The early Wittgenstein's truth-conditional conception of sense in the light of his criticism of Frege

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In this paper we question the differences between the truth-conditional meaning-theories propounded by Frege in the *Basic laws of arithmetics* and Wittgenstein in the *Tractatus*. We show that the rejection of the sense/reference distinction for every linguistic unit by Wittgenstein is the consequence of a thoroughly applied conception of the sense of propositions as expression of their truth-conditions. Sense can only do so, in Wittgenstein's view, if the proposition is the picture of a fact. A fact is composed of objects, but is not itself an object, and nothing associated to a fact could be an object. Thus it is misleading to consider the true and the false as objects that would be the references of propositions. Further, the sense/reference distinction is unnecessary, because reference is a condition for determinacy of sense. It is not its accidental consequence, as one could think if one interpreted Frege as conceiving sense as a mode of determination of reference that can succeed or fail, according to whether the reference exists or not.

We will first sketch briefly how Wittgenstein came to reject the application of the category of reference to sentences, by giving attention to the preparatory texts to the *Tractatus*. We then examine the connection between this rejection and the acknowledgement of a context principle in a stronger form than the one held by Frege in his *Foundations of arithmetics*. We finally examine Wittgenstein's criticism to Frege's conception of truth and the rejection of its truth-conditional character.

We try here a comparative analysis between Frege and Wittgenstein, as was done before by many authors, among them Dummett, Geach, and many others. Wittgenstein was well acquainted with the works of Frege. However, each time he criticizes him, he mentions the systematical distinctions used by Frege, like the one between sense and reference or the one between object and function, without retaining them. Moreover, he is implicitly rejecting them. Therefore a reconstruction is demanded to the reader to determine if Wittgenstein's criticisms hit their target. As we pursue this task, we must keep in mind that Wittgenstein has an intimate knowledge of the problems Frege is dealing with, and that he is discussing the problem in his own terms, not Frege's.

Another methodological point has to be stressed: Frege's and Wittgenstein's philosophical projects are significantly different. Frege, in his *Grundgesetze der Arithmetik*, builds a new language in order to express arithmetics and analysis ; he doesn't contend his language will be able to express the whole of knowledge ; it has a limited range, although it may be extended. However it is a powerful instrument to try to capture the form of every discourse we hold on reality, and his attempt had a very broad, although mostly delayed, influence. In justifying the semantics for the language he created, Frege gives insights about language in general, tries to determine which categories are needed to account for the workings of language and its connection to reality, and in his essays (mainly in *Sinn und Bedeutung*), he provides answers to these questions.

Wittgenstein's aim is quite different: he is in search of a language for every possible description of the reality, and wants to disclose the logical structure of such a language. The main task for him is to delineate the boundaries of sense and throw a new light on what it is to be a philosophical problem. A compared study of Frege's semantics (in his mature period, contemporary to the writing of *Basic laws of arithmetics*) with Wittgenstein's (in the *Tractatus*) shall enable us to come to grips with the problem of truth ; we begin with such considerations.

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1. Semantical considerations

What semantical notions should be adopted? What linguistic entities do carry truth? What linguistic entities do carry sense? In these three respects Wittgenstein and Frege have opposite positions. Frege and Wittgenstein agree that we can understand sentences, i.e. know their senses, before knowing if they are true or false. Sense is thus prior to truth or falsity. This of course does not preclude a characterisation of sense in terms of truth, as we will see later. For Frege semantics takes care of the relation of sentences to truth. In order to account for the potential informativity of identity-statements, Frege distinguishes for each expression its sense from its reference.

Expressions are the sense-bearers. The sense presents, or, in Frege's own words, contains a way for the reference to be given. As there is no unique way for an object to be given, to a reference may correspond different senses. For example, "the town where the Thames flows into the sea" and "the capital of england" are two expressions differing in sense, to which corresponds the same object, the town of London. For each kind of expression, a characterization of its sense is required. In the case of a sentence, it is the thought expressed by it ; in the case of a proper name, sense is a way to present an object. The referent of a sentence is the truth-value it has, if there is any. The referent of a proper name is the very object it designates.[2]

To which fragments of language can we ascribe a sense? On this point a difference appears between our two authors. For Frege, words are the smallest linguistic units that can have a sense. But they are not the sole bearers of sense. Everything that is composed out of words, and forms a unity, can be said to have a sense. A sentence also has a sense, which is the result of the composition of the senses of the different words that occur in it. It is important to note that in Frege the attribution of sense doesn't obey to categorial distinctions. What do I mean by categorial distinction ? A distinction concerning types of expressions and the entities corresponding to those expressions. In Frege, to each difference related to the type of an expression corresponds a difference in the entity referred to by the expression. The prominent categorial distinction in Frege is that between object and function : among the different signs of his formal language (conceptual notation - *Begriffsschrift,* as he calls it), there is a sharp distinction between signs of objects and signs of functions. The former are complete, whereas the latter stand in need of completion. The distinction between signs holds also between their referents, because both signs have a sense as well as a reference. It is important to remember this because in Wittgenstein's thought there is an intertwining between semantical notions and categorial distinctions. In Frege the sense/reference distinction is trans-categorial : no matter to which category an expression belongs, it will always have a sense *and* a reference.

What is Wittgenstein's view on these matters ? In order to understand his standpoint in the *Tractatus*, it is useful to turn back to the *Notebooks* where we can surmise that he still is under the influence of Frege's distinction. In the *Tractatus*, there is a strict delineation between what is a sense-bearer and what is a reference-bearer : while propositions have sense, names have reference. This is not an immaterial terminological point but is crucial in order to underline that the nature of the relation in virtue of which a sentence has a sense is completely different from the nature of the relation in virtue of which a name has a reference. This, according to Wittgenstein, Frege has missed, considering the sentence as a name.[3]

Wittgenstein has not rejected the sense/reference distinction right away. In his writings

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2   We follow Dummett's proposal to distinguish between 'reference' and 'referent', see FPL.

3   3.143

before the *Tractatus*, we find passages where such a distinction is acknowledged. The most striking one belongs to the notes dictated to Moore in April 1914. I quote :

« The *Bedeutung* of a proposition is the fact that corresponds to it, e.g., if our proposition be "aRb", if it'strue, the corresponding fact would be the fact aRb, if false, the fact ~aRb. (...)

That a proposition has a relation (in wide sense) to Reality, other than that of *Bedeutung,* is shown by the fact that you can understand it when you don't know the *Bedeutung*, i.e. don't know whether it is true or false. Let us express this by saying "it has sense" (*Sinn).*

In analyzing Bedeutung you come upon sense as follows: we want to explain the relation of propositions to reality. »[4]

In this passage Wittgenstein is retaining the two dimensions of sense and reference for sentences ; he will not keep the later one in the *Tractatus*, arguing that sentences only have Sinn. Here he considers the *Bedeutung* as a fact, a positive fact if the proposition is true, a negative fact if the proposition is false (we assume that the proposition in question is analysed, i.e. that there is no hidden occurrence of a negation sign). The knowledge of the *Bedeutung* of a proposition is here clearly thought to be dependent on the knowledge of the truth-value of the proposition : "knowing its truth-value = knowing if it is true or false". Indeed, if we know if a proposition is true or false, then we know the fact that corresponds to it. Wittgenstein is therefore in agreement with Frege who holds that the reference is the truth-value a proposition has, relative to the point that reference is dependent on facts. We consider here Frege's position from 1891 onwards, where he holds that the *Bedeutung* is the truth-value of the proposition and not a fact represented by the proposition, as he previouly held in the *Begriffsschrift*.

However, to know its *Bedeutung* is not all that is at stake when we understand a proposition. We have also to account for the fact that we understand it without knowing its truth-value ; what we understand then is called the *sense*. The sense is what enables us to explain the relation of propositions to reality. As in Frege, sense plays an intermediate role between the symbols and what the symbols are about. In the *Tractatus*, Wittgenstein retains the category of sense only for sentences. He quickly sees that a proposition, if it can be true or false, is one of the two only in a contingent way. What is essential is that a proposition is true-or-false, not that it is true or that it is false. The particular facts that are obtaining are not the concern of logic, but of the special sciences, that establish for every proposition which truth-value it possesses. Philosophy, as reflecting on logic, only has to settle what is the sense of a proposition, that is what makes its connection to reality possible. To know exactly which truth-value a proposition has cannot be important for logic.

A few months after the writing of the notes to Moore, we see Wittgenstein 's thought shifting slightly to the position that he will later hold in the *Tractatus*:

« For a proposition to be true does not consist in its having a *particular* relation to reality but in its *really* having a particular relation to it.

Isn't it like this: the false proposition, like the true one, and independently of its falsehood ortruth, has a *Sinn*, but no *Bedeutung*?

(Isn't it there a better use of the word "*Bedeutung*"?) »[5]

Wittgenstein is here reflecting on his own use of the word *Bedeutung* and for the first time considers that it shouldn't be applied to false sentences. We consider this a first step in the abandonment of the category of reference for propositions. Separating truth-value from *Bedeutung,* we see him departing from Frege. As we saw in the quotation from Wittgenstein's notes to Moore,

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4   Notebooks, Appendix II, p. 111
5   *Notebooks*, 02.11.1914 (our translation)

sense characterizes the determinate relation a proposition has to reality ; in tractarian terms, it is what is projected by the proposition, which enables the proposition to be a picture of a fact. « What a picture represents is its sense. » [6] Be it true or false, the proposition has this relation to reality. Truth and falsity consist in the obtaining or not obtaining of the fact depicted. False and true propositions are on a par in the *Tractatus* : the sense they have is independent of their being true or of their being false (but not of their being true-or-false). The true proposition has not a relation to reality that the false one wouldn't have. This terminological choice of Wittgenstein, to dispense with the notion of reference with respect to sentences is the result of an acute sense of the *uniqueness* of the role sentences play in language.

In the *Tractatus*, in expressing his version of the context principle, Wittgenstein will question the necessity of ascribing to each kind of expression a sense and a reference. The ascription of semantical notions shall indeed reflect the role an expression plays in our language. In ascribing to the name only a reference and to the sentence only a sense, Wittgenstein highlights the difference between name and sentence. Further, there is a priority of the sentence relative to proper names, for a name has a reference only when occurring in a sentential context.

2. A unique role for sentences

Wittgenstein's main preoccupation is to explain the unique role of sentences as truth-bearers. In what sense are they unique ? They are the only linguistic units able to represent what the world is made up of, facts, and thus to carry knowledge. To the obtaining or not obtaining of a fact corresponds the truth or the falsity of a sentence. This unique role of sentences, compared to the other linguistic units (words, complex expressions short of sentences), finds its expression in a strong context principle, enuciated in 3.3 : « Only propositions have sense; only in the context of a proposition does a name have a reference (*Bedeutung*) ». This formulation is very similar to the one we find in Frege's *Grundlagen der Arithmetik* : « Only in the context of a sentence do words mean anything. »[7] Despite the similar formulation the two principles differ in content. In Wittgenstein, it is supported by an ontological thesis, which is not the case in Frege. A discussion has arisen concerning how the context principle in the *Tractatus* should be understood, as ontological or as semantical. We will try to show that the ontological component is prevailing.

In Frege, even if a name refers only by occurring in a sentence, it still refers to something complete, namely an object. In the *Tractatus*, this context-dependent referentiality is the consequence of an ontological requirement : an object cannot subsist if it is not connected to other objects ; to know its essence implies to know its possible combinations : « If I can imagine objects combined in states of affairs, I cannot imagine them excluded from the possibility of such combinations. »[8] Objects are, like the fregean functions, in need of completion. The context principle is thus the echo on the semantical level of primitive features of the world : what exist are not isolated and independent objects, but combinations of objects into states of affairs. The incompleteness of objects has the context-dependency of names as a consequence. In Frege these two aspects are distinguished : it is possible to refer to something complete, even if only in a sentential context.[9]

The tractarian view has consequences related to the articulation between sense and reference. This view, combined with the dispatching of these semantical notions between propositions and names could allow us to think that there is a composition principle crossing the

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6   2.221

7   GA, §62

8   2.0121

9   We consider Frege's position in *Grundlagen der Arithmetik* and do not take stand here on the question whether Frege maintained the context principle in his later work.

semantical notions. Indeed, Wittgenstein holds that a proposition is a function of the expressions it contains.[10] He takes this idea over from Frege and Russell. The crossing takes place in this way : since the expressions composing a sentence only have a reference and the sentence only has a sense, the composition can only be that of a sense out of references. Is this crossing a transgression or can it be justified ? We will not answer this question here, only remarking that it is solely through its reference that the name can contribute to the sense of a sentence in which it occurs. Although it is difficult to ascertain that the sense of a proposition is composed out of the referents of the names it contains, we can certainly hold that Wittgenstein considers that conditionality holds between sense and reference : if the expressions composing a statement have a reference, then the statement has a sense. This reading fits with 5.4733 : « Any correctly constructed proposition must have a sense. And i say that any possible proposition is correctly constructed, and, if it has no sense, that can only be because we have failed to provide a reference (*Bedeutung*) to some of its constituents. »[11] All this can be seen as a way to secure the articulation of a sentence without using the sense/reference distinction.

Such a relationship of conditionality between sense and reference does not hold for Frege. For him, the articulation is secured, together with the doctrine of insaturation, through two composition principles, one concerning sense and the other concerning reference. Frege doesn't allow permeability between the two semantical notions he takes up : sense and reference are on different levels, and to a certain extent independent. The possession of sense doesn't imply possession of reference. Indeed, Frege acknowledges that sentences dealing with fictitious beings have a sense, although the proper names of these beings are devoid of reference. On the level of sense as on the level of reference, a principle of compositionnality holds : if expressions have a sense, then the statement composed out of these expressions has a sense (principle of compositionnality for sense). If expressions have a reference, then the statement composed out of them has a reference (principle of compositionality for reference)[12]. What really matters for Frege is not the determinacy of sense, but the referentiality of expressions. The syntactical rules assure us of the possession of sense, but the referentiality must be proven. The supreme principle of definitions, as Frege calls it, says: « Every name correctly formed must have a reference. »[13] In the paragraphs 30 and 31 of the *Grundgesetze der Arithmetik*, Frege gives a proof of the referentiality of all expressions constructed out of the symbols he has until then introduced in his language. Once the proofs are completed, he makes general comments about the relation between the sense of a sentence and its truth-value. In a unique passage in the whole of Frege's work, sense is equated with the expression of truth-conditions: « Every name of a truth-value expresses a sense, a thought. Through our stipulations is determined under which conditions it refers to the true. The sense of this name, the thought, is that these conditions are fulfilled. » [14] We have here a clear statement of a truth-conditional conception of sense, that shall in the following be further examined.

A striking difference between Wittgenstein's standpoint and Frege's is that for Wittgenstein the referentiality of names is not subject to a proof but depends on an arbitrary stipulation. For a name to have a reference is a mere matter of stipulation. Rejecting the fregean notion of sense, the relation between a name and the object it designates is not mediated by the sense of the name, that would present the object in a certain way. Names have to be logical in Russell's sense, i.e. have to be simple signs correlated with simple objects. The determinacy of sense relies on the referentiality of names, whereas for Frege possession of sense doesn't guarantee possession of truth-value. It is only when we know that a sentence has a truth-value that one can characterise its sense in terms of truth-conditions. Therefore a legitimate question arises: did Frege really have a vericonditional conception of sense ? Doesn't his thesis that truth-values are objects prevent him from having such a

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10 3.318

11 5.4733

12 Although Frege repudiated the idea that the reference of a sentence is composed out of the references of its components, in 1913 (in a lecture on the ideography in Iena), there is no evidence that he repudiated the minimal version of this principle that we state here.

13 GG, I, §28

14 ib., §32

conception ? An assessment of Wittgenstein's criticism on these problems is necessary to establish what a truth-conditional theory of sense requires.

3. Sense and truth-conditions

We now turn to the criticism that Wittgenstein adresses to Frege's conception of truth. It is a sharp criticism based on two main ideas : first, propositions aren't names, and its correlate, truth-values are not objects ; second, the sense of a proposition shall determine its truth-conditions. The radical distinction made by Wittgenstein between name and proposition makes it impossible to conceive of sense as determining a truth-value in the way Frege thought it would. Moreover, Frege's conception of truth involves an indeterminacy in the definition of the basic truth-functions. Thus if Wittgenstein's criticism is right, Frege's position on sense would be only apparently truth-conditional. That would nuance certain interpretations of Frege's thought, among them Michael Dummett's.[15]

To solve this problem, we first turn to one clue sentence of the *Tractatus*, 4.022:

 « The proposition shows its sense. It shows what is the case, when it is true. And it says that such is the case. »
 (Der Satz zeigt seinen Sinn. Der Satz zeigt wie es sich verhält, wenn er wahr ist.
 Und er sagt, dass es sich so verhält.)

This passage explains how sense expresses what has to be the case in order that the sentence be true. The sense is *shown* and not *told* by the sentence. A sentence is a fact which represents reality through the form it has. The form of the sentence, which is the possibility of the nexus of its elements, makes the picturing relation possible. This picturing relation consists « in the correlations (*Zuordnungen*) between the elements of the sentence and things ».[16]A sentence shows a state of affairs and says that the state of affairs it depicts obtains. If the state of affairs depicted does not obtain, the sentence is false. A crucial passage of the *Tractatus* rejects assimilation of truth-values as objects that could be named and does so through an analogy:

 « An image to explain the concept of truth: a black patch on white paper. Then we can describe the form of the patch by mentioning, for each point of the surface, whether it is black or white. To the fact that a point is black corresponds a positive fact; to the fact that a point is white (not black) corresponds a negative fact. If I designate a point of the surface (one of Frege's truth-values), this corresponds to an assumption to be decided upon, etc. etc.
 But in order to be able to say of a point that it is black or it is white, I must first know when a point is to be called black and when it is to be called white. In order to be able to say that "p" is true (or false), I must first have determined under what circumstances i call a proposition true, and thereby I determine the sense of a proposition. The point in which the analogy fails is this: I can indicate a point of the

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15 For a statement of Frege's conception of meaning as truth-conditional, see for example the opening paragraphs of
    "What is a theory of meaning? (II)", in *The seas of language.*
16 2.1514

paper without knowing what white and black are; but to a proposition without sense nothing corresponds. »[17]

4.063 presents an analogy between the pointing at a point on a surface and the designation of a truth-value by a proposition. Wittgenstein underlines the limits of the analogy and criticizes Frege for accepting it beyond these limits. Let's scrutinize the analogy presented : imagine a black spot on a white screen. I can point with my finger at some point of the surface. I don't have to know in advance if the point is black or white. Further I still can point at the surface even if I don't know what black and white are, for example if I am blind and never experienced colours.

How far goes the analogy with the nature of a proposition? A proposition can be assumed, or considered, without being asserted, being set as true. Following Frege, it is the name of a truth-value. With a proposition I designate a truth-value, but I don't have to know which one it is to do so. Still there is something I have to know, and here the analogy with the black patch stops : what I have to know is what it means for the proposition to be true, and what it means for it to be false. There the analogy reaches its limit. I cannot designate a truth-value if I don't know the sense of a proposition. If I haven't set conditions for the proposition to be true, I cannot say it has been conferred a sense: « I must first have determined under what circumstances i call a proposition true, and thereby I determine the sense of a proposition. »[18] The analogy is well-chosen, because the properties 'black' and 'white' are accidental, and every point is colored, but every point in the visual field isn't black or white. These properties are external, whereas the property to be located in space is internal : it is essential to a point that we can give its coordinates. Without that property it couldn't be pointed at. True and false are properties of that kind for propositions : propositions cease to exist as propositions if they don't have true and false poles. Thus truth and falsehood can be said to have internal relations to propositions.

To express it without making use of the analogy, we can say that the sense of a proposition must express its truth-conditions. As we saw, Frege contends that the sense of a proposition of his system is the expression of its truth-conditions. A later passage of the *Tractatus* presents indeed the way Frege defines its primitive signs as a statement of the truth-conditions of the statements they allow us to build. The procedure is deemed correct, but Wittgenstein diagnoses that the way Frege conceives truth makes the sense indeterminate. Here is the full passage:

> « The proposition is the expression of its truth-conditions. (Hence Frege was quite right to premise the truth-conditions as defining the signs of his symbolism. Only the explanation of the concept of truth is wrong: if "the true" and "the false" really were objects, and were the arguments in ~p etc, then according to Frege's specifications the sense of ~p would by no means be specified.) »[19]

In this text, Wittgenstein probably alludes to the stipulation of the negation function by Frege, that we find in *Grundgesetze der Arithmetik* (I, §6) : the value of this function is fixed regarding the values of the truth-value fonction. Wittgenstein rejects the idea that truth and falsity can be explained through the relation of reference ; he claims that, by doing so, an indeterminacy of sense arises. In Frege's theory, the truth-relation is a special case of the reference-relation. Sentences are proper names whose senses are thoughts and referents truth-values.

To better assess if Wittgenstein's criticism on this point is justified, let's have a closer look at what Frege says of the negation operator. It is for him a function that obeys following stipulations: $\sim p$ is the false when $\diagup p$ is the true. In all other cases, $\sim p$ is the true. We can then ask : when is $\diagup p$ the true? The answer is : $\diagup p$ is the true if and only if p is the true[20]. This stipulation of the truth-value-function sounds redundant and in fact it cannot prevent us from asking : when is p the true?

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17 4.063
18 4.063, already quoted.
19 4.431 (Anscombe's translation)
20 And when p is not the true, $\diagup p$ is the false. This is the stipulation of the truth-value function that we find in GG, I, §5.

Anscombe proposes the following interpretation of Wittgenstein's criticism to Frege's stipulation of the negation function :

> « in ~p we have a proposition determined as expressing the result of completing with the argument "p" a function whose value for given arguments is given; but where is the sense of ~p? "~p" appears to be defined in effect as that proposition whose reference is the true in certain circumstances and the false in others. But *on Frege's own principles you do not specify a sense by specifying a reference* ; and so, Wittgenstein says, according to Frege's own principles, the sense of ~ p is not determined. »[21]

There is a confusion in this passage: it takes for granted that Frege has the same notion of sense as Wittgenstein, which is not the case. In Frege sense shows itself whenever you speak of the referent of an expression. However, it cannot be specified directly : it gets specified through specification of the reference.[22] But the point to make is another : to the question of when a proposition not containing any operator is true, Frege has no answer, because he takes the true as a primitive object. Wittgenstein argues that the question « what is it for this sentence to be true? » should always get an informative answer in order that sense be determined.

CONCLUSION

Did Frege really hold a truth-conditional conception of sense? According to Wittgenstein, he missed the important idea that sentences are facts and not names.[23] He sets up correctly the conditions for truth-functions, but doesn't give a correct account of the primary bearers of truth, the elementary propositions. Frege explains the truth-conditions of the truth-functions (negation, implication, generality), but not how an elementary proposition can be said true or false. Frege actually is not concerned with the search for elementary propositions. His procedure, reconstructed, amounts to this : we set up a function that transforms every name, be it the name of an object or the name of a truth-value, to a truth-value. But we cannot explain how the sense of such a name provides us with such a truth-value. When the reference of a proposition is its truth-value, if we show the sense of a proposition by specifying its reference, we make sense, as expressing the truth-conditions of the proposition, dependent on the possession of truth-value. What Frege does is to specify the reference of the truth-functions (negation, implication, generality) according to the specification of another function, the truth-value function, expressed by the horizontal stroke. What matters for Wittgenstein is that there should be a primitive function the specification of which would not appeal to another function. Frege eludes this requirement by taking the true as a primitive object referred to by all true propositions.

For Wittgenstein the truth-conditions express the agreement or disagreement with the truth‑possibilities of the elementary propositions[24] ; every proposition is a truth-function of elementary propositions. But how the sense of elementary propositions can express their truth-conditions deserves also an explanation. And the conception of truth-values as objects can't do the

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21 An Introduction to..., p.107
22 Following Dummett, *Frege's philosophy of mathematics*, p.237
23 3.143
24 4.431

work. A description of the constitution of reality is then required : how objects combine into states of affairs, how pictures can represent those state of affairs. To consider the true and the false given as objects is to make sense dependent on facts. In some way, Frege's enterprise consists in dispensing with the requirement that the world has substance, enounced by Wittgenstein in 2.0211: « If the world had no substance, then whether a proposition had sense would depend on whether another proposition was true ». Wittgenstein's criticism, relying on the assumption of primitive constituents of reality, shows that Frege couldn't hold a conception of sense as expression of the truth-conditions, and that he mistakenly says he does in *Grundgesetze der Arithmetik* (I,§32). His stipulations are insufficient to assure the complete determinacy of sense. The rejection of the sense/reference distinction reaches here its purpose : underlining the unique role of sentences, uniqueness that is hidden when it is considered as a name. For Wittgenstein in the *Tractatus*, a proposition describes reality by its internal properties, and has not a truth-value only accidentally.

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