

# THE TACIT IN FREGE

CHARLES W. LOWNEY

Washington and Lee University  
lowneyc@wlu.edu

## ABSTRACT

Frege worked to expand explicit logic and was a major influence in the logical positivist movement in science. In contrast, Polanyi worked to explain the logic of tacit inference, and was a strong critic of positivism. Frege intended to build an objective, axiomatic system that would clearly present and relate all the sciences. Polanyi warned that such objectivist goals corrupted our understanding of ourselves and could have disastrous outcomes in moral and political contexts.

In spite of *prima facie* indications, however, in addition to strengthening our tools of explicit knowing, Frege brings out the tacit dimension of knowledge that Polanyi later articulates. In constructing his logical language, Frege created distinctions that implicitly recognize the intentional *from-to* dynamic that Polanyi explores. We can see this dynamic structure in five aspects of Frege's logical language. First, there is ineffability of the logical structure itself in its tacit role of presenting explicit understanding and knowledge; second, there is a peculiar inexpressibility surrounding the role of concepts in presenting us with objects and facts about the world; third, there is Frege's assertion sign, which testifies to the truth of a statement; fourth, there is Frege's care to distinguish between the mere mention of a term and its use; and lastly, there is Frege's conception of how a *Sinn*, or sense, works tacitly to provide a *Bedeutung*, or referent.

Both Polanyi and Frege advance a conception of understanding and expression that relies on a robust notion of the tacit, and, in the broader historical picture, both mobilize their work to combat the dangers each sees in an atomistic reduction. Frege is thus a strong ally for Polanyi in presenting a balance between postmodern tendencies toward making knowing ineffable and objectivist tendencies toward making knowing completely explicit.

Gottlob Frege is widely considered a founder of analytic philosophy. He was a mathematician and logician who, in his *Begriffsschrift* of 1879, revolutionized logic by inventing the predicate calculus. Predicate calculus leapt beyond syllogistic logic and class algebra by parsing propositions in terms of objects and concepts and by distinguishing second-order concepts, *i.e.*, universal and existential quantifiers, from ordinary concepts. In addition to advancing logic, Frege is also a major figure in the philosophy of language. There he famously distinguished between the sense of a sign (*Sinn*) and its reference (*Bedeutung*).

Frege's work provides a model of conceptual clarity and presents a sustained effort to construct a perfectly explicit and deductively certain language for science. Michael Polanyi, in contrast, emphasized the tacit dimension of knowing. He claimed

that all knowledge is based on an intentional structure in which tacit, subsidiary clues integrate into an awareness of a focal object. Although much of what operates tacitly can be brought into explicit expression, there is always a tacit residue that confounds the goal of a purely objective science. For Polanyi, the tacit dimension of knowing resisted the epistemological and ontological reductions that became prevalent in the positivist understanding of science; acknowledging the tacit mobilized against any view that reduced how we know to simple sense data or reduced what we know to mere matter in motion.

Frege worked to expand explicit logic and was a major influence in the logical positivist movement in science. In contrast, Polanyi worked to explain the logic of tacit inference, and was a strong critic of positivism. Frege intended to build an objective, axiomatic system that would clearly present and relate all the sciences. Polanyi warned that such objectivist goals corrupted our understanding of ourselves and could have disastrous outcomes in moral and political contexts.

My claim here is that, in addition to strengthening our tools of explicit knowing, Frege was also making distinctions that bring out the tacit dimension of knowledge that Polanyi articulates.<sup>1</sup> I intend to show that, in spite of *prima facie* indications, Frege is actually a strong ally for Polanyi. Both Polanyi and Frege advance a conception of understanding and expression that relies on a robust notion of the tacit, and, in the broader historical picture, both mobilize their work to combat the dangers each sees in an atomistic reduction.

Polanyi emphasizes the tacit in order to correct a misguided objectivism and its ill consequences, but he is by no means an enemy of analysis and explicit expression. He has a balanced view that affirms the role of analysis in discovering reality: “an alteration of analysis and integration leads progressively to an ever deeper understanding of a comprehensive entity” (Polanyi 1961: 125). Frege develops and emphasizes the power of explicit expression, but he also recognizes limits to expression and enfold an understanding of the tacit into his logical and linguistic theories. In Frege’s philosophy I see a Polyanian balance between the ineffable and the explicit, one that also has the power to check the postmodern’s skeptical impulse toward ineffability and the objectivist’s scientific impulse toward complete transparency.

While Polanyi worked towards correcting a scientific imbalance by starting with an emphasis on the tacit conditions of knowledge, Frege worked backwards towards recognizing tacit conditions as he made advances regarding what we could say explicitly in logical language. Frege, like Polanyi, recognized an area of the tacit

<sup>1</sup> This paper forms the first part of two part project, titled “The Tacit in Frege: A Defense of Michael Polanyi’s Thought from within Analytic Philosophy”, which was presented in summary at the conference *Reconsidering Polanyi*, in Budapest, 2008. This first part is meant to show how Frege’s philosophy expresses the idea of tacit knowing that Polanyi later develops. The second part looks at how Frege can assist Polanyi in defending his conception of tacit knowledge against critics within the analytic tradition.

that was ineffable, an area of the tacit that was only indirectly and partially expressible, and an area of the tacit that was fully expressible.<sup>2</sup>

## 1. FREGE AND THE THIRD WORLD

Frege believed he could use ordinary language as a clue to the logical structure of language, which in turn reflected the logical structure of the world. According to Frege, this logical structure, common to language and the world must exist in its own right. Frege thus had a strong rationalist strain, sometimes described as a platonism (Dummett 1973). He believed that numbers were real objects, and he saw numbers as something built up from the domain of the logical, hence he was a leading figure in the logicist project of attempting to derive mathematics and its objects from pure logic. This analytical move, for Frege, was actually an anti-reductionist strategy.

Just as Polanyi was fighting against the reductionism of his day, much of what Frege was doing was aimed at fighting the naturalistic and psychologistic reductionism of his day (Sluga:100-6). By taking up the logicist project, Frege was attempting to prove that that numbers do not reduce down to our experience with collections of physical objects or any psychological representation of that experience.<sup>3</sup> Mathematics reduced to the logical but the logical could not be reduced to sensation. In this way Frege was hoping to demonstrate the irreducibility of the mathematical and logical to the merely physical or psychological.

The logical itself, which carves reality up at its joints, was real for Frege. Frege argues in *The Thought* that “a third realm must be recognized” ([1918–1919] 1997: 337). Without the recognition of a third realm – which is neither the outer world of the source of sensation, nor the inner world of subjective impressions – without this logical, *a priori* realm all purported knowledge collapses into subjectivity and we no longer have an external world for mutual discussion and empirical investigation.<sup>4</sup>

Frege believed there had to be a non-empirical or non-sensory element in knowledge in order for us to be capable of having an objective, common world, and

<sup>2</sup> In *The Tacit and the Ineffable* (Lowney 2005), by sorting out different types of inexpressibility lumped together in the universalist *v.* calculist distinction, I argued that there could be a productive overlap between the views that caught the best of both of them. I found this overlap expressed in Frege’s philosophy of logic and language

<sup>3</sup> This is especially clear in *Foundation of Arithmetic* in 1884; in essays responding to E. Schröder’s criticisms of his *Begriffsschrift*, in 1882 and 1882-1883; and in his review of Schröder in 1895.

<sup>4</sup> As Hans Sluga states, for Frege, “This objective realm guarantees the stability of the external world” (Sluga, 1980: 120). For the need of a non-empirical or non-sensory element in knowledge in order to have an objective world – and for Lotze’s influence on Frege – see also Sluga, 1980: 30-32.

he located this in *the logical* as source of understanding, truth and meaning. This realm was comprised of thoughts (*Gedanken*), or propositions, which are capable of being true or false, so they are also called “contents of possible judgments” (CPJ’s or *beurteilbarer Inhalt*) (Frege [1879], 11fn9). Propositions, in turn, were comprised of concepts and objects. So the inhabitants of this logical-semantic realm are concepts and objects in various relations. But Frege also describes thoughts/propositions as the *Sinne*, or sense, of sentences. So with this connection between propositions and *Sinne* we begin to see more clearly the semantic aspect of the logical, third realm. J.A. Coffa calls this logical domain of sense “the semantic”, without the trivializing connotation that it is less real than what we experience, since “what we say”, as he puts it, is our access to “the things we talk about” (Coffa 1991: 76).

Although Polanyi would see this domain of the logical as emergent rather than strictly *a priori*, he would not deny its independence. Polanyi expresses the reality of this domain in his conviction that universals are real. As we shall soon see, Polanyi agrees with the rationalist or platonic, non-reductive strain in Frege by recognizing that universals cannot be reduced down to the particulars of our bare experience. We shall now examine the extent to which Frege can agree with Polanyi regarding the tacit structure of knowing.

## 2. FREGE AND THE TACIT

In constructing his logical language, Frege created distinctions that implicitly recognize the intentional from-to dynamic that Polanyi explores. We can see this dynamic structure in five aspects of Frege’s logical language.

First, there is ineffability of the logical structure itself in its tacit role of presenting explicit understanding and knowledge; second, there is a peculiar inexpressibility surrounding the role of concepts in presenting us with objects and facts about the world; third, there is Frege’s assertion sign, which testifies to the truth of a statement; fourth, there is Frege’s care to distinguish between the mere mention of a term and its use; and lastly, there is Frege’s conception of how a *Sinn*, or sense, works tacitly to provide a *Bedeutung*, or referent.

### 2.1. The Ineffability of Logical Structure

The idea that Frege shares sympathies with Polanyi may seem ironic, but from within the analytic tradition, Frege’s understanding of logic and language can best be understood in contrast to the drive to make all knowledge explicit. The distinction in the analytic tradition between a universalist perspective and a calculist perspective captures this contrast (van Heijenoort 1967; Hintikka 1997a). Universalists recognize

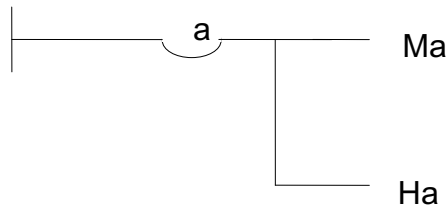
a fundamental inexpressibility that comes with our inability to step outside of language as our tool for understanding and communication. Calculists believe that we can get a direct bearing on our language by shifting within language or between languages, so all becomes capable of explicit expression. In terms of this distinction, Frege is considered an archetypical universalist.

Frege believed that logical language was a prerequisite for understanding any world. It functioned as the tacit background behind any and all understanding. What makes Frege primarily a universalist thinker is that he recognized that the fundamental categories of logic could not be explicitly expressed. The universality of language implies that we cannot have a meta-logic or meta-language *via* which we might explicitly discuss the basic logical-linguistic concepts that allow us to meaningfully understand and express the world of our common experience. For Frege, any effort to discuss basic logical categories turns out to be redundant rather than explanatory. Frege can gesture towards this structure and *show* it, but he cannot *say* anything informative about *assertion*, *identity*, *subsumption*, *negation*, *concept*, *object*, *thought*, *inference* or the meaning of “is true” (See Geach 1976: 55).

To convey these primitive logical concepts we are confined to what Frege calls “explications” or “elucidations”, sentences that already presume an understanding of the notion they seek to explain, and which are therefore strictly uninformative. Explications are not literal definitions but are hints to guide us to identify what we must already know, so that we may “associate the same sense with the explicated words” and attain a “mutual understanding” (See Frege ([1906] 1971: 59-60). For example, Frege calls concepts “unsaturated” or “incomplete” and describes objects as “saturated” or “complete”, but for him these terms are metaphorical and are ultimately empty of explanatory value.

In his logical language Frege distinguishes higher-order concepts from ordinary concepts, and he distinguishes ordinary concepts from objects. This basic logical structure was ineffable for Frege, but he could *display* it in his two dimensional notation; he could demonstrate how it was used, and hope that you, too, would see that this reflects the proper structure of thought and reality.

Here, for instance, we see the assertion “all humans are mortal”:<sup>5</sup>



<sup>5</sup> In Russell-Peano notation this asserted proposition is symbolized by the sentence “ $\vdash \forall x (Hx \supset Mx)$ ”.

For Frege, the horizontal lines were content lines. The dip in the first horizontal line and a gothic “a” in it stood for the universal quantifier and the objects it could range over. What we would call a “variable”, Frege referred to as a “letter”. The letter “a” holds the argument place and can be replaced by signs for particular objects. The “M” denotes the concept is mortal, and the “M” and “a” together illustrate the subsumption relation: the relation of an object *falling under* a concept. The concept position in logical structure (denoted by the letters “M” and “H”) and the object position (indicated by two instances of the letter “a”) provide the basic structure of the proposition, *i.e.*, the subsumption of an object under a concept. The longer vertical line indicates the logical relation that we would identify as a material conditional. The relative positions of “Ha” and “Ma” on this line show that *Ha falls within Ma*. This illustrates the *subordination* of one concept, being human, to another, being mortal. Finally, but foremost, is the initial vertical judgment stroke, which attests to the truth of the whole formula by making the proposition symbolized here an assertion.

Although this logical structure acts tacitly in informing any explicit understanding of a proposition that we have, how it does this cannot itself be made explicit and no proper definitions can be given for its basic terms. The fundamental categories of logic are ineffable; they are the tacit *from* that works to present us with any focal understanding. In the next section we shall see why, for Frege, subsumption is the most important among these logical relations, and how it has a special role in protecting the tacit and guarding against reduction.

## 2.2. The Peculiar Inexpressibility of Concepts

In addition to the ineffability of basic logical categories, such as *concept* itself illustrated by the concept position in logical structure, particular *concepts* have a peculiar inexpressibility in their functional role of presenting objects in propositions. Concepts for Frege are fundamentally different from objects, and this is tied together both with Frege’s efforts at anti-reductionism and with his recognition of the tacit.

Frege insisted on the irreducibility of concepts to objects. He denied that the understanding of a concept, such as *is a human*, was reducible to familiarity with objects, such as particular men, women and their aggregation, nor was it a mere abstraction that provided a class concept. Concepts were not simply the result of collecting explicit objects together or finding common denominators.

The independent existence of concepts preserved subsumption as *the* logical relation. Furthermore, the subsumption of an object under a concept was not a completely explicit matter, as it would be if there were an aggregative whole-to-part relationship between a concept and the things that could fall under it.

Frege saw that subordination – the falling of one class concept within another – can appear aggregative, but to focus on this missed the essence of the logical. He

criticized the early calculist thinkers mainly because they treated concepts as classes and were thus prone to confusing subsumption with subordination.

What Herr Schröder calls ‘inclusion’ or ‘subsumption’ is here, properly speaking, nothing but the part-whole relation, extended in such a way that every whole is to be treated as part of itself (Frege [1895] 1952: 87).

The conception of a part-whole relation here is one in which the whole can be reduced to its parts. Frege notes that to build on this part-whole notion “was intuitively very clear, and indubitable; only unfortunately it is not logic” (Frege [1895] 1952: 104). In contrast, the subsumption relation is what constituted logic:

The fundamental logical relation is that of an object’s falling under a concept: all relations between concepts can be reduced to this (Frege [1892b] 1997: 173).

In the logical relation of subsumption, a particular falls under a concept, but the concept is not reducible to the particulars that could fall beneath it. Here Frege and Polanyi agree. All the red things in the world could not add up to redness. All the balloons in the world could not add up to *ballooningness*. And if there are red balloons it is because an object exists that can be subsumed under both *red* and *balloon*. And if all things that are balloons were necessarily red then the concept of *ballooningness* would be subordinated to the concept of *redness*.

For Frege, recognizing that the concept was not reducible to objects, *via* the recognition of the subsumption relation and its strong distinction from subordination or class inclusion, was the key to preventing the psychologist’s and naturalist’s slide to seeing the sense impressions of things, and their abstraction, as the reductive basis of our concepts and our thoughts.

For Frege, concepts are arrived at by breaking apart a proposition. The concept on its own is unsaturated or incomplete. It is not possible to make it a fully explicit object; it cannot stand on its own. Objects are normally what we explicitly talk about and make focal. A concept is like a function in math with an open argument place. It needs a saturated object in that place in order to be complete and to produce another saturated thing that *is* explicitly objectifiable as an object: a thought or proposition (Frege [1891] 1997).

There is a concept position and an object position in logical-linguistic structure that can be filled by concept words and object words, respectively. A sentence does not make sense when the attempt is made to turn a concept into a focal object by putting it into the object position, hence attempts to express concepts directly tend to distort them. The expression misses what it aims at; it inadvertently twists a concept into something it is not: an object. This misfiring of language results in a sentence that is nonsensical or false.

This inability to turn around on concepts and explicitly express them directly reveals what Polanyi would see as their tacit role. Like Polanyi, Frege is showing that we see *through* concepts *to* things, and Frege is showing how difficult it is to catch this tacit function of concepts and display it explicitly. This peculiar inexpressibility comes across best in Frege's discussion in "On Concept and Object", where he discusses B. Kerry's sentence: "The concept 'horse' is a concept easily attained" (Frege [1892c] 1997: 184). Here "the concept 'horse'" is the sign of an object. This is indicated by the the article "the" and the force it receives from its place in the object position. "The concept 'horse'" does not designate the concept Kerry hoped it would. The concept in Kerry's sentence is designated by "is a concept easily attained", and here, the article "a" helps us locate the concept position.

For Frege, we can get an indirect glance at concepts in logical structure. We can appropriately symbolize concepts, but when we do so we have to be careful not to objectify them. Frege warns that the sign for a concept should always include a placeholder for an object (See Sluga: 87). A symbolism must *show* that a concept is incomplete or unsaturated by keeping the place of object open: "H( )" or "Hx" for *horseness* shows its unsaturated nature.

In Polanyi's terminology, we normally attend from concepts as tacit clues, but to attend directly to them converts them into a focal object and this distorts what they are doing when they are working *as* clues to present us with a focal object. Polanyi would say that in criticizing Kerry, Frege is presenting an example of how a clue that was acting tacitly in, for example, 'Bucephalus is a horse' is being falsified when it is objectified in the sentence "The concept 'horse' is easily attained". The concept is no longer acting as a clue working tacitly towards the presentation of a focal object. It changes when we shift to look *at* it rather than look *from* it. When this shift is made, as Frege says, "an object goes proxy for it" (Frege [1892c] 1997: 185).

In their functional nature we can see that concepts are logically prior to objects in that they are what allow for the understanding of explicit objects and thoughts. In the judgment 'Hb' ('Bucephalus is a horse'), 'b' names something already saturated that we can understand as being a horse, but on its own 'b' names a bare particular. The name-referent relation on its own does not provide any information about the object for the understanding without some iteration of the concepts that it can fall under.<sup>6</sup>

The functional nature of the concept that Frege emphasizes is a movement from the tacit to the explicit. The concept works tacitly for Frege in the way that the universal works tacitly to present us with particular objects for Polanyi. Let me strengthen this connection between Frege's concepts and Polanyi's universals by emphasizing three points: For Polanyi, like Frege, (1) concepts are irreducible to particulars and their aggregates; (2) concepts are real; and (3) concepts are the tacit background from which we understand particular objects.

<sup>6</sup> Haaparanta emphasizes the emptiness of this naming expression as she outlines two ways that Frege can express existence (Haaparanta 1986).



### 2.2.1. The Irreducibility, Reality and Tacit Role of Concepts

Frege stresses that concepts are logically prior to our understanding of particular experiences, but he does not discuss an original process of concept formation; concepts are found in retrospect, as the unsaturated part of an analyzed proposition. Polanyi, in contrast, provides a structure of tacit integration that allows for an understanding of how concepts are originally formed and accounts for the role of concepts in presenting us with objects and facts. Polanyi sees the formation of a concept based on the same sort of tacit integration that he identifies in the learning of skills and in perception. He states,

I am interpreting the formation of class concepts (along with the discovery of natural laws) as based ultimately on a process of tacit knowing, the operations of which I have exemplified in the learning of skills, the recognition of physiognomies, the mastery of tests, the use of tools, the uttering of speech, and the act of visual perception (Polanyi 1961: 167).

A tacit integration of particular clues is required, which is more than the mere identification of a common feature, the synopsis of a collection, or the schema of an abstraction. To arrive at a concept, a contradiction must be overcome.

... the apparent contradiction involved in taking an aggregate of objects which differ in every particular to be nevertheless identical in some way (Polanyi 1961: 167).

The concept resolves this contradiction “by revealing a *joint meaning* of conflicting clues in terms of a *new quality*” (Polanyi 1961: 168). The concept is thus an emergent feature of a tacit process; as such it is irreducible to the particulars that originally provided clues for integration.

The reduction of concepts to sense experience is a mistake Frege traces back to Aristotle (Sluga, 91). For Polanyi one might say sensation *is* indeed a necessary basis of the epistemological integration from which concepts emerge, but although sensation may be a necessary condition, it is not a sufficient condition – and Polanyi recognizes that a new level of being is being *discovered*. A level that must be, as Frege affirms, independent of those particular things we experience.

Polanyi goes on to affirm the reality of universals, or class concepts, and so, as with Frege, concepts are real for Polanyi. According to Polanyi’s definition of reality, concepts are to be considered *more* real than the indeterminate particulars of our sensation.

We pass from more tangible particulars to increasingly intangible: to entities which are (partly for this reason) more real: more real, that is, in terms of my definition of reality, as likely to show up in a wider range of indefinite future manifestations (Polanyi 1961: 168).

When Polanyi discusses concepts as the joint comprehension of particular clues, he says that we must recognize two things about them. First, that the integrative powers of tacit knowing explain the paradoxical jump from particulars to the concept they fall under. Second, that they have a “curiously *insubstantial character*” (Polanyi 1961: 168).

Concepts act as tacit clues to the focal presentation of objects and thoughts. The joint significance of the particulars becomes the tacit lens that we understand a particular through. The from-to structure, which brings us from particular clues to concepts, becomes a from-through-to structure, bringing us from concepts to a new awareness of particulars.

We use the particulars we have seen and heard as clues to the conceptions covering them, and then we designate these particulars by the names of these conceptions (Polanyi 1961: 191).

A general term names a *conception*. This is the universal or class concept as a focal object. But, as a clue back to the particular objects, the concept is not a conception; it acts as a subsidiary tacit clue, and we see *from* it, or *through* it, in order to understand particular objects. Concepts are “curiously unsubstantial” and not fully determinate, for Polanyi, in the same way that concepts are “unsaturated” for Frege. Concepts have this feature because their main job is to act as tacit clues to the focal presentation of objects and possible states of affairs. Also, since the particular concept, as the *through*, primarily has a tacit function, we miss something when we attempt to put it into explicit focus. When tacit clues are *looked at* in isolation rather than attended *from*, they present themselves differently according to Polanyi, and this explains the distortion or falsification that takes place for Frege when we attempt to look at concepts directly as saturated objects.<sup>7</sup>

We have a movement *from* tacitly working unspecifiable particulars *to* the presentation of a universal (e.g., from unspecifiable Xs *to human*; or unspecifiable Ys *to redness*), which offers a conception, *i.e.*, the universal as a focal object; and then a movement *from* (or *through*) the universal, as a tacitly working concept, *to* an understanding of particular objects (from *human* to a particular woman; or from *redness* to a particular red patch). Concepts together (*is red, is round, is rubber*) work to present us with objects (the red balloon) and concepts and objects together work to present us with a focal proposition (e.g., that the red balloon is floating away).

But there is still one more step we have to take for Frege, to get from propositions, which are in the third realm, to the existing world amenable to our investigation.

<sup>7</sup> With regard to the terminology, “universal”, “conception”, and “class concept” best designate the concept as a focal object, whereas “concept” as employed by Frege, describes the universal as it is when acting tacitly. We must, however, recognize that to call the concept an “it” here already distorts.

This step is the recognition of the proposition's truth, which is expressed by the assertion sign.

### 2.3. Assertion as a Tacit Function

Another feature that marks Frege as a universalist thinker is his belief in the 'ineffability of truth' (Hintikka 1981; 1989; 1997b). According to Frege, we cannot explicitly express what it is that makes a proposition true, since to do so would require a stance outside of our one language, *i.e.*, a stance that would allow for the connection between propositions and facts in the world. Because of the inescapability of language, Frege's universalist stance pushes such semantic links into the ineffable, or, at least, into the tacit.<sup>8</sup>

Assertion is Frege's mechanism for distinguishing a proposition that is true from one that might be false. In *Personal Knowledge*, Polanyi discusses the possibility that Frege's judgment stroke or assertion sign (rendered as a signpost in Frege's notation, or a turnstile "⊢" in Russell's) expresses a tacit coefficient, *i.e.*, the personal endorsement of the truth of a proposition (Polanyi 1958: 27-29). I see this interpretation as basically correct, and this displays again a tacit dimension in Frege's thought.

Without the assertion stroke, Frege does not commit himself to the truth of the propositions he expresses. As Peter Geach notes, Frege could, and did, use the assertion stroke to distinguish true premises from premises that were questionable. In his Appendix in the *Grundgesetze* on Bertrand Russell's paradox, Frege constructs arguments "with assertion signs omitted throughout – 'wegen der zweifelhaften Wahrheit' – as he says, because the truth of the matter is doubtful" (Geach 1976: 63).

Polanyi says, "The significance of my writing down '⊢*p*' is not that I make an assertion but that I commit myself to it... I believe what the sentence *p* says" (Polanyi 1958: 28). Where Polanyi discusses the belief that a sentence is true, Frege discusses the 'recognition' [*anerkennen*] that a sentence is true (Frege [1918-1919] 1997). This recognition is essentially what Polanyi would describe as belief with universal intent.<sup>9</sup>

Frege calls the proposition, or thought, on its own a "content of a *possible* judgment". It is not yet a judgment. It is the *Sinn* of a sentence, which is a saturated object, for Frege. The assertion that prefixes the proposition is what Frege would call "unsaturated" or "incomplete" and cannot stand on its own.<sup>10</sup> Thus the judgment stroke,

<sup>8</sup> The Tarski truth schema will not help Frege here. As a universalist he cannot rise to a metalanguage above the one language we understand. Also, what was true or false for Frege was the proposition and not the sentence. Saying "'Snow is White' is true if and only if snow is white" doesn't tell us what makes the proposition true.

<sup>9</sup> For more on the connection between Frege's notion of assertion and Polanyi's notion of a tacit co-efficient see Andy Sanders' *Michael Polanyi's Post-Critical Epistemology* (1988).

<sup>10</sup> Polanyi calls the assertion sign an "incomplete symbol" (1958: 27). But Polanyi, unlike Frege, claims that the proposition (Frege's CPJ) is incomplete. As Sanders (1988) recognized, this shows

for Frege, represents a function that, when joined with a CPJ, brings it to the True;<sup>11</sup> it shows that we recognize the CPJ to be the case.

Assertion, however, is not part of explicit logical language when that language is considered to be the language of science. Assertion functions similarly to a property or concept, but it is not an ordinary, or even higher-level, concept. Assertion is more like a function that brings sentences *into* the *Begriffsschrift*; assertion allows a sentence to function explicitly in an axiomatic system that moves from truth to truth.

The judgment stroke represents the tacit component that allows us to make explicit knowledge claims. For Frege, assertion is the function that displays our recognition that the CPJ is true; for Polanyi, it is the tacit, personal co-efficient that endorses its truth and testifies to our universal intent. What Frege endorses as true is the *Sinn* that underlies the explicit logic formula, *i.e.*, the sense (proposition) and not the sentence (sign). The sense provides the tacit background that brings us to the existing referents. This can be seen in Frege's distinction between use and mention, which is further refined in his distinction between sign, sense and referent.

#### 2.4. Mention *v.* Use of Signs: From Signs to Meaning

A word or sentence is a series of signs. For Frege, signs can be mentioned, in which case we are discussing the signs themselves as marks or sounds, or they can be used in language to bring us to their meanings.

Frege is keen to distinguish the mere mention of a word or sentence as a sign from its use. Even a logical or mathematical formula is no exception. It provides signs that require a sense to be meaningful. This is clearly seen in Frege's criticism of the mathematical formalists. For Frege, the logical axioms he founds his system on are true. His formal language comes integrally wedded to an interpretation. The mathematical formalists believed that they were just manipulating signs, and held that interpretations were irrelevant and unnecessary. Frege, in contrast, recognized a tacit domain of sense in the background of all meaningful mathematical and logical formulae and this domain gave the explicit signs their meaning.

Everyone who uses words or mathematical symbols makes the claim that they mean something, and no one will expect any sense to emerge from empty symbols. But it is quite possible for a mathematician to perform quite lengthy calculations without understanding by his symbols anything intuitable, or with which we could be sensibly

---

that Polanyi and Frege have a different understanding of the complete-incomplete distinction (1988: 83).

<sup>11</sup> More precisely, the assertion sign presents an unsaturated function that takes the sense of a sentence to the True, if a positive statement is asserted, or takes the sense of a sentence to the False, if a negated statement is asserted.

acquainted. And that does not mean that the symbols have no sense (Frege [1884] 1980: 22).

According to Frege, when we carry out such calculations by formal rules we may set aside the interpretations, but unless we can retrieve the meaning of the signs, the signs themselves become meaningless scribbles. Frege sees an important difference between the signs and what they mean, and what they mean takes precedence. This goes both for signs that express transformation rules as well those that express concepts and objects. Formal symbolic languages attempt to show the explicit relations of thoughts through the objective manipulation of signs by rules, but the actual relations and the truth of the sense of the signs are primary. For Frege, one can only set up one's language and manipulate signs appropriately if first one knows what the signs mean.

Frege recognized that formally correct calculations alone are never enough to insure the truth of sentences, one must constantly attend to their meanings. Frege says, "even if a concept contains no contradiction, we cannot infer that for that reason something falls under it" (Frege [1884] 1980: 105). Also, formal languages can have correct calculations and be meaningful and yet provide interpretations that are not true to way the world actually is. This is indicated in Frege's criticism of Hankel's operations. Frege says, "There is nothing against this so long as it is only not presupposed that operations of these sorts and objects such as their results ... exist" (Frege [1884] 1980: 109). But with true interpretation and calculations that mirror relations that take place in the actual world, one can achieve true results.

As Frege's philosophy of logic and language developed, the meaning of the signs became more clearly divided into the sense (*Sinn*) and the referent (*Bedeutung*).<sup>12</sup> Frege recognized that our signs can operate in several different capacities. As signs, *e.g.*, simply marks on paper, as the *Sinn* that these marks express, or as the existing referents to which the *Sinn* brings us.

## 2. 5. *Sinn* and *Bedeutung*: Through Sense to Referents

Normally the signs bring us directly to their *Bedeutung*, *i.e.*, to what they mean. Polanyi would call this the "vectoral" quality of the sign. When a sign functions as a tacit clue "it becomes, as it were transparent" and what we attend to directly is the meaning (Polanyi 1961: 145). For Polanyi, we are not focally aware of the letters when we attend

<sup>12</sup> "Bedeutung" is better rendered "referent" and not "meaning". While in ordinary English, we consider the sense of a term as roughly equivalent to its meaning, Frege saw the meaning as being more strictly aligned with the referent. So, while *Sinn* or sense is what we might call the "objective meaning" of a term, the *Bedeutungen* are the referents; the customary *Bedeutung* of a name, for example, is the existing object named."

from them to the meaning of a word; we are not focally aware of the words when we attend from them to the meaning of the sentence. There are levels of tacit integration involved in linguistic comprehension and in the recognition of objects or facts. The tacit clues we attend from are typically transparent, but we can re-direct our attention to them and become aware of them as focal objects.

Frege, like Polanyi, noticed that the route from the sign to its intended focal meaning is not a direct, one to one relation. For Frege, signs bring us to *Sinne* (senses) and *Sinne* bring us to *Bedeutungen* (referents). Frege calls the *Sinn* a “mode of presentation” [Art des Gegebenseins] (Frege [1892b] 1997: 152), it functions to take one from the sign to referent. When I write the sign “Venus” you understand via the sense of “Venus” that I am referring to the planet Venus, and perhaps the sense you have of “Venus” is the same as the sense of “the morning star”. We see the physical marks, there is a sense in the background, but the planet is what we are talking about.

The sign and the sense together are what we go *from* to get *to* the referents, which are the proper meanings of the signs for Frege. The sense thus provides the tacit background through which we arrive at the meaning. We see here again Polanyi’s from-through-to structure of tacit integration, and what we are ultimately brought to, for Frege, is what there is for us to recognize in the world:

Sign	>	Sense	>	Referent	◇	World
sentence	>	<i>Sinn</i> = proposition	>	the True	◇	fact
object word	>	its <i>Sinn</i>	>	object	◇	thing
concept word	>	its <i>Sinn</i>	>	concept	◇	property/relation

According to Frege, in our customary use of language we look *from* sign *through* sense (*Sinn*) *to* a referent (*Bedeutung*); we make assertions. These levels of tacit integration are displayed by Frege when he shows how we can stop short and look at what normally moves us on to the referents. We can objectify the signs, as formalists did, *or* the sense, even though we customarily use words to discuss things, properties and facts.

If words are used in the ordinary way, what one intends to speak of is their *Bedeutung*. It can also happen, however, that one wishes to talk about the words themselves or their sense. This happens, for instance, when the words of another are quoted. One’s own words then first designate [*bedeuten*] words of the other speaker, and only the latter have their usual *Bedeutung*. We then have signs of signs. In writing, the words are in this case enclosed in quotation marks (Frege [1892a] 1997: 153,4).

In *oblique* expression, or indirect speech, we bracket truth and look *from* signs *to* their *Sinn* as our focal object. We take the signs out of their customary role and our attention is directed to their sense. In such cases we consider the *Sinn* of a sentence

without its assertoric force, or the *Sinn* of a word independently of whether not it refers to an existing thing or property.

In *opaque* expression (e.g., mention) we can bracket the customary *Sinn* and *Bedeutung* and look from perceptual subsidiary clues to the signs as material objects. In a pure formalism, we see an example of this opaque expression, since the sign is cut off from both its sense and its referent. What comes across in Frege's critique of the formalists is that the original sense that the signs have in their customary use may be missed when one shifts to *mention* and manipulate that which one has been *using*.

In discussing another person's ideas (as when Frege discussed Russell's assumptions) we see an example of oblique expression. One focuses on the *Sinne* explicitly and cuts off the integration to any existing referent in the actual world that might make it true. If John writes, "Venus is low on the horizon in the morning", I can understand the sense of his words without committing myself to their truth. We discuss the signs themselves or the sense itself by directing our focus with the aid of linguistic conventions. We may put a word in quotes to discuss the sign itself or its sense, or we may put a sentence in quotes to discuss another person's words or their sense. These techniques cut short the typical tacit integration from clues to focal meaning that we have in ordinary speech.

But why do we need *Sinne* when we have concepts? "When I say, "Venus is the star that appears in the morning" I refer to an object named "Venus" and a concept denoted by "is the star that appears in the morning". Alternatively, I can say that a sense of the planet Venus is "the morning star". Later universalists reject sense claiming that it adds nothing beyond the sentences themselves. Later calculists tend to abandon sense in favor of a notion of concepts and complexes of concepts. The first group reject this domain of the tacit, while the second believe that everything tacit can be made fully explicit. Frege, like Polanyi, opts for something in between.

### 2. 5.1. Speaking of Concepts

In pointing us toward existing objects and allowing us to understand them, *Sinne* seem to perform the same task as concepts. We can see the from-to relation in the movement *from* sense *to* referents; we can also see it in the movement *from* concepts *to* objects. Frege commentators, such as L. Linsky and L. Haaparanta see a *Sinn* as the concept, or a cluster of concepts, which brings us to the referent (Linsky 1977:, 5, 85; Haaparanta 1986: 169). This effectively collapses the distinction between *Sinne* and concepts, but Frege does not collapse the distinction. Why does he keep it? Polanyi can help here.

Polanyi says that what we look *at* focally has a different character than what we look *from* subsidiarily. Hence when we turn around to look at what *was* typically a

subsidiary clue to a focal integration, its character changes. Looking at the letters as focal objects isolates them from their role in an integration that presents the focal meaning of a word, looking at the words as focal objects isolates them from their integration into the focal meaning of the sentence, and looking at the meaning of the sentence itself as a focal object can bracket our commitment to its truth. We can indeed turn around and objectify what was functioning tacitly to make that clue explicit, but we lose something when we do this. We lose the way that the clue functioned in coordination with other clues to present a tacitly integrated focal whole.

Frege's concept-object relation shows that concepts have a tacit role in presenting us with objects. Like Polanyi, Frege recognized that we can objectify what is tacit, *i.e.*, the concepts, but he was also acutely aware that something was lost in this process, and I believe this loss provides an important reason for Frege to introduce and maintain the notion of *Sinn*.

*Sinne* provide the concept(s) that bring us to the referent. Here the commentators are indeed right. From the various senses that present Venus we get the concepts *is the morning star*; *is the evening star*; etc. These concepts help us understand, and allow us to find, the referent, Venus. For Frege, however, these concepts in their functional role resist objectification. Concepts are completely distinct from objects. That which presents us with the object – *i.e.*, the Fregean concept – functions tacitly. Objects are explicit. Looking at a concept focally objectifies it, and hence, given the from-to structure of tacit integration, this move to bring the tacit into explicit focus will distort as well as reveal. *Sinne*, however, *are* objects for Frege. The *Sinn* is what gets revealed; the concept, as Frege's analysis of "the concepts 'horse'" shows, is what gets distorted.

What I propose, then, is that the *Sinne* are what we get when we *look back* at concepts in their role of presenting us with an object. They are concepts linguified and made focally accessible as objects. As such, they provide us with an explicit tool to locate objects in a context that allows us to understand them. The *Sinn* of a name for an object, for instance, gives us a concept that helps identify the object. For example, the sense of "*the morning star*" can allow us to identify the planet Venus among celestial objects and *being the morning star* helps us to understand it.<sup>13</sup>

Frege could not collapse *Sinne*, which are objects, together with concepts, as others do for him, because he recognized that concepts could not be made focal objects, even though we can *say* something about how concepts functioned to present an object referred to by a word. What we can talk about directly are the

<sup>13</sup> This brief analysis of the *Sinne* of proper names is worked out in more detail in Lowney (2005) chapter seven. Also, barely breached above is a discussion of the *Sinne* of sentences. These *Sinne* are not objectified concepts, but are whatever is objectified to give us a proposition. What *Sinne* objectify here may be something like the background context that works tacitly to enable us to understand some particular possible state of affairs and what allows us to recognize when that state of affairs is actual.



*Sinne*. The *Sinn* goes proxy for the concept. By becoming *Sinne*, concepts become objectified in order to provide an explicit context for understanding and identification.

The *Sinne*, however, since they are isolated from the concept's proper function and other tacit components that go into the presentation of the referent, can only provide partial information. Frege acknowledges that merely naming a *Sinne* could always be an incomplete way of identifying the referent when we were trying to communicate it to another person (Frege [1892a] 1997: 153). For any one person a *Sinn* is determinate and can bring him or her directly to the referent. This works the way the image on a telescope lens can bring a person's attention directly to a planet in the sky (Frege [1892a] 1997: 155). But when attempting to communicate with another person, who may have different background knowledge, the sign may miss the *Sinn*, and thus may miss the intended referent. If I say "Venus", you may think I am talking about a club downtown, and so I may try to convey the referent I intend by providing another sense that directs your attention to Venus, such as "the morning star" or "the evening star", and if you still don't get it, I may have to add "the second planet from the sun", etc. I would attempt to provide enough overlapping senses of the object's name so that we can be reasonably sure we are talking about the same thing. These senses would help you locate the object Venus on a conceptual map and this would allow you to identify it should you come across it.

Frege recognized that the tacit information that is determinate in bringing one person to a referent might be different for another person (Frege [1892a] 1997: 153fnB). We may need to communicate an indefinite number of *Sinne* in order to narrow down to the referent we aim toward. This realization aligns well with Polanyi's understanding of the limitations we encounter when we attempt to make tacit knowledge explicit. The clues we can articulate are understood only in the context of the unarticulated whole in which they play a role. Making one clue explicit on its own is not enough to provide another person with the object it intends. For Polanyi, we can provide a list of necessary clues, but we will not know if we have made explicit a sufficient number of clues such that their presence will always insure the proper focal integration for another person. For Frege, we can explicitly express a list of the *Sinne* that point toward an object, but it may not always get everyone to an awareness of that referent. For both, there is always a tacit residue in our explicit expressions.

### 3. THE INEFFABLE AND THE TACIT

Frege and Polanyi together show us that there are several forms of inexpressibility surrounding the logic of language and the logic of tacit integration. There are (1) aspects that are ineffable, (2) aspects that can be indirectly expressed, and (3) aspects that can become fully explicit.

First, the structure of logical inference itself is ineffable. For Frege, we cannot turn round on the basic logic structure and its categories in order to explicitly understand them; for Polanyi, we detect the from-to structure in our cognition, in our perception, and in our skills, but we are always using the structure of tacit knowing in any knowing, we cannot escape it to make it fully explicit independently. We can, however, display this structure.

Second, the clues we attend from *as* clues are inexpressible. For Polanyi, we cannot attend to the clues as focal objects without losing them as they are when we are attending from them. We miss their functional role when we isolate and objectify them. For Frege, this inexpressibility manifests as the difficulty involved in expressing particular concepts; we cannot turn round on them to make them directly explicit. It also manifest in the inexpressibility of our simple recognition of truth.

But, third, tacit clues can be brought into the light of explicit expression. For Polanyi, clues can indeed be objectified, we can engage in analysis as well as integration. We can look at the two dimensional information each eye provides in presenting us with the focal three dimensional picture that integrates both. For Frege, we can chart how one concept falls within another. And we can even catch the concept's role in presenting us with objects and facts by looking at the sense that a name or sentence presents. We can explicitly look at the signs, the sense, or the referents we intend.

But although we can identify clues and make the tacit explicit there will always be a tacit residue marked by our inability to know when we have isolated all the clues that go into a specific focal integration. Even the tacit knowledge that is made fully explicit shows our limitations.

What we can objectify and systematize is explicit knowledge. Frege makes historic advances in our ability to analyze and systematize knowledge, and in our ability to express it. But Frege's explicit system of logical language, as we have seen, rests on the ineffable and enfoldes the tacit. By looking at the tacit in Frege we see the truth of Polanyi's claim that "Formalization of tacit knowing immensely expands the powers of the mind" and we find support for his conviction that "The pursuit of formalization will find its true place in a tacit framework" (Polanyi 1961: 156).\*

\* An earlier version of this paper was read at the conference Reconsidering Polanyi, Budapest, June 2008.

## BIBLIOGRAPHY

- Beany, M. (ed. 1997) *The Frege Reader*. Malden, Oxford: Blackwell Publishers,  
 Bynum, T.W. (ed. 1972) *Gottlob Frege: Conceptual Notation and Related Articles*, Oxford University Press, Oxford.  
 Coffa, J.A. (1991) *The Semantic Tradition from Kant to Carnap*. Cambridge: Cambridge University Press.

- Dummett, M. (1973) *Frege: Philosophy of Language*. Cambridge: Harvard University Press.
- Frege, G. ([1879] 1967) „Begriffsschrift.” In van Heijenoort, J. (ed.) *From Frege to Gödel: A Sourcebook in Mathematical Logic, 1879-1931*, Harvard University Press, Cambridge 5-82.
- Frege, G. ([1882] 1972) “On the Scientific Justification of a Conceptual Notation” In Bynum, T.W. (ed.) 83-89.
- Frege, G. ([1882-1883] 1972) “On the Aim of the ‘Conceptual Notation’” In Bynum, T.W., (ed.) 90-100.
- Frege, G. ([1884] 1980) *The Foundations of Arithmetic*. (trans J.L. Austin) Evanston, Illinois: Northwest University Press.
- Frege, G. ([1891] 1997) “Function and Concept.” In Beaney, M. (ed.) 130-150.
- Frege, G. ([1892a] 1997) “On Sinn and Bedeutung.” In Beaney, M. (ed.) 151-171.
- Frege, G. ([1892b] 1997) “Comments on Sinn and Bedeutung.” In Beaney, M. (ed.) 172-180.
- Frege, G. ([1892c] 1997) “On Concept and Object.” In Beaney, M. (ed.) 181-193.
- Frege, G. ([1895] 1952) “A Critical Elucidation of Some Points in E. Schröder’s *Vorlesungen über die Algebra der Logik*.” In Geach, P. and Black, M. (eds.)
- Frege, G. ([1906] 1971) “On the Foundations of Geometry” In Kluge, E.W. (ed.) *Gottlob Frege On the Foundations of Geometry and Formal Theories in Arithmetic* (trans. E.W. Kluge), New Haven: Yale University Press. 49-112.
- Frege, G. ([1918-1919] 1997) “Thought.” In Beaney, M. (ed.) 325-345.
- Geach, P. (1976) “Saying and Showing in Frege and Wittgenstein.” In Hintikka, J. (ed.) *Essays on Wittgenstein in Honour of G. H. von Wright*. *Acta Philosophica Fennica*, Amsterdam, vol. 28, 54-70.
- Geach, P. and Black, M. (eds. 1952) *Translations from the Writings of Gottlob Frege*, Basil Blackwell, Oxford.
- Greene, M., ed., 1969, *Knowing and Being: Essays by Michael Polanyi*, University of Chicago Press, Chicago.
- Haaparanta, L. (1986) “Frege on Existence.” In Haaparanta, L. and Hintikka, J. (eds.) *Frege Synthesized*. Dordrecht: Reidel Publishing Co. 155-174.
- Hintikka, J. (1981) “Semantics: A Revolt Against Frege.” In Fløistad, G. and von Wright, G.H. (eds.) *Contemporary Philosophy: A New Survey, Volume I: The Philosophy of Language/Philosophical Logic*. The Hague: Martinus Nijhoff.
- Hintikka, J. ([1989]1997) “Is Truth Ineffable?” In Hintikka, J. (1997a) 20-45.
- Hintikka, J. (1997a) *Lingua Universalis vs. Calculus Ratiocinator, Selected Papers*, vol. 2, Kluwer Academic, Dordrecht.
- Hintikka, J. (1997b) “Contemporary Philosophy and the Problem of Truth” In Hintikka, J., (1997a) 1-19.
- Linsky, L. (1977) *Names and Descriptions*, University of Chicago Press, Chicago.
- Lowney, C. (2005) *The Tacit and the Ineffable: Frege and Wittgenstein on the Distinction between Language as a Calculus and Language as the Universal Medium*. Boston: Boston University.
- Polanyi, M. (1958) *Personal Knowledge*. University of Chicago Press, Chicago.
- Polanyi, M. (1961) “Knowing and Being” In Greene, M. (ed.)
- Sanders, A. (1988) *Michael Polanyi’s Post-Critical Epistemology*. Amsterdam: Rodopi.
- Sluga, H. (1980) *Gottlob Frege*, Routledge, Kegan Paul, London.
- van Heijenoort, J. ([1967] 1997) “Logic as Calculus and Logic as Language” in Hintikka, 1997b.