on beliefs in those domains where our scientific knowledge doesn't suffice any more.

If we introduce transcendental idealism that way independently from the doctrine of antinomies, we can thereby absolutely remain in accord with FRIES. Because the doctrine of the split of truth, which FRIES subsequently brings up for the resolution and explanation of the antinomies, doesn't need the antinomies for its grounding. And this is a methodological advance; since

the doctrine of antinomies contains very many problematic argumentations. Above all there is the risk to prove too much, |<sup>105</sup> by posing statements in the antithesis, which are by no means principally unrevokable for scientific thinking, and therefore assign boundaries to science, which it doesn't have in fact. Transcendental idealism must not be understood in such a way that it produces a factual-structural discrepancy between what is existent in reality and what is maintained in the scientific world view. If science should make sense, we have to hold the standpoint that that what is stated in science as factual—as far it is not a common error in the sense of science itself—, expresses also a factualness of reality and by no means deviates in such a way from reality that is expressible in the framework of science itself. The limitation of scientific knowledge has therefore to be based in a proper sense on the conditions of the possibility of scientific natural research as such.

In the first place the linkage to perception is such a condition in the first place. The considerations which force us to give up naive realism and anyway eliminate sensible qualities in the physical treatment have to be imputed to the antinomies. The discursive character of science is a further essential condition that comes from the fact that knowledge by reason [Vernunftkenntnis] is mediated to us through reasoning [Denken]. In fact here is something resulting, in any case inadequate to reality, namely the hypothetical form of the laws of nature. It is not in accordance to the idea of a real connection, that the latter consists in a law, according to which something takes place under certain circumstances. Such a law can only be a cause of knowledge [Erkenntnisgrund], but no real cause [Realgrund]. Thus, while |<sup>106</sup> the aforementioned antinomy refers to the fact that we don't get knowledge of the

*existing* in essence, but only as something that stands in certain relations, the second antinomy concerns the lack of essence [das Wesenlose] of the *connection*. The existence of still other antinomies, especially of the kind of the ones posed by KANT, should in no way principally be disputed. But in any case a revision of the given is necessary, going farther than it was done in our school up to now.

If we look now on factual natural sciences as to how they relate to the program of pure immanence we find that one has departed from the observance of a phenomenological program more than ever, despite the intentional emphasis of MACHEAN thoughts, also proclaimed especially by EINSTEIN. There we have completely abstract existence claims, which are related to perception only in their consequences. This is especially true for present-day quantum theory. According to this theory the physical state is related to perception only through *probability statements*, i. e. the physical states, whose temporal interrelation is a wave-theoretical causal one, exert themselves through perception being related to certain discrete processes in a statistical frequency computed from the state variables, and these frequencies and also other quantitative provisions of those processes present themselves for the experiment by intuitive quantities, e. g., color and intensity of spectral lines.

Also, EINSTEIN's general relativity theory by no means conforms the tendencies of a pure phenomenism.<sup>107</sup> Die measurement lawfulness of the space-time-manifold is here purely conceptually introduced by assuming a metric field that forms a physical object being analogous to the electromagnetic field. The quantitative progression of this field is correspondingly determined by temporal-spatial measurements, as the shape of the earth corpus



is determined by measuring lengths—on the base of our common space intuition. However, whereas the corpus of the earth transcends our imaginative power only because of its extension, the metric field is principally out of the range of the intuitively imaginable, because of its union of the spatial and the temporal.

The establishment of such theories deviating very far from observation speaks very strongly in favor of the FRIESEan doctrine of knowledge being imagined only by reason. Sure enough these theories cannot be united with the KANT-FRIESEan doctrine of *pure intuition*. But also by no means we need to give up this doctrine as a whole, in order to stay in harmony with today's scientific theories, but only its specific form.

E. g., with justice, however, the KANTian claim is disputed that geometry and physics are bounded to the framework of our intuitive ideas of space and time as a condition of the possibility of scientific knowledge. Indeed, in its abstractions geometry goes far beyond the framework of intuitive ideas of space by having developed into a general theory of ordered manifolds connected to environment relations, within which the laws of EUCLIDEN geometry form only a special structural lawfulness, distinguished by systematic advantages.  
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Moreover, concerning theoretical physics its recent development has shown with full obviousness, that the possibility of theoretical knowledge about nature [Naturerkenntnis] is completely independent from accepting a certain structural lawfulness of space and time.

In another respect, however, the KANTian doctrine of pure intuition has gained recognition again especially in our days. For a long time heretofore

the opinion was dominant that mathematics can be developed purely out of logic. The attempt to bring this idea to an execution, as it was initially undertaken by FREGE, then by WHITEHEAD and RUSSELL, failed regardless the systematic unity of the work “*principia mathematica*”. The investigation of the foundations of mathematics has in fact shown two things. Firstly, that a certain kind of purely intuitive knowledge has to be taken as a starting point for mathematics, that even logic as the theory of judgements and inferences cannot be developed without taking such an intuitive knowledge to some extent into account. In this connection it is the intuitive idea of the discrete, from which we take the most primitive combinatorial ideas, especially the one of succession. Constructive arithmetic develops with the help of this elementary intuitive knowledge. Secondly it appears that we do not get by with constructive arithmetic for the doctrine of quantity [*Größenlehre*], that for the latter in this connection we rather have to add certain ideas related to the totality of embodiments [*Inbegriffe*] of mathematical objects, e. g. the totality of the entirety of numbers and the entirety of sets of numbers. |<sup>109</sup>

It is now remarkable that already FRIES—in his “*mathematische Naturphilosophie*” (Heidelberg 1822)—separated that elementary kind of mathematical knowledge under the name “syntactic” from arithmetic in the sense of a doctrine of quantities. He says about the syntactic:

It “contains the most general abstraction which can be done for mathematical knowledge at all. It is solely based on the postulates of the *arbitrary order of given elements* and their *arbitrary repetition without end*. It has no theory for itself because it doesn’t know any axioms; its operations are for themselves immediately comprehensible . . .” (page

70.)

In his considerations on syntactic, however, FRIES only thought on the doctrine of permutations and combinations, whereas he treated number theory only in respect to analysis. He stated, e. g.:

“The purpose of the number system is generally to bring the knowledge of quantity on concepts, i. e., to recognize the relationships between quantities not only intuitively but also by reasoning” (page 121.)

“The specific pure intuition of arithmetic is the continuous series of the greater and the smaller. By scientifically developing this pure intuition we should *think* the idea of quantity or bring it on concepts” (page 77.)

In order to come from these FRIESEAN views to a conception being in accordance with today’s state of research, not very substantial modifications are required. We have to count, however, elementary number theory to the domain of syntactic. Moreover, it cannot be thought of as settled that the scientific development of the concept of quantity consists only in making clear the purely intuitive knowledge. We rather have to take the possibility into account, that here a conceptual accentuation is concerned, <sup>110</sup> an “idealization”—as FELIX KLEIN called it—of the intuitive idea of the greater and the smaller. With this, as well, the rational element would not yet have been excluded from the arithmetical doctrine of quantities (of analysis). Because that conceptual accentuation takes place, as already said, with adding certain totality ideas, and in this we would have to see something that reason adds to the intuitive idea. For this speaks especially the fact that the

totality ideas applied in analysis claim to be valid for mathematical systematics by making possible the unrestricted application of the logical *forms of the general and the particular judgement* in the domain of real numbers and functions. And according to FRIES the logical forms of judgements are exactly those, through which we become conscious about the knowledge of reason in reasoning.

In the sense of such an opinion analysis would already contain a component of the knowledge of reasons grasped only by thought. It would thus have the same character of knowledge, that FRIES assigns to pure natural science. Indeed, even at today's state of science mathematics has by all means the role of a pure natural science, the "armory of hypotheses," according to an expression of FRIES.

It also characteristic that—right from the beginning of making the infinitesimal methods precise—some sort of phenomenological opposition arose against the rational element in analysis. At first by KRONECKER and at the present time by BROUWER and his school a position of the restriction to the intuitively imaginable is acted for, according to which those mentioned totality presuppositions of analysis mentioned above are categorically rejected. Lately WEYL has hinted at the analogy of this <sup>111</sup> "Intuitionism" to MACH's standpoint.

In a completely different way than from the side of this opposition, HILBERT argues in his new *proof theory* for the epistemologically distinguished position of the elementary intuitive (syntactical), or as HILBERT calls it, the "finite" mathematics against systematic mathematics, especially analysis and set theory, as based on the formation of ideas. HILBERT sub-

jects here systematic mathematics to a sort of proof criticism, by which, using elementary, finite methods, the deductive consequences of the formation of ideas in systematic mathematics are investigated, whereby the aim is to show that the application and the pursuit of these formations of ideas can never lead to discrepancies in the consequences and especially because of this also not to contradictions against elementary intuitively recognizable facts.

For a *philosophical supplementation* of this proof theory a *methodological discussion* is necessary, by which those principles systematized in proof theory get some kind of deduction in the sense of a clarification of their epistemological methodological meaning. This discussion should at the same time have to clarify the methods of mathematical idealization and with this give a satisfying answer to NELSON's question, what the norm for an idealization could be, if it doesn't lie in pure intuition.

In the end I would like to indicate, how the special status of the esthetic becomes understandable through the doctrine of transcendental idealism. In the language of our school the expression "esthetic" is used for all those objective evaluations, whose norm cannot be conceptually understood. It |<sup>112</sup> appears to be appropriate—on the one hand with respect to the common use of language and also for pointing out essential differences—to restrict the use of the word "esthetic" to such a kind of evaluation in which a subject is esteemed as *symbolical presentation* for something which is not directly accessible for our finite knowledge of nature. According to this opinion the value of an esthetical object as such does not adhere to the thing as the really existing, as it is the case with the value of a noble character whose existence for itself has a value, but that value is principally related to the

imagining subject, i. e. the object is only valuable as an imagined object. The objective of an esthetical value consists in the objective determination of the *aptitude* of an object to serve as a symbolic expression. The interest for such a symbolic expression depends essentially on the imperfection of our view of nature, i. e. the division of truth. We estimate the symbolical expression of ethical values in the beauty of figures of nature and art, because we cannot directly imagine intuitively an ethical value of a being, but only assign it to it by reasoning. Likewise we value the conceptual unity of scientific systems of thoughts as a surrogate for an immediate intuitive realizing of the unity in the context of the real.

According to this view theoretical science has an *esthetical significance*, as far as we regard it solely under a systematic viewpoint, desisting from its vital significance for our orientation and our acting. This opinion remains indeed the only chance, if we either do not exaggerate the role of exact sciences to that of a perfect world view, or depreciate it to <sup>113</sup> that of a mere tool. Accordingly, the scientific systematization has not only the sense of saving labor, but also an esthetic task, given to us by reason. Only the doctrine of the belief of reason [Lehre von dem Vernunftglauben] makes the search for a systematic union and the success of such searching understandable,—from MACH's standpoint this success is a pure miracle. On the other hand we take the instruction to moderate our expectation of a systematic completeness in the knowledge of nature from the doctrine of transcendental idealism .—

With this I have sketchily exposed, in what sense I think of a vivid preservation and perpetuation of the basic thoughts of the FRIESEAN doctrine. You know, it was NELSON's special concern to prevent the thoughts of FRIESEAN

philosophy from being forgotten again. I believe, that one has also to avert another risk, namely that these thoughts were preserved in the tradition, but regarded only under historical viewpoints, and not standing in a vivid interaction with the philosophical intellectual life. The sense of my presentation should have been to show that the FRIESEAN doctrine is anyhow capable to such vivid interaction with present-day philosophy, and that we don't need to be worried to lose the basic ideas of this doctrine by modifications necessary for changes in science into account. Let's take also into consideration that it was NELSON's own intention to start on in the domain of speculative philosophy and with this especially on the philosophical methodology of natural science in the sense of a revision and new treatment of FRIESEAN thoughts after having completed his systems of ethics.