Frege – The Unintentional Linguist. On Frege's Views of Language in the Context of 19th Century German Linguistics

KARSTEN HVIDTFELT NIELSEN

Department of Language, Literature and Culture, Aarhus University, Denmark

Sein ganzes berufliches Leben hindurch betrachtete Frege die Sprache als eine gefährliche Bedrohung des wissenschaftlichen Erkennens, der mit allen Mitteln der Logik zu begegnen war. Im ersten Teil des Aufsatzes wird aufgezeigt, wie Frege diese Auffassung in oft unbewusster und ungewollter Übereinstimmung mit gleichzeitigen Tendenzen sowohl in der deutschen Linguistik (Becker, Steinthal, Paul, Wundt) als auch in der deutschen Sprachkritik (Gruppe, Nietzsche, Mauthner) entwickelte und wie sein epistemologischer ‚Kampf gegen die Sprache' mit einer bitteren persönlichen und professionellen Niederlage endete. Der zweite Teil des Aufsatzes enthält eine Rekonstruktion von Freges logischer Grammatik sowie eine Darstellung des linguistischen Argumentes, das für Freges endgültiges (und tragisches) Akzept vom Sprachskeptizismus entscheidend wurde (das sogenannte Fregesche Paradox). Der Aufsatz schließt mit einer Evaluierung der Relevanz des Fregeschen Paradoxes für die heutige Linguistik.

1. INTRODUCTION

Until 1980 practically all research on Frege was conducted on the premises that Frege's writings should be interpreted and analysed as if written by a contemporaneous mind. Indeed, the common tenor, as presented most emphatically and effectively by Dummett in Frege. *Philosophy of Language* (1973),[1] was on claiming for Frege the status of a highly original innovator, unbiased and unaffected by the thoughts and the writings of his own century. Sluga's book on Frege (Sluga 1980) was the first to draw attention to the traps and failures inherent in treating Frege only as a contemporary. In the wake of

Sluga's interpretation, much research has been focussed on placing Frege's writings in the context of their own time. The expected picture is beginning to emerge. As the magisterial work of Kreiser (Kreiser 2001) has demonstrated, Frege was as dependent on the conceptual horizon of his own time as most mortals eventually prove to be.

To be sure, Frege did not leave much material for source hunting historians to go by. By profession Frege was a mathematician. He tried to open his discipline towards neighbouring fields such as philosophy and linguistics, but there is only scant indication in his writings (published or private) that he acquired any professionalism in the process. In the case of philosophy, Frege seems to have relied mostly on secondary material. Sluga 1980, Currie 1982 and Kreiser 2001 have argued that we should conceive of Frege's philosophical endeavours as embedded in the contexts of Neo-Kantian movements in 19th century Germany. But there is little evidence that Frege was in any personal or professional contact with the different schools of Neo-Kantianism flourishing around him.[2]

On linguistic issues, Frege was to remain plainly, and apparently deliberately ignorant throughout his whole career. There are practically no references in Frege's writings to linguists.[3] Frege seems to have been unaware of the fact that intense discussions on all kinds of linguistic issues were conducted around him. The linguistic turn in philosophy may have been a characteristic feature of the 20th century; however, 19th century Germany prided itself on having transformed the study of language into a scientific discipline with deep repercussions on the internal structure of other sciences.

Recent research has shown that Frege in some cases has been reluctant to disclose his sources. Dummett has found clear indications that Frege in his *Kernsätze zur Logik* involves in a rather detailed discussion with the introduction to Lotze's *Logik*, without, however, mentioning neither book nor author.[4] Likewise, Picardi, elaborating a surmise originally due to Currie,[5] has established beyond doubt that Frege, for a thought experiment conducted in his article *Der Gedanke*,[6] leaned tacitly on an illustration from Mach's famous critic of the Ego in *Analyse der Empfindungen* (1886).

Studying Frege from the viewpoint of historical and theoretical linguistics, I have found in Frege's writings similar, if, perhaps, less clear-cut traces of foreign material that Frege, for whatever reasons, may have chosen to present as his own. What I have happened to have picked up I shall duly report, but it must be emphasised that the principal aim of the present article lies beyond what can be documented by positive evidence. The thematic focus of my interest is on Frege's repeated attempts to determine the influence of language, and in particular grammar, on logic. Frege carved out for himself a highly personal view of how logic and language could be interconnected, but he did so almost exclusively by means of discursive and conceptual categories that were all parts of intellectual mainstream debates in 19th century Germany. I am not going to argue that Frege knew much of these debates. In most cases, he probably did not.[7] What I want to show is that Frege, in his investigations, followed trends and patterns that we today recognise as typical of 19th century thought. I do not thereby want to dispute the originality of Frege's efforts, although I do believe that there still is a general tendency to exaggerate his philosophical ingenuity.[8] My motives lie elsewhere.

I want to claim for Frege a unique position in the development of the tradition known as language criticism (see below). Reservations towards the intellectual reliability of language are as old as reflection over language itself. However the striking novelty that Frege brought to this tradition was the precision necessary for actually testing the claims of language criticism. With Frege, decidability at last became an option in linguistic debates and descriptions. Ironically, language was never a main issue for Frege. For that reason perhaps, he relied on existing concepts and theories when addressing linguistic questions. I shall try first to establish the linguistic context in which Frege wrote, and then show how Frege used the material at his disposal for framing a highly precise view of language. Since Frege, in my interpretation, arrived at a rigorous model of language, I shall conclude my investigation by offering a simplified exposition of the linguistic reasons why Frege ended up embracing the sceptical branch of language criticism. Thus, two motives prompt my presentation, a historical and a theoretical one. It is my hope that the combination of both will prove to be fruitful.

2. LANGUAGE CRITICISM (*SPRACHKRITIK*)[9]

The idea of a conflict between logic and language surfaces in most of Frege's writings on logico-linguistic issues. So, for instance, in the early notes on *Logik*,[10] dating somewhere between 1879 and 1891:

> [...] the business of the logician consists in a continuous fight against psychological elements and, partly, against language [*Sprache*] and grammar, namely in so far as the latter fails to properly express the logical element[11]

or in the article *Der Gedanke* from 1918/19:

> Thus [because of the metaphoricity of language] a fight with language arises, forcing me to deal with language although my business here is different[12]

or in a late note on mathematics and language:

> Therefore, a major part of the philosopher's work consists in – or should consist in – a fight with language.[13]

That Frege came to think of language and cognition (science, philosophy or logic) in terms of conflict and fight may have been caused by professional experiences with language, but the attitude was by no means restricted to mathematicians grown sceptical of words. In the wake of Kant's philosophy, German thinkers had begun speculating whether Kant had not failed to point to the right place when arguing the pre-structuring of man's cognition. With Herder and Hamann a German tradition for maintaining that speech and language be considered the genuine apriority of cognition arose. In the 19th century, this tradition for language criticism (*Sprachkritik*) was to become an intellectual position linking figures like Reinhold and Gruppe over Hermann and Gerber with Nietzsche and Mauthner. During the century, a noticeable shift in outlook took place. Whereas Reinhold and Gruppe, both writing before 1850, expressed an optimistic view of man's capacity for bringing the unruliness of language (speech) under cognitive control, scepticism grew as the century drew to an end. Around 1900, neither Nietzsche nor Mauthner were ready to place much faith in the powers of cognition.

Especially the lines connecting Gruppe with Mauthner are of interest to the Frege scholar.[14] Not only did Mauthner publish the writings of Gruppe, he also took from Gruppe his central concern.[15] How can we, both asked, investigate language for its impact on thought and cognition when that very same investigation has to be carried out by means of language?[16] But whereas Gruppe, in 1834, could feel confident that the fight against language could be won, Mauthner, in 1901, saw no other possibility than to declare cognition finally defeated by language.

Frege was to experience a similar sobering. In *Begriffsschrift* (1879) Frege speaks as if philosophy could indeed accomplish the task of breaking

> the sway of the word over the human spirit by exposing the conceptual fallacies that usage [*Sprachgebrauch*] almost inevitably creates.[17]

At the end of his career, a more disillusioned Frege speaks. In a late remark he explicitly confronts the same problem as that which Gruppe had set out to unravel and Mauthner despaired of solving:

> Our investigations are particularly difficult because we tend to be misled by language, language which is indispensable to us while investigating. One might think that one had to start by liberating language of all logical imperfections before using language in such investigations. However, the work needed to do so can only be done with the help of the imperfect tool of language.[18]

And this work, Frege admitted shortly before dying, is likely to be in vain:

> It is difficult, perhaps impossible, to test any expression that language offers us for logical qualities.[19]

Did Frege know of the Gruppe-Mauthner connection? Around mid-century, most educated Germans were familiar with the leading tenets of Trendelenburg's philosophy. At one place, Frege refers directly to Trendelenburg in his writings.[20] But Frege may, in addition to Trendelenburg's "climatic" influence[7], have been encouraged by Lotze, Frege's teacher in Göttingen, to go over Tredelenburg's *Logische Untersuchungen* from 1840.[21] Had Frege done so, he would, in the second volume of Trendelenburg's logical treatise, have read a praise of Gruppe for

having, in his *Wendepunkte der Philosophie im 19. Jahrhundert* (1834), shown by means of linguistic analysis that the judgement is prior to the concept.[22] We don't know whether Frege ever came in contact with Gruppe's writings. But he certainly would have consented to Gruppe's characterisation of the relationship between language and thinking (*Denken*):

> Between both a kind of reciprocity obtains that has never been appreciated in its full extension and in all its consequences.[23]

Gruppe's book, *Wendepunkte*, is devoted to doing what, according to Gruppe, has never been done before. He felt certain that he had found a way of breaking the sway of language over philosophy. Hence the optimistic title of his book, *Wendepunkte der Philosophie* (Turning Points of Philosophy).

The actual course of Gruppe's investigation may strike a present reader as slightly naïve. Speech, Gruppe thinks, works by metaphor and comparison.[24] However, by empirical analysis of speech, we may succeed in neutralising its effects and so arrive at language independent regularities of thought (*Denken*). Gruppe is conscious of the fact that language must play a double part in his book: both as object studied and as instrument of study, but no attempt is made in his investigations at determining and controlling speech by means of precise analysis. What he offers instead reads as a rather traditional philosophical text which slowly transforms into a detailed historical interpretation of Aristotle.

Mauthner may have realised the shortcomings of Gruppe's analysis. At least, he is convinced of the futility marking, as he thinks, all attempts at analysing language with language. His *Beiträge zu einer Kritik der Sprache*, albeit rich in illuminating details, is from start to end suffused with the pessimistic certainty that the need to use language for criticising language must by necessity distort its object. Mauthner therefore came to the conclusion that language can never become an object of cognition. Instead, he looked to mysticism for a solution of the riddles that language weaves around its users.

3. FREGE'S MODEL OF LANGUAGE

Frege shared most of the psychological beliefs of his century. He seems to have subscribed to a modified version of Mach's empirio-criticism.[25] As far as the psychological side of man is concerned, man is secluded in his strictly subjective inner life. From his first logical sketch to the concluding remarks of *Der Gedanke in Logische Untersuchungen*, Frege was to entertain the belief that the psychological part of man "in no two persons can be identical".[26] "No two persons can ever share the same mental image (*Vorstellung*)".[27] But Frege felt that this could not be the whole story. If there was nothing more to man that what psychology tells us, scepticism would follow. Scientific knowledge would be an illusion. And that, Frege strongly felt, must be an impossible conclusion.

Two considerations may have motivated Frege in taking up his opposition against psychologism. We know that Frege, the mathematician, had been led into logic by experiencing the shortcomings of his native German when used for professional purposes.[28] The writing of *Begriffsschrift* had been triggered by the wish to develop a more reliable professional language. However, in addition to this practical motivation, Frege entertained a more speculative belief. As indicated above, Frege shared with the language critics of his time the idea of a conflict obtaining between cognition and language. Until his final surrender to pessimism, Frege was to entertain the belief that logic would prove the key to a solution of that conflict. Frege was convinced that language must contain a logical core:

> Grammar is to speech what logic is to thought, but in grammar psychological elements are mixed up with logical elements.[29]

So, Frege believed, the conflict could be solved if one managed to cleanse grammars of their psychological impurities. A purified language would be the proof that scepticism was wrong. It was an empirical fact that man had the ability to acquire real objective knowledge. And to Frege, it was to remain obvious that it was the logical part of language that provided man with that ability. If it had not been for the logical part of language, man would have had no window on knowledge. In *Über die wissenschaftliche Berechtigung einer Begriffsschrift* (1882), Frege informs us that we cannot form a concept unless we

find means of denoting it with signs.[30] At the end of his career, Frege was to repeat his belief in the importance of language:

> In order for man to grasp thoughts it is necessary that the thought combines with a sentence in our consciousness.[31]

So, Frege brought two components to his fight against scepticism: the language critical belief in the high importance of language in epistemological affairs and the mathematician's knack for analysing expressions in a completely rigorous fashion. Armed with this equipment, Frege embarked on his campaign to dismantle the claims of his opponents. Frege did not try to turn his opposition towards the psychologism of his time into a philosophical system. Given Frege's philosophic innocence, perhaps we should be glad he did not.[32] Instead, he tried to define a special way of thinking and writing about logico-linguistic affairs that he felt would prove a workable alternative. It will be convenient to speak of Frege's collected beliefs as if constituting a model of how language functions. However, to Frege what I call "model" was reality. Frege believed himself to be speaking directly of what things in some logico-linguistic world were really like. Being well aware of the logical insufficiencies of his native German, Frege decided around 1890 to develop a special terminology with which to speak of this reality (model). The terminology is best explained in *Über Sinn und Bedeutung* (1892),[33] but seems to have been in place already in 1891.[34]

Frege invented neither model, nor terminology. Rather, both may be seen as specialisations or refinements of ideas and professional vocabularies circulating in the linguistic community of 19th century Germany. It is uncertain what Frege knew about the discussions going on around him. As previously stated, he probably knew little. But nevertheless, Frege's work neatly mirrors contemporary efforts to model and describe language. It seems as if Frege first decided to become explicit on linguistic issues in the late 1880s. Whether he was influenced to do so by the rich literature on language appearing in the same decade, we do not know.[35] Echoes may have reached Frege brooding in Jena over the new logic for his *Grundgesetze*. Before 1890, Frege's linguistic commitment is either subtle or inconclusive. In *Begriffsschrift*, as well as in the articles defending it,[36] Frege sporadically buttresses up a mostly logical argumentation with linguistic examples. One may read the *Grundlagen der Arithmetik* as an implicit

meditation on the logical consequences of the definite article in German.[37] But we have to wait for the publication of the decisive articles in 1891-92[38] until Frege chooses to confront the language issue directly.

In most German schools between 1840 and 1880, elementary grammar was being taught according to the system developed by Karl Ferdinand Becker. Also young Frege seems to have been trained to conceive of the grammar of his native language by the Becker system.[39] Frege never seems to have felt the need to subsequently subject his grammatical school training to a critical scrutiny. Like most non-linguists writing about language, Frege must have been confident that school teaching sufficed for later in life engaging in intellectual discussions about grammar.[40]

In the historiography of linguistics, Becker's accomplishments are well described.[41] On the one hand, he renewed the tradition of logical, or rational grammar. On the other, he revolutionised the established conception of grammar in Germany. The first part made him the target of severe criticism from the dominant schools of linguistic thought in Germany.[42] The second part made him the founding figure of German school grammar in the 19th century. When Becker died in 1849, his rational grammar was slowly growing into scientific disrepute. Until the 1880s, when a noticeable shift in German linguistics took place, historical and psychological linguistics totally dominated in Germany. However, it is interesting to notice that transitory misfortune in science did not stop Becker's grammatical system from making its way into most German school grammars.[43]

Until Becker's publications, German grammar (like most European grammars) had been constructed around the concept of word classes.[44] A sentence is built up from contributions of elements from these classes. Such had been the accepted wisdom in grammar since antiquity.[45] Becker turned grammar upside down. The sentence, not the word, is the starting point of grammar. Grammar deals with sentential analysis, not with the synthesis of a sentence from components. This view-point made syntax the most important part of grammar. Becker's school grammar was a syntax, teaching pupils how to split the sentence into its syntactical constituents.

The sentence, Becker held, made the outer appearance of thought possible. Language had no other mission than to serve as the embodiment of thought. Furthermore, thought was primarily logical. By logic, Becker did not mean any specific system, let alone a formal structure. What Becker had in mind, was something which he sometimes called the "inner meaning" (*innere Bedeutung*)[46] of language. The inner meaning is the same to all mankind.[47] Naturally, Becker was aware of the differences separating the grammars of the natural languages. But every grammar, he held, contained the same basic syntax. This syntax was the accurate mirror of one and the same "logic" common to all mankind.

Frege seems to have taken in most of Becker's teachings. Like Becker, Frege held the sentence to be prior to its parts.[48] Words, or syntactical constituents, may express concepts and relations, but these are to be discovered by sentential analysis. They have neither existence nor meaning outside the sentential structure.[49] Like Becker, Frege insisted that the sentence mirrors, or expresses a thought. Both were convinced that negations are special kinds of thoughts. The negated thought does not consist of a full thought with a negation part added, but is a complete thought in its own right.[50] And most important perhaps: like Becker, Frege assumed all natural languages to contain one and the same logical system. The syntax, both believed, was the right place to look for this alleged system.

The foundations of Becker's syntax are metaphysical.[51] Structurally, the sentence is like a hierarchical tree with only two branches on every knot. The relationship between two branches going out from the same knot is one of subordination. Becker interprets the subordination either in terms of generality (the superior) and specificity (the subordinate), or of activity (the superior) and being (the subordinate). The first division of the sentence is that between subject and predicate. The predicate denotes, or expresses[52] the general concept, which is also the concept of activity; the subject expresses being in its specificity. In the sentence the subject is subordinated to the predicate.

Apart from its metaphysical character, Becker's syntax is still far from satisfying the needs of a keen, mathematical mind. Frege explicitly tells us of his dissatisfaction with the concepts of "subject" and "predicate",[53] and suggests that they be supplanted with those of "argument" and "function". But once

equipped with the tools of functional theory, Frege is able to transform Becker's system into a genuine formal logic. Next to Becker's division into subject and predicate follow two divisions: the subject divides into subject and attribute, the predicate into predicate and object.[54] We find Frege handling the former in for instance *Funktion und Begriff* when analysing "the capital of the German Reich";[55] the second division is being taken care of by means of functions of more than one argument.[56]

In Becker's system, any subject, or object may further divide into attribute and subject/object. Finally, we may distinguish between two kinds of objects: one directly connected to the verb, another connected by means of an adverb (thereby forming an adverbial).[57] Subordinate clauses are to be treated as syntactical constituents of the main clause, that is as subjects, attributes, or objects (or adverbials). Since direct objects and subjects coalesce when appearing in the grammatical form of the subordinate clause, Becker is led to distinguish between three kinds of subordinate clauses according as their syntactical role is that of an attribute, a subject/object or an adverbial. In the terminology of the grammarian Götzinger (1839)[58] Becker's distinctions appear as *Beisatz* (as attribute), *Nennsatz* (as subject/object), and *Adverbsatz* (as adverbial), that is as the three kinds of subordinate clauses known to Frege in *Über Sinn und Bedeutung.*

Finally, before leaving Becker, one could speculate on a certain similarity between the metaphysical frameworks of Becker and Frege. There have been some attempts to explain Frege's fundamental belief in the existence of two kinds of entities: objects and functions (concepts).[59] Especially, the definition of a function as an unsatisfied entity has puzzled some of Frege's readers.[60] Also Becker believed the universe to consist of two basic kinds of entities: those that had being in themselves, and those that had being only as activities directed against other entities. In these stipulations one may surmise echoes of Becker's occupation with Aristotle who, in his Categories, makes the fundamental distinction between a primary substance (ουσια πρωτη) and what can be said about the specimens of this substance (that is, specimens represented by the 10 famous categories). If Frege was a Platonist, as many have claimed[32], he was certainly an Aristotelian Platonist.

In 1855, Becker's rational grammar was subjected to a scorching criticism from the leading spokesman of the new psychologically inspired linguistics, Heymann Steinthal. For more than 30 years, Steinthal and his school[61] were to dominate linguistic thought in Germany. Steinthal wanted to transform the study of language into a strictly scientific discipline. The only way to do so, he believed, was to provide the craft with a firm psychological underpinning of their doings.

During the 19th century, psychology witnessed an unprecedented height in intellectual prestige. Most intellectuals looked to psychology as the fundamental discipline of science and philosophy. In psychology the Herbart School dominated.[62] To Herbart psychology was a science as strictly causal as physics, only ruled by some different set of laws. The soul was a reality, conceptualised as an inner space consisting uniquely of certain dynamic interacting forces, known as "mental images" (*Vorstellungen*). In Herbartian psychology all mental activity could be explained by reference to mental images. Also higher forms of mental life such as speaking (*Sprechen*) and thinking (*Denken*) could be explained as special kinds or constellations of an underlying image formation (*Vorstellen*).

Steinthal fully accepted the basic lines of Herbart's psychology. He made the term "mental image" (*Vorstellung*) the central constituent in his description of the linguistic activity. Also Frege seems to have been attentive to the new winds blowing. In *Begriffsschrift* Frege's use of "mental image" (*Vorstellung*) and cognate expressions is vague and non-specific. The formal expression "-A", for instance, is said to evoke a mental image in the reader (BS, 2); the content of the word "house" is called a "mental image" (BS, 2); the number 20, Frege tells us, renders an independent mental image (BS, 17) and so on. In *Grundlagen* Frege has learnt to distinguish between mental images "in a subjective sense", pertaining to psychology, and mental images "in an objective sense", pertaining to logic (GLA, 59). And after the grand revision around 1890, we find Frege using "mental image" only as a general term of anything that "moves" in man's inner life, which is precisely as Steinthal had taught the linguistic community to use the word.

Frege drew another consequence from Steinthal's psychological linguistics than Steinthal did himself. As indicated above, Frege came to the conclusion that everything in language reflecting mental images eluded scientific scrutiny.[63] To

Frege there could be no science of mental images. If man was to overcome the limitations of his inner subjective life, he had to turn to logic. Given his psycho-scientific outlook, Steinthal, of course, held the opposite position.

Steinthal had criticised Becker's idea of a logical grammar[64] by reproducing an ancient argument against this conception. The fact that there are different languages, each with its own specific grammar, but only one logic common to all mankind, is the empirical proof that grammar cannot be logical. What Steinthal had failed to see was that Becker had actually managed to indicate how this old empirical argument could be successfully countered on its own ground. Becker's syntactical reformulation of grammar could be read as a first step in that direction. If something like a common syntactical "deep structure" (not Becker's word) could be detected in each and every language, the diversity of languages (and their grammars) would be no argument against rational grammar. Of course, for this "deep structure" to be logical in nature, one would need a second argument. The existence of a common syntax would only guarantee that mankind shared a common structure of speech, not that this structure was logical.[65] Becker does not seem to have been aware that a second argument was needed. He simply supposed thought to be logical by nature.

Frege may, or may not have known Steinthal's work.[66] But he certainly adopted his own terminology to the new standards of psycho-linguistics. However, of more consequence to his model of language, was the concept that Steinthal had devoted his book *Grammatik, Logik und Psychologie* (1855) to clarify:

> The greatest inspiration I received from Humboldt's concept
> of an inner form of language. The present book is nothing
> but the explanation of this concept.[67]

Steinthal is famous for having made Humboldt's concept of an inner form a vital and recurrent issue of German linguistics.[68] For almost a century, "inner form" was to remain a theoretical question on which it was compulsory for German linguists and language theorists to take a professional stand.[69]

One cannot say that the concept was clarified in the progress. The leading idea was that of a specific linguistic intermediary or bond between observable sound structures and meanings. The observable side of language gave rise to the study

of etymology, morphology and syntax (often referred to as the outer form of language). What meanings were was to remain a more obscure issue.[70] Simplifying matters (and terminology) greatly; one might say that the meaning side of language embraced at least three kinds of phenomena:

1. The mental images believed to be happening in the soul during speech.
2. The concepts and relations mostly conceptualised as higher forms of mental images.
3. The entities referred to by means of speech.

Between these different phenomena of meaning, not always carefully distinguished, and sounds a special structure or bond, called "inner form", was assumed to be existing.

With Humboldt, the motivating factor for stipulating the existence of an inner form of language was inter-linguistic. He realised that each language impresses upon its users a specific way of experiencing and categorising meaning (a *Weltansicht*), and suggested the name of "inner form" for this kind of categorisation. It was (and is) uncertain whether Humboldt had wanted to sustain a radical form of linguistic relativism, or whether he had assumed the existence of universal grammatical and logical categories. Some, like Wundt, argued the former, others, like Marty, the latter. But whatever the opinion, discussions were conducted on the inter-linguistic premises originally due to Humboldt.

In this respect, Steinthal's treatment stands out as an exception.[71] Steinthal realised that there was an intra-linguistic aspect to inner form as well. Different languages offer different ways of conceptualising meaning. But much the same, he felt, could be said about the linguistic means (the outer form) provided by one language only. In the first tome of his Abriss der Sprachwissenschaft (1881[2]), he gave three explanations of how an inner form develops and functions within one language. To the Frege scholar only the third is of interest.[72] Consider, Steinthal says, different German words like *Grab*, *Gruft* and *Grube*. What such synonyms show is that "the same object may be apperceived by means of various words in multiple ways. This difference is the inner form of language".[73]

Frege's reasons for introducing the category of "sense" into his model of language are well-known. He had wondered how to give a satisfying description of identity, the logician's analogue of synonymy. The solution, found around 1890, was the introduction of sense, the perhaps most contested concept of Frege's model. It is fairly obvious what Frege wants his new category to yield. It is more dubious whether Frege ever managed to give a complete consistent explanation of what to understand by "sense".[74] The crux of the matter is his "definition" of sense as manner of givenness (*Art des Gegebenseins* (KS, 143-44), "wie der, die oder das durch ihn [den Namen] Bezeichnete gegeben ist" (KS, 350)). A sign, Frege tells us, is connected not only to its referent, but also to a special way of presenting a referent to us.

Frege's favourite examples are geometrical (KS, 144), but it is clear that Frege believed sense to be closely bound up with language. The sense of a name, he tells us in *Über Sinn und Bedeutung*, will be comprehended (*erfasst*) by anyone knowing the language to which the sense belongs (*der er [der Sinn] angehört*) (KS, 144). In a perfect language, all users would connect the same signs with the same senses (KS, 144). However, in our more imperfect world, all we can hope for is that the context of speech will enable us to disambiguate differences in sense (KS, 145). 30 years later, in *Der Gedanke*, Frege elaborates on the linguistic aspect of sense. One may imagine, Frege says, two individuals using exactly the same signs or expressions, differing, however, in the senses they connect with their shared signs. These two individuals will not speak the same language.[75]

From the wording of the latter example, one might believe that Frege tries to define a language by reference to some specific structure of sense shared by only those that speak the language. That would have made Frege share the opinion of Wundt. But Frege wants us to draw a different conclusion. The stratum of sense exists independently of man and will therefore be the same to all mankind. Therefore, what defines a language cannot be some specificity of sense. There is no such thing as a specificity of sense. Neither can we define a language by its expressions alone. As we just heard, two individuals may very well use identical expressions and still fail to speak the same language. So, the definiens of language must be a matter of how expressions connect with sense. Of course, no two existing languages combine expressions with senses in the same way. Hence there are different languages (KS, 144). But even what we would normally refer

to as one language, say the German language, may very well prove to consist of many different languages (KS, 349).

So language is defined by the nature of the bond that exists between the outer expressions of language and the universal realm of sense. This conclusion is corroborated by other explanations Frege offered of sense. In an answer to Jourdain Frege wrote that our ability to understand new sentences in a language depends on some underlying structure of sense (WB, 127). Language and sense interact, or, as Frege explicitly tells us in his *Aufzeichnungen für Ludwig Darmstaedter* (1919) in connection with an analysis of a specific sentence:

> To this analysis of the sentence an analysis of the thought [that is, the sense] that is thereby expressed corresponds (NS, 275).

In a language, the structure of expressions is mapped on to the structure of sense which again is mapped to the referents. The latter mapping, however, is irrelevant to language. What defines a language is the way in which expressions and senses are connected.

Frege's idea of what constitutes a language is certainly on a par with the linguistic conception of an inner form. Basically, language is a bond between tangible expressions and certain invisible entities (be they senses, mental images or something else). We don't know how much or little Frege knew of these linguistic debates, but if we accept to consider Frege's idea of a connection between expressions and senses as either influenced by, or structurally similar to contemporaneous discussions of the linguistic inner form, we must realise that Frege's approach differs in intention from what professional linguists were trying to achieve: Frege were not out to identify some inner form within the historically and empirically given languages. He did not share the linguists' concern for distinguishing a middle realm between sounds and meanings in some specific language. Frege wanted to distil a logical part in language. He considered every existing language a mixture of psychologically and logically motivated constituents. So his interest was entirely focussed on the logical side of language.[76] If Frege was looking for anything like an inner form of language, then this stipulated element was to do service as an important ally in his fight for a logically cleansed language.

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Frege had other motivations for stipulating the category of sense than the one just stated. He also believed that sense would be a useful instrument when analysing indirect or oblique speech. He further held sense to yield a good explanation of what we do when speaking without denoting, or referring intentions, be it in reasoning, or, as Frege was fond of saying, in poetry. In the former case, our use is serious and legitimate. We merely suspend asserting while hypothesising.[77] In the latter case, we engage in more playful or artistic usage.[78] One may also mention the importance of sense to Frege's theory of negation, or to his psychological theory of grasping. Frege often seems to have resorted to the category of sense when otherwise short on arguments. No wonder, perhaps, that Frege felt ultimately driven to provide his senses with the metaphysical housing of a third realm.

By 1890 Frege had at his disposal a model of language and logic that in terms of clarity and simplicity was superior to anything the crafts of linguistics or logic could muster. We do not know whether Frege, in the revision of his early logic, was inspired by the rich development of linguistic theories taking place in the 1870s and especially the 1880s. We have seen him adopt the vocabulary of psycho-linguistics, and I have argued that Frege's idea of sense could be seen as a logician's specification of inner form. There are some indications that Frege knew when he departed from standard usage, which he must then have known. He thinks it worth while to explain that he uses the word "thought" in an unusual way (KS 148, NS 138, 147), and he seems aware of the dangers that one might conflate his new category of sense with concepts.[79] Below, when presenting a brief outline of Frege's model, I shall give a few more indications that Frege used existing material for his reshuffling of logical analysis.

In short, Frege's model of language may be described as follows.[80] Within every language a logical syntax may be discovered. The elements of this syntax Frege took from Becker's grammar and from functional theory. In *Begriffsschrift* Frege gave a brief outline of how such a syntax could be empirically discovered. Although not originally developed for linguistic purposes, the technique was later sporadically applied to the analysis of language.[81] There are three basic categories of logical syntax: that of value expressions, that of function expressions and that of proper names. Then there is the auxiliary category of argument expressions. An argument expression is either a value expression, a

function expression or a proper name. Logical language comes in sentences. Every sentence is a value expression. It can be analysed into function and argument expressions. Functions expressions never allow of further analysis; argument expressions, not themselves functions expressions, sometimes do.

The basic categories of the logical syntax are mapped – in a one-to-one fashion – on to the structure of sense. By this mapping all linguistic elements connected to mental images disappear.[82] The structure of syntax being isomorphic to the structure of sense, we have the same type of basic constituents at the level of sense as at the level of syntax. To the sentence the thought corresponds. Also to the function expressions, to those value expressions that are not sentences and to the proper names special constituents of sense (with no specific names) correspond. Since argument expressions are syntactically ambiguous, they are mapped on to the level of sense according as they are proper names, value expressions or function expressions. Finally, we have the domain of what Frege called *Bedeutungen*.

There have been some discussions over Frege's choice of the word *Bedeutung* (and over what could be the proper translation). With one important qualification Tugendhat is right in emphasising

> the puzzlement which every German reader experiences
> with this word [i.e. *Bedeutung*] when first reading Frege's
> essay *Über Sinn und Bedeutung*.[83]

No doubt, Frege's use of *Bedeutung* is at odds with present German usage, but less so, I think, with the usage of his own time. In 19th century Germany, *Bedeutung* was a freely floating term covering anything one might think to be connected with the use of linguistic expressions (see my comments on meaning above). Moreover, the combination *Sinn und Bedeutung* (in that order) seems to have had an almost idiomatic status. One finds it, for instance, in Gruppe's *Antäus*;[84] Grimm uses the idiom in the fourth part of his *Deutsche Grammatik* (1837).[85] Also after Frege, the idiom is used by authors who most certainly were ignorant of Frege's work.[86] Frege is hardly to be credited for having invented the constellation.

Whatever Frege's reasons for choosing the word *Bedeutung*, his intentions with the word seem clear. With *Bedeutung* Frege denotes those entities of his model that we today call "referents" (or "denotations"). The strict isomorphism obtaining between the basic categories of syntax and sense does not extend to the level of referents.[87] First, expressions and senses are mapped in a many-to-one fashion to referents. And further, the domain of referents is divided not into three basic categories, but only into two: the category of objects and the category of functions. The category of objects contains, as an important sub-class, the sub-category of truth values with two members only: Truth and Falsity. Sentences and thoughts are mapped to these two members. All other value expressions together with all proper names (and their respective senses) are mapped to objects outside the sub-category of truth values.[88] Function expressions (and their senses) are mapped to members of the category of functions. These members are either concepts or proper functions, according as they give truth values or not as values. The mapping between expressions and referents Frege conceives of as a naming relation. So, all expressions are names. For the mapping between senses and referents Frege has no special terminology, but by the isomorphism between syntax and sense, the latter mapping must copy the structure of the naming relation between expressions and referents.

Some interpreters have taken Frege to task for his believing all expressions to be names.[89] They feel that it is wrong to speak of concept expressions as names of concepts. I shall not enter the discussion of which usage would be more appropriate in modern logic. However, in 19th century Germany, Frege's usage was well accepted. It prospered in the philosophy known as nominism developed in the 1870s and 1880s by Ludwig Noiré and Max Müller.[90] According to Müller; the activity of thinking involves four kinds of material: sensations (*Empfindungen*), mental images (*Vorstellungen*), concepts (*Begriffe*) and names (*Namen*). All words (and expressions) are names of concepts. Hence the name *Nominism*.

Frege was no nominist. He was no follower of Müller's philosophy. But he did accept to model all expressions as names, just as he, like Müller, had no scruples thinking of concepts as referents. One may therefore detect, in Frege's model (as well as in Müller's nominism), a tension between nominalistic and realistic tendencies (in the mediaeval sense).[91] Words name, but they do not name

objects only as a traditional nominalist would demand. They also name concepts (as the nominist assumed). And moreover, to every object and concept one or more senses, endowed with objective existence, are related. So, Frege's nominalistic model does present rich material for realistic interpretations of both mediaeval and modern kind.[92]

4. LANGUAGE CRITICISM SYNTACTICALLY REVISITED

Frege believed that every language must contain a logical syntax. Until he finally succumbed to scepticism, he even believed that it would be possible to detect and use such a syntax in the service of science. To that end he constructed his model of language and logic. As I have been trying to demonstrate, the model was constructed out of conceptions well-established in the linguistic communities of 19th century Germany. Much the same can be said about the terminology that Frege devised for speaking about his model.

With his model Frege was able to counter the traditional argument against logical or rational grammar. If one can detect in every existing language one and the same syntactical "deep structure", then the Babylonian variety of language is in itself no argument against the programme of a logical syntax. To Frege matters were clear. Either such a syntax could be found and used, or scientific knowledge was Utopian dreaming. By his affinity to Becker Frege enters the long European tradition of rational grammar. He heightens the ambitions of the tradition by insisting that the successful implementation of a rational grammar is a necessary condition to the possibility of gaining genuine knowledge. And more important: Frege adds to the idea of a rational grammar a hitherto unknown degree of logical (mathematical) precision.

In linguistic affairs, precision is often conclusive. Due to the rigour of his model, Frege found himself in the unique position of actually being able to test the traditional claims of logical grammar. We know that Frege's interest in language was triggered by arguments current in the language criticism of his time. We also know that Frege ended up darkly embracing language scepticism. Between the two, a period of intense occupation with language and logic lies.

In one of his latest notes Frege points to the reason why he finally gave in to scepticism: the difficulties of dealing with the definite article in German (the

main problem of GLA). This problem has engendered, Frege says, not only "the paradoxes of set theory […] which have destroyed set theory", but also proved fatal to his own attempt at "providing for numbers a logical foundation".[93] It is interesting to notice that Frege chooses to tag the shortcomings of set theory on the same syntactical device as that which caused the downfall of his life work. And even more, of course, that he identifies syntax as the common decisive factor.

By citing the definite article of German, Frege highlights a very special oddity which he discovered around 1890. It is first discussed in the article *Über Begriff und Gegenstand* (in 1892), and is known, in the literature, as Frege's paradox.[94] In brief, the so-called "paradox" emerges when one tries to nominalise a function expression. The paradox has received much attention in the Frege literature. Some have regarded the paradox a blatant absurdity proving that Frege's model of language must be completely wrong,[95] some have tried to remedy its fatal effects,[96] and some have actually embraced it as a definite result with most thought-provoking consequences.[97] Below, I shall try to explain why Frege held his paradox to be of interest to anyone working scientifically with language, be it linguistically, analytically or historically. But first, a brief presentation of the argument leading up to the paradox.

In a logically cleansed language (English for instance), we may regard the definite article ("the") as a nominalisation device. Let us assume, with Frege, that the definite article may be rendered as a function expression taking as argument expression some concept expression ("man" for instance) and giving for value a value expression ("the man").[98] Like any other value expression, "the man" must (when couched in some sentence) be mapped first on to some entity of sense, and then to some object. Value expressions always denote objects. But now, suppose we want to speak, in our precise language, not of objects, but of concepts (or other kinds of functions).

Why should that be a problem? Before answering, let me first explain my use (standard, as I believe) of the colloquial phrase "speaking of" as used in the paragraph above. When we say "the man goes for a walk", we speak of some definite (previously introduced) man. That is, what we speak of is what we denote by the argument expression. By the function expression we denote what

we will say of the entity we speak of. We know from our model that argument expressions may be of any kind: value expressions, proper names or functions expressions. So, there is nothing <u>per se</u> to prevent us from speaking of functions and concepts.

The problem only arises the moment we want to do two things simultaneously: we want to speak of a concept (or a function) and we want to do so by means of our nominalisation device. Let me illustrate by means of Frege's own favourite example why this double act causes troubles.[99] Suppose we say "the concept horse is a concept". As above, the definite article "the" combines with the concept expression "concept horse" to yield the value expression "the concept horse". All value expressions denote objects. Hence "the concept horse" denotes an object. That is in itself a puzzling oddity. But when saying "the concept horse is a concept", we add falsity to oddity, for what do we say? We say that some strange object (denoted by "the concept horse") is a concept.[100] But since objects and concepts are strictly separated in Frege's model, no object can ever have the property of being a concept.[101] So our sentence denotes Falsity (or the sentence is false, as most would prefer to say). What holds for this nominalisation of a concept expression, holds for all attempts to be using nominalisations of concept and function expressions. We can speak of all the concepts and functions we want, but when we nominalise them, we automatically deprive them of their "concept-" or "function-hood".

This may seem a minor problem. In most cases we may probably find alternative ways of phrasing our sentences.[102] But there is one, specialised use of language in which the problem cannot be avoided, and that is when we apply language to itself. Whenever we find ourselves compelled to speak of those parts of language which are designed to occupy function position, we inevitable create the forbidden nominalisation. Normally, we may not notice what we are actually doing when using nominalised expressions in our linguistic descriptions. But when the precision of our descriptive language reaches the heights that Frege was the first if not to claim, then at least to climb, our descriptive resources start to fail us. Analysing the sentence "this rose is red", Frege discovers the fatal blow that logic deals at anyone who tries to give a precise description of language:

> the grammatical predicate *is red* belongs to the subject *this rose*. In that sentence the words *the grammatical predicate "is*

red" are not the grammatical predicate, they are the subject. It is precisely by calling the predicate *predicate* that we deprive it of the property of being a predicate".[103]

Frege's paradox arises from our wish (or need) to speak of language. There can be no precise meta-language that does not distort the object language it is designed to denote. When we try to speak of a language in a completely rigorous way, we inevitably produce false sentences. According to Frege, model theory had been flawed when model theory had been used to speak of itself (Cantor's diagonalisation). Russell had used another version of the same kind of self-reflexivity when discovering the fatal paradox in Frege's *Grundgesetze*. And rational or logical grammar, Frege realised, would, for the very same reason, be prevented from developing into a complete precise science. The construction of a logically cleansed language seems to be limited by itself. That is why Frege finally found himself despairing (along with Wittgenstein and Mauthner) of the possibility of cleansing language with language:

It is difficult, perhaps impossible, to test any expression that language offers us, for logical qualities.[104]

One may debate the importance of Frege's paradox. Do results obtained in cleansed languages carry over to their natural cousins, or do they only hold within the formal restraints of a logical syntax? Does the ease with which we speak of language in a natural language deceive us, or may we waive aside results like Frege's as a mere artificiality? To Sluga and Diamond, Frege's results show (or even prove) that logical semantics can be no science in the strict sense of the word.[105] But Frege, I think, was more ambitious. He believed that logic was the only valid answer to epistemic scepticism. Science is characterised by an ever increasing purification of language. The non-logical or psychological parts of language will dominate in poetry. "In mathematical, physical, chemical writing they will occur with lesser frequency than in the historical sciences." For that reason, Frege adds, the humanistic sciences (*Geisteswissenschaften*) are closer to poetry than to the stricter sciences.[106] However, for any discipline to become a real science, it must abandon the psychological aspects of language and make its use of language comply with the exigencies of some specific logical syntax. If science is to function in a reliable way, the language of science must adapt to logical criteria. But there is one prospective science which by its mere object is

prohibited from turning into real science. And that is the science of language. No occupation with language, Frege discovered, can overcome the difficulty arising from the traps of nominalisation. There can be no complete scientific meta-language of any object language.[107] To Frege this result meant the end of his scientific career. We still do not know whether Frege is right. Perhaps, we do not need a rigorous description of our chosen professional language. However, the problem is before us and should interest anyone claiming precision for their discourse on language.

REFERENCES

Frege, Gottlob (GGA), *Grundgesetze der Arithmetik*, first vol., Darmstadt 1962 [1893]: Wissenschaftliche Buchgesellschaft.

Frege, Gottlob (BS), *Begriffsschrift und andere Aufsätze*, Darmstadt 1964 [1879]: Wissenschaftliche Buchgesellschaft.

Frege, Gottlob (WB), *Wissenschaftlicher Briefwechsel*, Hamburg 1976: Meiner.

Frege, Gottlob (NS), *Nachgelassene Schriften*, Hamburg 1983[2]: Meiner.

Frege, Gottlob (GLA), *Die Grundlagen der Arithmetik*, Stuttgart 1987 [1884]: Reclam.

Frege, Gottlob (KS), *Kleine Schriften*, Hildesheim 1990[2]: Georg Olms.

Baker, G.P., P.M.S. Hacker (1984), *Frege: Logical Excavations*, Oxford: Blackwell.

Baker, G.P., P.M.S. Hacker (1987), "Dummett's Dig: Looking-Glass Archaeology", *The Philosophical Quarterly*, 37 (1987), pp. 86-99.

Becker, Karl Ferdinand (1969 [1835/1870[2]]), *Ausführliche deutsche Grammatik als Kommentar der Schulgrammatik*, Hildesheim: Georg Olms.

Becker, Karl Ferdinand (1970 [1841[2]]), *Organism der Sprache*, Hildesheim: Georg Olms.

Bell, David (1979), *Frege's Theory of Judgement*, Oxford: Oxford University Press.

Bergmann, Gustav (1958), "Frege's Hidden Nominalism", *The Philosophical Review*, 67, pp. 437-59.

Bumann, Waltraud (1965), *Die Sprachtheorie Heymann Steinthals. Dargestellt im Zusammenhang mit seiner Theorie der Geisteswissenschaft*, Mesenheim am Glan: Anton Hain.

Carl, Wolfgang (1994), *Frege's Theory of Sense and Reference. Its Origins and Scope*, Cambridge: Cambridge University Press.

Church, Alonzo (1956), *Introduction to Mathematical Logic*, New Jersey: Princeton.

Cloeren, Hermann-Josef (Hg.) (1971), *Philosophie als Sprachkritik im 19. Jahrhundert*, Textauswahl I, Stuttgart: Frommann-Holzboog.

Cloeren, Hermann-Josef (1988), *Language and Thought: German Approaches to Analytic Philosophy in the 18th and 19th Centuries*, Berlin: de Gruyter.

Currie, Gregory (1982), *Frege. An Introduction to His Philosophy*, Brighton: Harvester Press.

Diamond, Cora (1984), "What Does a Concept Script Do?", in: Wright (1984), pp. 158-183.

Diamond, Cora (1995), "Frege and Nonsense", in: Diamond, Cora (1995), *The Realistic Spirit*, Cambridge Mass.: MIT, pp. 73-93.

Dummett, Michael (1973), *Frege: Philosophy of Language*, London: Duckworth.

Dummett, Michael (1981), *The Interpretation of Frege's Philosophy*, London: Duckworth.

Dummett, Michael (1984), "An Unsuccessful Dig", in: Wright (1984), pp. 194-26.

Dummett, Michael (1988), "Reply to 'Dummett's Dig', by Baker and Hacker", *The Philosophical Quarterly*, 38 (1988), pp. 87-103.

Dummett, Michael (1991), *Frege and Other Philosophers*, Oxford: Clarendon.

Forsgren, Kjell-Åge (1992), *Satz, Satzarten, Satzglieder. Zur Gestaltung der deutschen traditionellen Grammatik von Karl Ferdinand Becker bis Konrad Duden 1830-1880*, Münster: Nodus-Publikationen.

Geach, Peter T. (1972), *Logic matters*, Berkeley: University of California Press.

Geach, Peter T. (1976), "Saying and Showing in Frege and Wittgenstein", in: Hintikka, Jaako (ed.) (1976), *Essays on Wittgenstein in Honour of G. H. von Wright* (= Acta Philosophica Fennica 28), Amsterdam: North-Holland Publishing Company, pp. 54-70.

Glinz, Hans (1947), *Geschichte und Kritik der Lehre von den Satzgliedern in der deutschen Grammatik*, Bern.

Götzinger, Max Wilhelm (1839), *Die deutsche Sprache*, II,3: *Satzlehre*, Stuttgart.

Gruppe, Otto Friedrich (1831), *Antäus. Ein Briefwechsel über speculative Philosophie in ihrem Conflict mit Wissenschaft und Sprache*, Berlin (excerpts in: Cloeren (1971), pp. 47-60).

Gruppe, Otto Friedrich (1834), *Wendepunkte der Philosophie im 19. Jahrhundert*, Berlin.

Haselbach, Gerhard (1966), *Grammatik und Sprachstruktur. Karl Ferdinand Beckers Beitrag zur Allgemeinen Sprachwissenschaft in historischer und systematischer Sicht*, Berlin: de Gruyter.

Hjelmslev, Louis (1961 [1943]), *Prolegomena to a Theory of Language*, Madison: University of Wisconsin Press.

Kleemeier, Ulrike (1997), *Gottlob Frege. Kontext-Prinzip und Ontologie*, Freiburg: Alber.

Knobloch, Clemens (1984), "Sprache und Denken bei Wundt, Paul und Marthy. Ein Beitrag zur Problemgeschichte der Sprachpsychologie", *Historiographia Linguistica*, 11, pp. 413-48.

Knobloch, Clemens (1988), *Geschichte der psychologischen Sprachauffassung in Deutschland von 1850 bis 1920*, Tübingen: Niemeyer.

Knobloch, Clemens (1992), "Wilhelm Wundt", in: Dascal, M., D. Gerhardus, K. Lorenz, G. Meggle (Hgg.) (1992), *Sprachphilosophie*, vol. VII,1 of *Handbücher zur Sprach- und Kommunikationswissenschaft*, Berlin: de Gruyter, pp. 412-31.

Koerner, Konrad (1989), *Practising Linguistic Historiography*, Amsterdam: Benjamins.

Kreiser, Lothar (2001), *Gottlob Frege. Leben – Werk – Zeit*, Hamburg: Meiner.

Kripke, Saul A. (1979), "A Puzzle about Belief", in: Margalit, Avishai (ed.) (1979), *Meaning and Use*, Dordrecht: Reidel, pp. 239-283.

Kutschera, Franz von (1989), *Gottlob Frege. Eine Einführung in sein Werk*, Berlin: de Gruyter.

Löhr, Rosemarie (1989), "Bemerkungen zur Grammatiktheorie Jakob Grimms und Karl Ferdinand Beckers", *Sprachwissenschaft*, 14 (1989), pp. 126-160.

Marty, Anton (1884), "Über subjektlose Sätze und das Verhältnis der Grammatik zu Logik und Psychologie", 7 papers in: *Vierteljahresschrift für wissenschaftliche Philosophie*, 8 (1884).

Marty, Anton (1908), *Untersuchungen zur Grundlegung der Allgemeinen Grammatik und Sprachphilosophie*, Halle.

Mauthner, Fritz (1901), *Beiträge zu einer Kritik der Sprache*, Stuttgart: Cotta.

Müller, Friedrich Max (1888), "Das Denken im Lichte der Sprache", in: Schmidt (1971), pp. 61-145.

Nielsen, Karsten Hvidtfelt (2003), *Interpreting Spinoza's Arguments. Toward a Formal Theory of Consistent Language Scepticism*, Lewiston: Mellen.

Nielsen, Karsten Hvidtfelt (2005), "Braucht eine Textlinguistik Kategorien des Sinns? Sinnkritische Bemerkungen zu Frege, Coseriu und Luhmann", *Tidsskrift for Sprogforskning*, 3/1 (2005), pp. 47-83.

Nerlich, Brigitte, David D. Clarke (1999), "Protopragmatic Theorie of Language in Europe 1780-1930", in: Schmitter, Peter (Hg.) (1999), *Sprachtheorien der Neuzeit*, I, vol. 4 of *Geschichte der Sprachtheorie*, Tübingen: Narr, pp. 254-300.

Noiré, Ludwig (1877), *Der Ursprung der Sprache*, Mainz: v. Zabern.

Paul, Hermann (1975 [1920[5]]), *Prinzipien der Sprachgeschichte*, Tübingen: Niemeyer.

Picardi, Eva (1996), "Frege's Anti-Psychologism", in: Schirn, Matthias (1996), pp. 307-29.

Porzig, Walter (1923), "Der Begriff der inneren Sprachform", *Indogermanische Forschungen*, 41 (1923), pp. 150-169.

Robins, R.H. (1990[3]), *A Short History of Linguistics*, London: Longman.

Schirn, Matthias (ed.) (1996), *Frege: Importance and Legacy*, Berlin: de Gruyter.

Schleicher, August (1888[5] [1855]), *Die deutsche Sprache*, Stuttgart.

Schmidt, Siegfried J. (ed.) (1971), *Philosophie als Sprachkritik im 19. Jahrhundert*, Textauswahl II, Stuttgart: Frommann-Holzboog.

Skorupski, John (1984), "Dummett's Frege", in: Wright (1984), pp. 227-43.

Sluga, Hans D. (1980), *Gottlob Frege*, London: Routledge & Kegan Paul.

Steinthal, Heymann (1968 [1855]), *Grammatik, Logik und Psychologie, ihre Prinzipien und ihr Verhältnis zueinander*, Hildesheim: Georg Olms.

Steinthal, Heymann (1970a), *Kleine Sprachtheoretische Schriften*, ed. by Bumann, Waltraud, Hildesheim: Georg Olms.

Steinthal, Heymann (1970b [1860]), "Ueber den Idealismus in der Sprachwissenschaft", in: Steinthal (1970a), pp. 380-414.

Steinthal, Heymann (1972 [1881[2]]), *Abriss der Sprachwissenschaft*, I, Hildesheim: Georg Olms.

Trendelenburg, Adolf (1840), *Logische Untersuchungen*, 2 vols., Berlin.

Trendelenburg, Adolf (1846), *Beiträge zur Philosophie*, 3 vols., Berlin.

Tugendhat, Ernst (1970), "The Meaning of 'Bedeutung' in Frege", *Analysis*, 30 (1970), pp. 177-189.

Wegener, Philipp (1885), *Untersuchungen über die Grundfragen des Sprachlebens*, Greifswald.

Weisgerber, Leo (1926), "Das Problem der inneren Sprachform und seine Bedeutung für die deutsche Sprache", *Germanisch-Romanische Monatsschrift*, 14 (1926), pp. 241-56.

Wiggins, David (1984), "The Sense and Reference of Predicates. A Running Repair to Frege's Doctrine and a Plea for the Copula", in: Wright (1984), pp. 126-43.

Wright, Crispin (1983), *Frege's Conception of Numbers as Objects*, Aberdeen: Aberdeen University Press.

Wright, Crispin (ed.) (1984), *Frege. Tradition & Influence*, Oxford: Blackwell.

Wundt, Wilhelm (1885), *Essays*, Leipzig.

Wundt, Wilhelm (1900), *Die Sprache*, vol. I,1 + I,2 von *Völkerpsychologie*, Leipzig.

NOTES

1   Also Dummett was to change his mind on Frege. In Dummett (1981), Frege is no longer a contemporary philosopher of language:

> An explicit adherence to the fundamental tenet of analytical philosophy thus cannot be claimed for Frege; but what can be claimed is that his philosophy of thought and of language leads almost inexorably in that direction. (54)

That Dummett's change of attitude toward Frege was also to move in the direction of a historical view becomes outspoken in Dummett (1991) which contains a number of articles discussing Frege's work in the context of 19th century thought.

2   There never was one unitary Neo-Kantian movement. The idea of advancing philosophy by going back to Kant flourished in many different areas of philosophy. In 1916, the historian Oesterreich distinguishes, in his re-edition of Ueberweg's *Grundriss der Geschichte der Philosophie*, between 6 different schools of Neo-Kantianism (a physiological, a metaphysical, a realistic, a logicist (The Marburger school), a value theoretical and a relativistic).

3   In the unpublished paper *Booles rechnende Logik und die Begriffsschrift* (1880/81), in NS, 9-52, Frege makes a brief allusion to the linguist A. H. Sayce who like Frege argued the primacy of the sentence over its parts (NS, 19).

4   See Dummett's "Frege's 'Kernsätze zur Logik'" in Dummett (1991: 65-78). Frege's dependence on Lotze has likewise been discussed in Sluga (1980) and Kreiser (2001). To Sluga, Frege owes his so-called "paradox" (see below) to Lotze (Sluga 1980: 138). Kreiser suggests a rather different kind of dependence, focussing more on Lotze's religious views than his logical (Kreiser 2001: 95ff).

5   See Picardi (1996: 326f). The reference is to Currie (1982: 182).

6   From 1918, in KS, 342-62.

7   In GLA, Frege makes the remark that his view of numbers, although not actually current among mathematicians, nevertheless seem to be "lying in the air" (*Sie scheinen mir in der Luft zu liegen*) (GLA, 24). Much the same, I think, could be said about his views of language. The historiographer Koerner has repeatedly emphasised the importance of studying the kind of influence that also Frege is acknowledging with his reference. See Koerner 1989 on the reasons why the historical study of language needs to take "the climate of opinion" (85), the "spirit of the time" (*der Geist der Zeiten* (Goethe)) (61) into consideration.

8   I more or less agree with the severe criticism that Baker & Hacker (1984) have launched against the philosophical qualities of Frege's work; however, their eagerness for belittling the philosophical endeavours of Frege seems to have blinded them to other merits of Frege's (his intellectual persistency for instance). To the controversy over Baker & Hacker (1984), see Dummett (1984), Baker & Hacker (1987) (modifying some of their criticism), and Dummett (1988).

9   In German language, the modern conception of *Sprachkritik* seems to have originated with Hamann (see letter to Herder 7.7.1782)). For a brief introduction to the German tradition for language criticism, see Cloeren (1988). As Cloeren, I have chosen to translate *Sprachkritik* by language criticism.

10 In NS, 1-8.

11 NS, 7. All translations from Frege's work are my own. Key words will be marked by being followed by the German original.

12 KS, 350.

13 *Erkenntnisquellen der Mathematik und der mathematischen Naturwissenschaften* (1924/25), in NS, 286-94, 289.

14 Sluga (1980) is to be credited with having for the first time brought the attention of Frege scholars to the possible importance of Gruppe for Frege. See Sluga (1980: 22ff). For a brief survey of Gruppe's philosophy, see Cloeren (1988: 78-109).

15 Mauthner also took from Gruppe the metaphor of natural language as a ladder that may be thrown away after climbing (in Gruppe 1831, excerpts of the book are found in Cloeren 1971: 47-60; here the ladder-metaphor 51-52). The metaphor was later to acquire fame through Wittgenstein's *Tractatus logico-philosophicus* (1922).

16 Gruppe (1834: 31); Mauthner (1901: 5).

17 BS, xii.

18 *Tagebucheintragungen über den Begriff der Zahl* (1924/25), in NS 284-85, 285.

19 *Erkenntnisquellen der Mathematik und der mathematischen Naturwissenschaften* (1924/25), in NS, 286-94, 289.

20 In BS, xi, Frege makes a brief mention of Trendelenburg (1846).

21 For a similar conjecture, see Sluga (1980: 49). At the same place, Sluga even suggests that Frege might have taken the name for his *Begriffsschrift* from Lotze. See however Kreiser (2001: 153-169), for a detailed discussion of more plausible inspirations for Frege's interest in pasigraphy. Both Sluga (1980) and Kreiser (2001) concur on ascribing to Trendelenburg, who had supervised Lotze's dissertation, a lasting influence on Lotze's views of logic.

22 Gruppe (1834: 145f).

23 Gruppe (1834: 28).

24 In this respect, Gruppe's work clearly antedates central aspects of Nietzsche's language criticism.

25 The discovery of Currie and Picardy (see note 5), together, of course, with Frege's general view of knowledge, points to the position known today as empirio-criticism. Below, I shall argue that Frege may have arrived at this position by the intermediary of Steinthal's psycho-linguistics.

26 *Logik* (1879/91) NS, 1-8, 6.

27 *Der Gedanke* (1918), KS, 342-62, 352. See also GLA 59-60.

28 One finds a first indication of Frege's alertness to the symbolic-linguistic side of the mathematical profession in his *Rezension von: H. Seeger, Die Elemente der Arithmetik* (1874), in KS, 85-86.

29 *Logik* (1879/91), NS, 1-8, 6.

30 In BS, 106-14, 107.

31 *Erkenntnisquellen der Mathematik und der mathematischen Naturwissenschaften* (1924/25), in NS, 286-294, 288.

32 It is symptomatic that those who have, in fact, tried to transform Frege's scattered comments on matters of philosophy into a coherent system have failed to reach agreement on even the most basic issues. Did Frege conceive of himself as an epistemologist (such as argued by Sluga 1980 and Carl 1994), or as an ontologist (Dummett 1973, 1981 and 1991, and Wright 1983)? Was Frege a realist (Dummett 1973, 1981, and 1991), a Platonist (Bell 1979, Wright 1983), a nominalist (Bergmann 1958), or a transcendentalist (Sluga 1980, Currie 1982, Carl 1994 and Kreiser 2001)? As earlier stated (see note 8), I share the view of Baker & Hacker (1984) that philosophy was really not Frege's strongest asset. But contrary to Baker & Hacker, I do not believe Frege's philosophical ingenuousness a convincing argument against the overall importance of his achievements.

33 In KS, 143-62.

34 Frege seems to have first mentioned his innovations in language related thought and terminology in the, now, famous letter to Husserl of 24.05.1891, in WB, 94-98.

35 In Germany, the 1870s became known as the decade of the so-called "Junggrammarians". However, in the 1880s a more speculative kind of linguistics flourished. Knobloch (1988), the most reliable and comprehensive study of German linguistics in the second half of the 19th century, suggests that many of the theories published around the 1880s could be characterised as a re-emergence of the tradition of rational grammar (Knobloch 1988: 401, 424, 434-438). Under this heading would certainly fall: Müller (1888) (a Becker redivivus to Knobloch 1988: 424), Noiré (1877), Gerber (1884), Wundt (1885), Marty (1884f) (with points later resumed in Marty 1908). Of a more pragmatic bent, perhaps, Wegener (1885) stands out.

36 *Booles rechnende Logik und die Begriffsschrift* (1880/81), in NS, 9-52, *Über den Zweck der Begriffsschrift* (1882), in BS, 97-106, *Über die wissenschaftliche Berechtigung einer Begriffsschrift* (1882), in BS, 106-14, *Booles logische Formelsprache und meine Begriffsschrift* (1882), in NS, 53-59.

37 One may, of course, also, and much more customarily so, read the *Grundlagen* as an investigation into the nature of numbers as in Wright (1983) for instance.

38 *Funktion und Begriff* (1891), in KS, 125-42, *Über Sinn und Bedeutung* (1892), in KS, 143-62, *Über Begriff und Gegenstand* (1892), in KS, 167-78.

39 Unfortunately, the most complete life on Frege, Kreiser (2001), is tacit on Frege's linguistic school training. Kreiser refers the reader to the school grammar produced by Frege's father who was a school teacher. But there is little, apart from paternity, to suggest that Frege's views of language were actually shaped by his father's pedagogical efforts.

40 As already Goethe noticed:

> Because every person knows how to speak, he also feels competent to speak about language (*Ein jeder, weil er spricht, glaubt auch über die Sprache sprechen zu können*). (Maximen und Reflexionen)

Quoted from *Sämtliche Werke* I, 13: *Sprüche in Prosa*, Frankfurt am Main (1993).

41 See, for instance, Glinz (1947), Haselbach (1966), Knobloch (1988) and Forsgren (1992).

42 Becker was criticised both by Grimm, the most prominent member of the historical movement within German linguistics, and by Steinthal, the founder of psycho-linguistics in Germany.

43 For a comprehensive list of Becker's work, see Haselbach (1966). Becker's school grammar, *Schulgrammatik der deutschen Sprache*, was first published in 1831.

44 Becker's shift from morphology to syntax seems to have been influenced by Trendelenburg's Aristotelianism with which he first became familiar around 1840, and so did not manifest itself until the second edition of *Organism* in 1841.

45 The tradition for constructing grammars around word classes dates back to the first European grammar, the *Techné of Dinonysius the Thracian*. The tradition was not broken until Girard in his *Les vrais principes de la langue française ou la parole réduite en méthode conformément aus lois de l'usage* from 1747 made syntax the pivotal point of grammar. See Glinz (1947) and Robins (1990[3]).

46 Becker (1970: xiii).

47 In this argument, one finds clear traces of the opening passages from Aristotle's *On interpretation* (Περι ερμηνειας).

48 This could be the origin of the much debated context-principle in Frege's work. For a thorough analytic discussion of Frege's context-principle, see Kleemeier (1997).

49 Discussions of the priority of either sentences over their parts, or the parts over the sentence were by no means restricted to the logical community, but formed the centre of a vital debate in German linguistics. Especially the confrontation between Wundt (claiming the primacy of the whole (the sentence)) and Paul (claiming the primacy of the parts) gained notoriety, see Knobloch (1988).

50 Compare, for instance, Becker (1970: 66f) with Frege's *Die Verneinung* (1918), in KS, 362-78.

51 Haselbach (1966) points to the romantic tradition for *Naturphilosophie* (Schelling). As indicated, also Aristotle, by the mediation of Trendelenburg, may have influenced Becker.

52 Becker makes no functional distinction between expressing (*ausdrücken*) and denoting (*bezeichnen*) as Frege later is to do.

53 See BS, xiii, 3. Notice however, that Frege, in spite of his pronounced dissatisfaction with the traditional denominations of grammar, at numerous places resorts to the traditional nomenclature of grammar (so, for instance, in *Über Begriff und Gegenstand* (1892), in KS, 167-78, in *Ausführungen über Sinn und Bedeutung* (1892/95), in NS, 128-36, in GGA (1893) and in *Logik* (1897) in NS, 137-63). Naturally, this inconsistency has not escaped the critical eyes of Baker & Hacker (1984) who, rightly I believe, claim that Frege's linguistic imagination stayed within the bonds of traditional, that is Beckerian, grammar (Baker & Hacker 1984: 79).

54 Becker, no great systematic, unfortunately uses the terms *Prädikat* and *Subjekt* indiscriminately of levels.

55 See also *Aufzeichnungen für Ludwig Darmstaedter* (1919) in NS, 273-77, 275.

56 In BS, 18, Frege explains how to render the predicate-object-relationship by means of a two-place function, taking the subject for its first, and the object for its second argument.

57 Becker did not himself coin the term *Abverbiale* for the latter constituent, however Wurst, who did much to popularise Becker's ideas, did (see Glinz 1947: 71).

58 To Götzinger's grammar, see Forsgren (1992: 29-31, 250).

59 As explained in, for instance, GLA and *Über Begriff und Gegenstand* (1892), in KS, 167-78.

60 See discussions in Bell (1979), Baker & Hacker (1984) and Wiggins (1984).

61 Other leading figures of psycho-linguistics in Germany were: Moritz Lazarus (Steinthal's friend and collaborator) and Wilhelm Wundt who was to develop the ethnic branch of Steinthal's programme.

62 Opposition against the Herbart view of psychology was not to emerge until the 1870s where Brentano, based on a personal reading of Aristotle, turned psychology into an introspective study of intentions. The difference between causal and introspective psychology is neatly mirrored in the vehement debates between Wundt and Marty (a follower of Brentano). See Knobloch (1992).

63 Frege was certainly not the only one inferring agnosticism from Steinthal's premises. See, for instance, Wegener (1885), Paul (1975), and, of course, Mauthner (1901).

64 In Steinthal (1968).

65 In the linguistic theories of the 20th century, we find the divide between belief in logical and non-logical "deep-structuring" represented in the respective positions of Montague (logical deep structure) and pre-minimalist Chomsky (biological deep structure).

66 There can be no doubt that Frege was familiar with the new psychology. In GLA, we find Frege mentioning the work of Herbart (GLA, 17); as for *Vorstellungen*, his primary source seems to have been a work of Stricker (*Studien über die Assoziation der Vorstellungen*, Wien (1883)). In GGA, Frege launched a severe criticism of Benno Erdmann, a late follower of Herbart.

67 Steinthal (1968: xx).

68 In linguistics, the idea, as well as the term of an <u>inner form</u> originates with Humboldt. However, in philosophy the concept is much older dating back to the writings of Plotinus.

69 See, for instance, Wundt (1900), Mauthner (1901), Marty (1908), Porzig (1923) and Weisgerber (1926).

70 The term "meaning" is here used as an intended (and necessary) simplification. In 1855, Schleicher observed that the linguistic science had not even started investigating what we today might call the "semantic parts of language" (Schleicher called the missing discipline "functional theory" (*Funktionslehre* (Schleicher 1885: 10)). Half a century later, Marty was, on radically different premises, to repeat Schleicher's judgement: if we compare the study of the semantic features of language (Marty called this study "descriptive semasiology") with the study of the phonetic features, one cannot help noticing the undeveloped state of the former (Marty 1908: 69). Knobloch (1988) is good at debunking myths concerning the alleged flourishing of an autonomous discipline of semantics in the 19th century (Knobloch 1988: 239-241), however somewhat optimistic when assuming the 20th century to have proved more successful. There still is no clear idea of what the study of the semantic side of speech should involve, not even unanimity on what to understand by "meaning" or related terms.

71 As for clarification, Steinthal is certainly no exception. Bumann is right, I think, in concluding that Steinthal's discussions of what an inner form could be did not succeed in removing from this concept its apparently inherent obscurity (Bumann 1965: 122).

72 Arguing genetically, Steinthal locates the first two instantiations of an inner form in the pre-history of speech. Originally, inner form worked by onomatopoeia, then inner form came to depend on etymology. Today, both kinds of inner form have disappeared, leaving us with the third kind of inner form solely sustained by synonyms.

73 Steinthal (1972: 432).

74 Dummett seems to have ended up assuming Fregean sense to cover three different aspects: (1) abstract objects, (2) routes to reference, (3) pre-theoretic meaning (see the informative paper of Skorupski on Dummett's Frege (Skorupski 1984)); of these three, at least (1) and (2), objects and routes, cannot both be correct; so Frege's idea of sense is inconsistent to Dummett (see "Frege's Myth of the Third Realm" in Dummett 1991: 250-262). Naturally, also Baker and Hacker find fault with Frege's sense. They conclude their attempt at assembling as many of Frege's comments on sense under the heading of (2) by judging Frege's theory of sense

> riven with contradictions and fraught with inner tensions
> between irreconcilable principles (Baker & Hacker 1984:
> 333)

Some, like Church (1956: 6f) and Picardi (1996), have identified sense with linguistic meaning (itself a dubious concept (see note 70)). And most have agreed that Frege never explained how to separate senses from concepts (see below, especially note 79).

75 KS, 349. In his paper *Der Gedanke* (1918), in NS, 342-62, Frege comes very close to Mauthner's theory of individual (private) languages. See Kripke (1979) for a similar reading of Frege, and Nielsen (2003) for a thorough discussion of the issue.

76 The question of how to demarcate logic from grammar was also a hotly disputed issue among linguists. From Becker to Marty, most German linguists felt called upon to discuss the matter. However, since no clear conception of logic was available to any, the discussions routinely ended in indeterminacy.

77 For reasons of simplicity, I have chosen to omit a discussion of Frege's different anticipations of speech act theory, such as, for instance, the difference between asserting and expressing/denoting. Notice, by the way, that Austin, who translated Frege's GLA to English, may have found inspiration in Frege for his realisation of the role played by speech acting elements. Furthermore, Frege was not the only one incorporating pragmatic features in his linguistic theory. See Nerlich & Clarke (1999) for a brief survey of "protopragmatic theories of language in Europe 1780-1930".

78 The idea that language, among its many components, should also include an artistic, poetic one was particularly promoted by Gerber (*Die Sprache als Kunst* (1871-73)).

79 So, for instance in *Ausführungen über Sinn und Bedeutung* (1892/95), in NS, 128-36, 129. Notice that Church 1956, notwithstanding Frege's caveat, chooses to identify the sense of a concept word with the concept itself.

80 For a more detailed precise presentation of Frege's model, see Kutschera (1989).

81 The technique consists in analysing one's material for constant and variable elements. What we chose to regard as constants, we identify as function expressions; the variable elements we take to be argument expressions. In *Über Begriff und Gegenstand* (1892), in KS 165-78, 173, Frege gives a brief intimation of how the technique could be applied to linguistic material. Incidentally, Hjelmslev, certainly without any knowledge of Frege's pioneer work, was to reinvent Frege's technique in Hjelmslev (1961).

82 Frege often referred to these elements as colouring (*Färbung*) or illumination (*Beleuchtung*); see, for instance, *Über Sinn und Bedeutung* (1892), in KS, 143-62, 147, or *Kurze Übersicht meiner logischen Lehren* (1906), in NS, 213-18, 214.

83 Tugendhat (1970: 177).

84 Gruppe (1831):

> Now if philosophers have not learnt by careful linguistic study to replace these transitions of language, this high ladder, on which the sense and the referent [*der Sinn und die Bedeutung*] not only of singular words, but of the entire language depend, […] (*Wenn nun die Philosophen nicht durch gründliches Sprachstudium diese Übergänge, diese hohe Leiter, zu ersetzen wissen, wovon allein der Sinn und die Bedeutung nicht einzelner Wörter sondern der ganzen Sprache abhängen*) (in Cloeren 1971: 52)

85 > Sound, root, word, formation and flexion of the word contain sense and referent [*Sinn und Bedeutung*], however, these elements do not become live until activated by thought (*Laut, Wurzel, Wort, Bildung und Flexion des Worts enthalten Sinn und Bedeutung, die aber erst durch das Geschäft des Denkens lebendig werden*) (quotation from Haselbach 1966: 39)

86 One could mention as different works as Paul Hankamer's monography on the German language in the 16th and 17th centuries (*Die Sprache* (1927: 41)) or Ernst Jünger's essay on language having for title Sense and Referent (*Sinn und Bedeutung*) from 1971. Perhaps, the idiom owes some of its popularity to the euphony of its rhythm (matching the ending of an hexameter).

87 Notice that Frege, in *Aufzeichnungen für Ludwig Darmstaedter* (1819), in NS, 273-277, explicitly states that no isomorphism obtains between sense and referent. It is

therefore a little confusing to find Baker & Hacker speaking of a "triple-layered isomorphism" dominating Frege's model of language (Baker & Hacker 1984: 316).

88 In the name of precision, one ought to add that there are two value expressions, "The True" and "The False", and two proper names "Truth" and "Falsity", that are to be mapped to the same objects as sentences.

89 To Baker and Hacker, Frege, when turning sentences into names, made a "disastrous move" (Baker & Hacker 1984: 124), however one, they think, symptomatic of the Augustinian vision of language that Frege, in their opinion, had fallen prey to (Baker & Hacker 1984: 23, 56, 61, 290). Also Geach (1972) regarded Frege's nominalism as a corruption, however not of Augustinian origin. Instead, Geach refers the reader to Aristotle's original corruption of logic which is to have first insinuated its way into logic when the Stagerite decided to abandon his (sound) division of the sentence into subject and predicate for the (untenable) two term-theory of sentences.

90 See especially Müller (1888).

91 Müller (1888) explains that he has chosen the name of Nominism instead of the traditional Nominalism in order to distinguish it from Occam's system (in Schmidt 1972: 61-62).

92 In his many writings on Frege, Dummett has insisted on attributing to Frege a modern species of realism. See Bergmann 1958 for an attempt to place Frege in a modernised nominalism.

93 See *Erkenntnisquellen der Mathematik und der mathematischen Naturwissenschaften* (1924/25), in NS, 286-94, 288-89.

94 According to Kleemeier (1997), the so-called "paradox" would only constitute a genuine paradox if "the concept horse" (see below) did denote a concept (which, of course, it does not), see Kleemeier (1997: 241).

95 So, for instance, Baker & Hacker (1984: 16, 255).

96 So, for instance, Kleemeier (1997, 244f).

97 So, for instance, Geach (1972: 216), Sluga (1980: 138) and especially Diamond (1984 and 1995) (in both *passim*).

98 For minor corrections, my presentation is identical to the one given by Frege in GLA 71, 85, or in an undated letter to Huntington (in WB, 88-90, 89).

99 Frege discusses the problem in *Über Begriff und Gegenstand* (1892), in KS, 167-78, and in *Ausführungen über Sinn und Bedeutung* (1892/95), in NS, 128-136. It is interesting to notice that Frege's favourite example, the horse, is the same as that of Becker and Müller; all three, of course, harking back to Aristotle's treatise on the Categories whence the tradition for illustrating linguistic problems with the word "horse" seems to have originated.

100 Late in life, Frege seems to have changed his mind about what expressions like "the concept horse" could denote. In *Logik in der Mathematik* (1914), "the concept positive number" is said to be devoid of denotation (in NS, 221-70, 269), in *Erkenntnisquellen der Mathematik und der mathematischen Naturwissenschaften* (1924/25), "the concept fixed star" is criticised for suggesting to us the existence of something which cannot exist (in NS, 286-94, 289). In both cases, Frege puts the blame on the syntax of language.

101 Technically, an expression like "concept" is a concept expression denoting a concept of second order. For argument the concept expression must therefore have a concept expression denoting a concept of first order (that is a concept under which objects fall). But "the concept horse" does not denote a concept of first order, and so fails to meet the semantic (denotational) conditions placed on the syntactical structure "the A is a B", with "B" denoting a concept of second order.

102 Frege did actually devise a way of speaking of concepts without simultaneously adding falsity to oddity. For his device, see *Ausführungen über Sinn und Bedeutung* (1892/95), in NS, 128-36, 133. To some (Geach 1972: 216) Frege's device is a workable solution, to others (Kleemeier 1997: 230) Frege's device ends up in the same semantic (denotational) trap as that it was meant to evade.

103 *Über Begriff und Gegenstand* (1892), in NS 167-78, 170-71.

104 *Erkenntnisquellen der Mathematik und der mathematischen Naturwissenschaften* (1924/25), in NS, 286-94, 289.

105 Sluga (1980: 144), Diamond (1984: 182). Like Geach (Geach 1976), both have found in Frege's paradox the origin of Wittgensteins's famous distinction between showing and saying.

106 *Der Gedanke* (1918), in KS, 342-62, 347.

107 From the view-point of science, language is deeply irreflexive. No scientific language can describe its own structure. For a further discussion of this axiom of irreflexivity, see my Nielsen (2003), where also Gödel's later attempt at solving the same problem is analysed in detail.