Frege's new language

It was Kevin and the oysters who clinched it, and I left the banks of the Isis for the richer banks of the Rhone. Along with oysters went talk of many things — not in our case (so far as I recall) of ships and sealing-wax, and still less of cabbages, but much (which I do recall, with fondness) of logic and of the great Gottlob. May these pages summon up remembrance of things past.

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Philosophers have always griped about language. Sometimes the complaints have been local, sometimes global. Some critics have wrung their hands, others have acted. Frege, from the beginning of his career to its end, was a griper — and a man of action. He invented a new artificial language which was to be immune to the diseases which debilitate natural languages and make them incapable of doing scientific service. The new language was a *Begriffsschrift*, an ideography. It is usually referred to as 'the *Begriffsschrift*'; but since it is not the only *Begriffsschrift* in the world, I prefer to call it 'Fregean'.

Fregean came in two versions, Mark 2 an enlargement and a refinement of Mark 1. Frege never claimed that it was a perfect language full stop — I daresay he thought that no language could be perfect full stop. But he held that it was adequate for arithmetic, and for logic — or at least for that part of logic which arithmeticians need; and he believed that it could be augmented so as to become adequate for any scientific purpose.

What is adequacy? Fregean, I suppose, will adequate for arithmetic and logic insofar as, first, it is capable of expressing any arithmetical or logical thought; secondly, those formulas which express such thoughts express nothing extraneous to the thoughts which they express; and thirdly, the structure of its formulas corresponds to the structure of the thoughts which they express. Fregean should be complete, and unadorned, and perspicuous.

Is Fregean adequate? Is it superior to Frege's native German? and to my native English? Here are a few loosely connected ruminations on some parts or aspects of those questions.

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In a scientifically adequate language no formula expresses more than one thought. In other words, the language avoids ambiguity, at least at the sentential level. English revels in ambiguity. In its refined version, Fregean is entirely free from ambiguity. (In Mark 1 every single sign is ambiguous.)

Frege sometimes suggests that ambiguity is bad because it is misleading — or because it does not lead at all. Faced by an ambiguous expression, you may choose the wrong sense — or you may be flummoxed. Or, perhaps worse, you may not realize that the expression is ambiguous. Aristotle, who liked to sniff out Greek ambiguities and was proud of his nose, thought that philosophers had sometimes gone astray in their reasonings because they had not recognized an ambiguity — Parmenides' metaphysics, he says, floundered because its author had not noticed that the Greek word 'ei\nai' has several senses. Aristotle was mistaken in his diagnosis of Parmenides (and his own account of the senses of 'ei\nai' is also mistaken); but no doubt some philosophers have sometimes been fooled by sophists who palter with them in a double sense.

How did Aristotle react to the ambiguities he detected in Greek? Did he think of inventing a new language? Not for a moment. Did he decide to remove all ambiguous words from his own Greek idiolect? Not at all. He continued to speak and write in natural Greek; he used, cheerfully, words which he took to be ambiguous; and occasionally — when it appeared useful — he indicated which sense of an ambiguous expression was the pertinent one. On the whole, that works pretty well: when Bernard gets a puncture, he doesn't buy a new tractor.

However that may be, Frege, unlike Aristotle, was not particularly exercised by lexical ambiguities: what excited him more were functional ambiguity and structural ambiguity, and to one particular case of functional ambiguity he returned again and again. In English, phrases of the form 'The f' perform a variety of functions. For example, 'The f' may serve to designate an individual object, as in

The walrus and the carpenter were walking hand in hand.

Or it may have a generalizing sense, as in

The mouse is a creature of great personal valour.

Or it may denote a group of objects, as in

The scribes on all the people shove.

And there are other uses aplenty, not all of them marginal or quirky —

The glass is falling hour by hour.
You won't hold up the weather.

The English definite article is, as they say in francophonia, polyvalent.

Mark 1 Fregean has no sign which corresponds directly to any of those uses of the definite article. Mark 2 introduces a symbol — a thick back-slash — which answers, roughly, to the use of the definite article to designate an individual object. The symbol is not ambiguous: it cannot, for example, be used to express generality.

So in that respect Fregean is different from English. Is it also superior? What's wrong with the polyvalence of 'The f'? Not, surely, that it misleads or bamboozles: how many English speakers have been puzzled by Lewis Carroll's line? how many have thought that poor Kit Smart was referring to an individual mouse? how many have scratched their heads and wondered to what individual object the expression 'the weather' refers? No doubt a polyvalent expression always has, as it were, the potential to mislead; but the potential is rarely actualized — and it is, in any event, scarcely dangerous enough to require the invention of a new language.

There are other objections to polyvalence — or rather, to the particular polyvalence of 'The f'. The one most pertinent to Frege's concerns might be illustrated like this. From

The walrus was walking

you may infer

Something was walking.

The inference is a special case of a general form; and you might think to specify the general form in something like the following way:

From 'The f Fs' infer 'Something Fs'.

But that won't do — after all, it allows you to infer

Something is balmy

from

The weather is balmy.

It is the polyvalence of the definite article which causes the trouble; for if you use polyvalent expressions in the specification of rules of inference, then your rules will let in fallacy.

That would be serious were it true. But it isn't true; you can take the sting out of polyvalence by indicating which is the pertinent value. Don't write:

From ‘The f Fs’ infer ‘Something Fs’.

Try instead something like:

From ‘The f Fs’, when ‘The f’ functions as a singular designator, infer ‘Something Fs’.

That rule will pass the good inferences and stop the bad.

But that’s not the end of it. Consider the thoughts you might express in English by the following three sentences:

The horse eats hay.

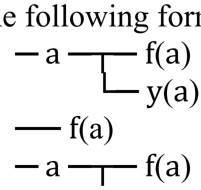
Frege eats hay.

Nothing eats hay.

The thoughts are different from one another — not just in their truth-value and in their sense but also in their logical structure. But the three English sentences have the same structure. At any rate, had I been asked, half a century and more ago, to parse them, I should have had no difficulty: ‘Subject, verb, object, sir’. The structure in question is

S + V + O.

In Fregean — were Fregean expressively rich enough to talk about hay — the three thoughts would be expressed by three formulas of the following forms:



Those three structures are quite different from one another—and also quite different from the English structure

S + V + O.

If a condition on the scientific adequacy of a language is that the structure of its formulas correspond to the structure of the thoughts which they express, then here is a clear case in which Fregean is adequate and English is not. And the trouble is caused, in part, by the definite article, which disguises the structure of the thought that the horse eats hay.

To that claim a radical objection is sometimes made. It runs like this. The claim supposes that we can distinguish between, and then compare, two items: the structure of a given thought, and the structure of a sentence which may be used to express it. But how can we determine what the structure of a given thought is? Well, you can’t inquire into the structure of a thought without identifying it as the thought that P; and you can’t do that except by producing some sentence, S, which expresses the thought that P. In that case, how could the structure of the thought that P fail to match the structure of the sentence S? To be sure, the thought that P might be expressed equally well by two sentences, S and S*, which have different structures. But that’s not a difficulty: it will follow that the thought that P has (at least) two different structures; and that is scarcely news.

In that case, no language is structurally more apt than another. If the thought that the horse eats hay is expressed in English by the sentence

The horse eats hay,

and if that sentence has the structure

S + V + O,

then the thought has the noetic counterpart of that structure. No doubt the thought also has a structure which is the noetic counterpart of the Fregean

─ a ─┬─ f(a)
        └─ y(a)

But that doesn’t put Fregean ahead of English. The score is one all.

What is ‘noetic structure’? There is the closest connection between the structure of a thought and its inferential powers: roughly speaking, the structure of a thought —better: the structures of a thought — determine the ways in which the thought performs in formal inferences. Thus the thought that Frege eats hay is entailed by the thought that everything eats hay, and it entails the thought that something eats hay. Those inferential powers are fixed by the noetic structure — or rather, the expression ‘noetic structure’ (or ‘logical structure’, or ‘structure’ *tout court*) is, so far as I can see, nothing but a metaphorical manner of speaking about inferential powers.

Now the two inferential powers of the thought that Frege eats hay are shown up by the structures of the Fregean formulas which express the thought. The first entailment is an instance of the formal inference from

  ── a ─┬─ f(a)

to

  ── f(a)

The second is a case of the inference from

  ── f(a)

to

  ─┬─ a ─┬─ f(a)

And on that point Fregean is superior to English. For there is no formal inference from

  S + V + O

to

  ‘Something’ + V + O.

For example, from

  Nothing eats hay

it doesn’t follow that

  Something eats hay.

English needn’t throw in the towel. No doubt Fregean gets its structures right in the way I have just sketched. But English is not limited to the schoolboy structure

S + V + O.

For example, there is a familiar distinction between 'surface' grammar and 'deep' grammar. The surface grammar of the three English sentences under discussion may indeed be characterized by the schoolboy structure; but there is also the deep grammar — which will doubtless turn out very similar to the surface grammar of the Fregean formulas. Perhaps that's true — but it only serves to underline the superiority of Fregean over English. For Fregean, which has no deep grammar, wears on its surface what English conceals in the depths.

Hold on to the towel. Each of the three English sentences has the structure

S + V + O;

but that is only one part of their surface grammar. The most elementary of English grammar-books will point out that there are different sorts of subjects (and different sorts of verbs and of objects, come to that). A subject may be a proper name, or a pronoun, or a phrase of the form 'The f', or … So although the three sentences share at least one common structure, they also have structures of its own. For example, a slightly more refined grammatical analysis might come up with the following three structures:

PN + V + O

[art + CN] + V + O

Pron + V + O

The inference from

Frege eats hay

to

Something eats hay

is an instance of the inference from

PN + VF

to

'Something' + VF.

The underlying rule doesn't warrant the inference from

Nothing eats hay

to

Something eats hay.

And English hasn't yet received the K.O.

But the rule in question doesn't warrant the inference from

The walrus was walking

to

Something was walking.

For 'The walrus' is not a proper name. Rather, it is an inference from

[art + CN] + VF

to

'Something' + VF.

And that form of inference is not generally valid.

Earlier I said that you might express a rule of inference in the following fashion:

From 'The f Fs', when 'The f' functions as a singular designator, infer 'Something Fs'.

And that rule warrants the walrus inference. It is objected that the rule goes against a principle implicit in contemporary logic, a principle according to which rules of inference should be stated by way of matrixes or schemata. That is to say, rules have the general form:

From a set of thoughts of the forms F_1, F_2, …, F_n infer a thought of the form F*.

The forms are expressed by matrixes or schemata — by sequences of dummy letters and significant symbols such that the appropriate replacement of the dummies by significant symbols yields the expression of a thought. The rule I have just commended doesn't fit that plan; for it doesn't specify the form of the premiss by means of a matrix. And that is no accident: on the contrary, the rule succeeds — if it succeeds — precisely because it uses more than matrixes to specify forms.

But why should a rule fit the plan? After all, you might think that the rule which licenses the inference of

Something is walking

from

The walrus is walking

ought also to license the inference of

Something eats hay

from

Frege eats hay.

Those are two particular instances of one general inference; and that general inference can't be explained by way of matrixes. Rather, you might opt for something like this:

From a thought which ascribes something to an individual, infer a thought which ascribes the same thing to something or other.

Rules which don't use matrixes will not be muddled by the vagaries of English grammar; for they are neutral between English and Fregean (and between any two languages you like).

And there is something else to be said for them. From the disjunction

Either he's dead or my watch has stopped

together with

My watch hasn't stopped

it follows that

He's dead.

What general rule underlies that inference? Consider this rule:

From 'Either P and Q' and 'Not Q' infer 'P'.

Very good — except that we shall then need a different rule for the inference from

Either he's dead or my watch has stopped

together with

He's not dead

to

My watch has stopped.

Without matrixes a single rule does the job:

From a disjunction and the negation of one of the disjuncts infer the other disjunct.

That rule deals with two-membered disjunctions. If you want to state a comparable rule for three-membered disjunctions, or a general rule for *n*-membered disjunctions, then you will get nowhere at all with matrixes.

If rules of inference are expressed not by schemata but by what the Greeks called periocaiv or metalogical descriptions, then English is still up and fighting. But of course Fregean can take the same line. Two all?

Return to the thought that Frege eats hay. From it you may infer that something eats hay — and also that Frege eats something. How might the inference be dealt with in Fregean? Since eating is a relational affair, you might be briefly tempted by the notion that

Frege eats hay — so Frege eats something

is an instance of the inference from

—— f(a, b)

to

—┬— a —┬— f(a, b)

But that won't do. A formula of the form

—— f(a, b)

is well-formed only if the symbols which replace 'a' and 'b' are singular designating terms — proper names, in Frege's jargon. But ‘hay’ isn’t a proper name: it’s a common noun. (If you’re half tempted by the idea that ‘hay’ is a proper name — a name for the totality of hay in the universe, say —, then take:

Russell eats apples.

That raises exactly the same questions — and there is no temptation to construe ‘apples’ as a proper name.)

Frege recognizes function-expressions which take argument-expressions of different orders in different places: thus there are two-placed function-expressions of the form ‘f(x,m)’, where the first place is to be occupied by a proper name and the second by a one-place (first-order) predicate. Why not think that ‘eat’ is such an expression? — that ‘eat(x,m)’ takes a proper name in its first place and a one-place predicate in its second place? Or, equivalently, that it takes a one-place predicate in its second place and makes a one-place predicate. (That is to say, insert ‘hay(x)’ in the second place of ‘eat(x,m)’ and — after a bit of idiomatic polishing — you get ‘eats hay(x)’.)

That is, I think, good Fregean. But is it as good as English? English has a single relational expression, ‘... eat ---’ which appears both in

Frege is eating hay

and also in

Frege is eating that *Bratwurst*.

One and the same expression, with one and the same sense, has two different constructions: its second place may be filled either by a common noun or by a proper name. Fregean does not admit expressions of that sort; for in Fregean no expression may have more than one syntactical construction. So Fregean — if it is to express the theorems of the science of gastronomy — will be obliged to have two predicates, ‘eat(x,z)’ and ‘eat*(x,m)’. That is hardly a catastrophe. But I incline to think that, in this respect, English is superior to Fregean.

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Structure matters in a scientifically adequate language because structure is allied to inference. And an adequate language must be able not only to express inferences perspicuously but also to signal them clearly and distinctly. English, like other natural languages, has various signals, the most common of which are deictic adverbs: ‘therefore’, ‘so’, ‘*ergo*’, ... Frege claimed that these natural signals were unsatisfactory, and for two reasons.

First, he notices that the inferential adverbs of natural languages are promiscuous — that they will associate with any inference which smiles upon them. The word ‘therefore’ may introduce the conclusion of an induction or of an enthymeme or of a deduction, and when it introduces a deductive conclusion, that conclusion may follow (or be supposed to follow) in accordance with any of an indeterminate number of rules. In short, the inferential adverbs serve to introduce a conclusion but do not specify how the conclusion is supposed to be inferred.

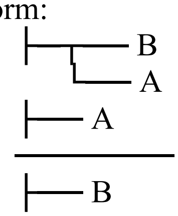
That is true. But why complain? As well object to the adverb ‘later’ because it indicates that one thing happens after another but does not specify how long after. That is an advantage rather than a disadvantage. If you can’t or don’t want to specify how much later something happened, then ‘later’ is just what you need. And if you do want to specify, add a qualifier: ‘Ten minutes later ...’, ‘Half a lifetime later ...’. Similarly with the inferential adverbs. They are just the ticket when you can’t or don’t want to indicate what sort of inference you’re drawing; and they are readily reinforced when you do — ‘Therefore, by a syllogism in Barbara ..., ‘So, by induction, ...’.

The second of Frege’s complaints about ‘therefore’ is this: in English good grammar doesn’t guarantee good logic. Here’s an inference I made the other day:

The second letter of ‘skate’ is k — so a kea must be a New Zealand bird.

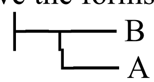
Was it a good inference? You can’t tell without more information. But you can tell, without any enquiry, that it was impeccably expressed. As far as grammar is concerned, you may write ‘Therefore’ or ‘So’ between any indicative sentences you like: the result will be grammatically impeccable, even though it may be logically lunatic.

Frege thought that that was a lamentable state of affairs; and in Fregean, good grammar guarantees good logic. In principle, Fregean can express only one sort of inference, namely a version of *modus ponens*. The inferences are expressed by formulas of this form:



The horizontal line which separates the formulas corresponds to the English phrase ‘Therefore, by *modus ponens*’.

Frege says little about this symbol: he spends a few pages in explaining how expressions for inferences may be abbreviated, and in doing so he makes various modifications to the horizontal line; but the line itself is introduced without remark. Nonetheless, it is a genuine symbol of Fregean — it is not just a punctuation mark. And it may be explained like this: (i) the horizontal line takes three judgement-expressions to make an argument-expression, two of the judgement-expressions being written above the line and one below it; (ii) the upper two judgement-expressions have the forms



and

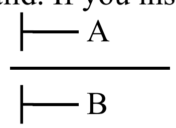
$\vdash$ A,

and the lower one has the form

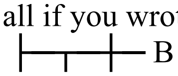
$\vdash$ B;

and (iii) the line signifies that the judgement expressed below it follows, by the rule of *modus ponens*, from the two judgements expressed above it.

That explanation has the result which Frege wanted: the grammar of Fregean, unlike the grammar of English, guarantees validity — in Fregean, you can't set down an argument which isn't valid. If you inscribe something of the form



you haven't expressed an invalid, or a dubious inference. You have expressed nothing at all — just as you would express nothing at all if you wrote, say,



The grammar of the horizontal line ensures that whenever it appears on the page, as part of a grammatical construction, then it marks the presence of a valid argument in *modus ponens*. There is no means, in Fregean, of marking any other sort of inference; and there is no means of expressing an invalid inference of any sort.

In that way, Fregean differs from English. Is it also, in that way, superior to English? It's true that there are some things you can't do in Fregean which you can do in English: you can't propound lousy arguments. But who wants to propound lousy arguments? (You may want to say of a given argument that it is invalid. But in order to do so, you need not propound the argument — it is enough if you can describe or designate it.) And isn't it a great advantage not to be able to express bad inferences?

To be sure, writing in Fregean can't stop you from misreasoning. If you write in good Fregean you will never write down a bad argument: it doesn't follow that you'll never write down anything wrong. Fregean doesn't protect you from error — it merely ensures that your errors will be syntactical rather than logical. Still, it is in fact easier to avoid errors if you write in Fregean than if you write in English. Not because Fregean grammar guarantees validity (though it does do so), but because Fregean gives you fewer opportunities to go wrong, whether you are trying to produce an inference or to check an inference which has already been produced. Suppose you look at an inference on a page of the *Grundgesetze* and wonder whether or not it is valid. Fregean can only express one sort of inference; so you need only ask whether what is in front of you is an inference in *modus ponens* or not. Fregean has only one way of expressing such inferences, so you need only ask whether the symbols in front of you form such an expression or not. And the way of expressing the inferences in Fregean makes it easy to tell whether or not the symbols form expressions of the right sort.

True, in real life it's not quite so simple. First, the inferential abbreviations which Frege introduces in order to save ink make it harder to check an argument for validity: try reading the last section of *Begriffsschrift* or pretty well any section of *Grundgesetze*. Secondly, one of the things you need to check is that 'A' and 'B' are each replaced twice by the same expression, and since the expressions which replace ‘A’ and ‘B’ may have any degree of complexity, it is not difficult to overlook a minor difference. Nonetheless, the substantial point remains: arguments in Fregean are easier to check than the corresponding arguments in English — and that sort of perspicuity is an advantage.

Still, what gives Fregean the edge is the fact that it limits himself to a single style of inference and a single way of expressing it. Suppose you want to stick to English but would like to enjoy the advantages of Fregean: isn’t it enough to state clearly, at the start, that the only form of inference which you are going to use is *modus ponens*, and that the only way in which you are going to express such inferences is by sequences of the form:

If P, then Q.
P.
Therefore Q.

A reader who wants to check your arguments is as well off as if you had written in Fregean: he need only ask ‘Is this in *modus ponens*?’, and to answer he need only check whether or not it has the prescribed form.

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Consider this Fregean formula:

─┬─ a ─┬─ f(a).

A ‘literal’ English translation might be:

Not everything doesn’t f.

That lumbers — and an English speaker will prefer the simple equivalent

Something fs.

Now make the predicate two-placed:

─┬─ a ─ b ─┬─ f(a, b)

That may be Englished by:

Not everything doesn't f everything,

which is intelligible if heavy. But there are, of course, predicates with more places — for example, the predicate you arrive at by abstracting the four proper names from the following sentence:

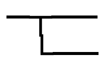
Camilla gave Archie to Marie at Christmas.

(Archie is a cat.) From that predicate, together with quantifiers and negations, you can arrive at a large (and calculable) number of items, each of which can be clearly and distinctly expressed in Fregean. Expressing them in English at all is difficult, and expressing them clearly and distinctly is next to impossible What will an English speaker make of, say:

Nobody ever gave anyone everything?

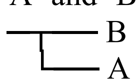
Here is the moral: certain complex thoughts can be expressed easily in Fregean, painfully in English.

Consider a few sentential operators: 'It's false that …', 'No-one believes that …', 'England expects that …' — such things can be iterated, and embedded, and mutually permuted. Up to a point the complexity is fun: ' … at least, I knew he thought I thought he thought I slept'. But sooner or later you arrive at the limits of intelligibility. Those particular operators are, it is true, of no professional interest to Frege. But Frege was essentially concerned with the operator which produces conditional sentences. Fregean expresses conditional thoughts by way of the connector



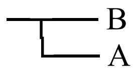
The rule for well-formedness is this:

If 'A' and 'B' are well-formed sentences, then

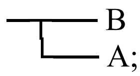


is a well-formed sentence.

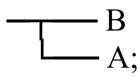
The rule guarantees that Fregean contains an unlimited number of variously complicated sentences of the form



For ‘A’ and ‘B’ may, either or both, be replaced by formulas of the form



and in those replacements, ‘A’ and ‘B’ may, either or both, have the form



and so on without end.

One ordinary way of expressing conditional thoughts in English uses the connector ‘If ..., then ---’. It sounds plausible to say that

> If ‘P’ and ‘Q’ are well-formed indicative sentences, then ‘If P, then Q’ is a well-formed indicative sentence.

If that is so, then English, like Fregean and for the same reason, contains an unlimited number of well-formed sentences of the form

> If P, then Q.

So, in this respect, Fregean and English are on a level.

Is the rule for English correct? If it is, then there are English sentences which begin with five, or fifty, or five hundred occurrences of the word ‘if’. Two ifs are ungainly but manageable — for example:

> If if Australia beat England then Australia play South Africa, then South Africa is in the final.

Three ifs are harder. I once dredged up something semi-intelligible with four ifs. Five defeat me. As for fifty ...

So if the rule is correct, there is an infinite number of well-formed English sentences which no English speaker could possibly understand. That is surely absurd: how could there be English sentences which no master of English could comprehend? The rule needs to be replaced by something like this:

If ‘P’ and ‘Q’ are well-formed, and neither goes beyond a certain degree of complexity, then ‘If P, then Q’ is well-formed.

What degree of complexity? Presumably there is no sharp boundary between the well-formed and the ill-formed, no commandment of the sort: Thou shalt have but three ifs. Rather, well-formedness shades into not-so-well-formedness, and that shades into ill-formedness.

When sentences become complex, English differs from Fregean. And there are some thoughts — an infinite number of them — which can be expressed in Fregean and not in English. Or are there? What goes for English goes for all natural languages. Why doesn’t it go for Fregean too? Well, Fregean is an artificial language, and the rules for well-formedness are determined by its artificer. Frege specified the rule of well-formedness for his conditional stroke, and it follows that Fregean contains sentences which deploy five or fifty or five hundred such connectors. English is a natural language: its rules are discovered, not invented.

You might allow that there is a formal or theoretical difference between English and Fregean and deny that there is any substantial or practical difference. After all, Fregean has its own limits of intelligibility, and there are well-formed sentences in Fregean which no master of Fregean could comprehend. When the limits of intelligibility are crossed, English comes to a stop: Fregean marches on, for ever. But what on earth could be the advantage of that? What could be the point or purpose of generating sentences which no-one can understand? (Or perhaps theologians should write in Fregean?)

But in fact there is a substantial and practical difference. To be sure, it is a contingent difference — but no less significant for that. The difference is this: some scientific thoughts which can be expressed and understood in Fregean and cannot be expressed in English. To see that that is so, it is enough to turn the pages of the *Grundgesetze*. There you will find any number of complicated formulas written in Fregean. The complicated formulas are not easy to understand, not even once you have familiarized yourself with Fregean. But they can be understood: their sense can be worked out, even when it can't be taken in at a glance. There are no English translations of the formulas.

English is inadequate inasmuch as it can't express all the thoughts which Frege needs to express: Fregean can. And it may be added that, in this respect, Fregean is superior not only to English and other natural languages but also to the artificial languages which logicians have universally preferred to it. Translate the *Grundgesetze* into Peano-Russell, for example, and you are quickly lost: formulas stretch over two or three lines, and the brackets and dots which punctuate them are dizzying. As Frege realized, the superiority of his language derives in part from the fact that it is two-dimensional — natural languages are all one-dimensional, and so are the artificial languages of contemporary logic.

Fregean is superior to other languages primarily and essentially because it can express in an intelligible fashion thoughts which they cannot express intelligibly or cannot express at all. That, I suppose, is an unremarkable conclusion to arrive at. After all, Frege invented Fregean because the further he advanced in his project, the more tortuous and the less comprehensible became his

German; and he invented Fregean because he needed a language which could express intelligibly certain sorts of highly complex thoughts. Fregean has the virtue it was designed to have.

'If Fregean is so bloody marvellous, why has no-one but Frege ever written in it?' (Well, Carnap once wrote a postcard in Fregean — but that doesn't count.) The answer is simple: what distinguishes Fregean from other languages is its capacity to express extremely complicated thoughts. You have little reason to learn Fregean unless you desire to express thoughts of that kind — and that's the rarest of desires.

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