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On Frege's 'Modes of Presentation' in Signs

Abstract: Gottlob Frege introduced a new dimension to the characterization of signs – that of 'mode of presentation'. The same referent may be represented by different signs and in different manners, revealing it with dissimilar depth and profundity. The mode of presentation varies due to the fact that the same denoted object changes in the course of time and under alternating circumstances, but also because people designating it have unequal means for doing so. Herein I undertake to explicate these facts as they occur in semiotic reality.

Keywords: absolute and relative truth; Frege; meaning; reference; sense

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1 The Contribution of Gottlob Frege to Semiotics

In 1892, Friedrich Ludwig Gottlob Frege (1848–1925), the German mathematician, logician, and philosopher, published a paper called "On Sense and Reference" (the terms in German are *Sinn* and *Bedeutung*, respectively). At the beginning of the paper, Frege (1993) compares two logical equations: $a = a$ and $a = b$, where "a" is a denoted object and "b" is its designation with signs. He writes:

a = a and *a = b* are obviously statements of differing cognitive value; *a = a* holds *a priori* and, according to Kant, is to be labeled analytic, while statements of the form *a = b* often contain very valuable extensions of our knowledge and cannot always be established *a priori*. (23)

Why is there a difference between these two equations? Both equations should indicate that the two items connected by the equal sign (=) are absolutely equal:

Now if we were to regard equality as a relation between that which the names 'a' and 'b' designate, it would seem that $a = b$ could not differ from $a = a$ (i.e. provided $a = b$ is true). (23)

Yet they are obviously not equal. Why is this the case? Frege explains this as follows:

A difference can arise only if the difference between the signs corresponds to a difference in the *mode of presentation* (italics and bold are mine – A.S.) of that which is designated. (24)

This means that the designated object remains the same, but it is represented to the observer differently; its “mode of presentation” differs, and therefore its sign (designation) is different. Nonetheless, as Frege points out, it is still one and the same object; only its portrayal changes. Frege called these two aspects of an object its *reference* and its *sense*. The *reference* is the stable aspect of the designation while its *sense* is the aspect that changes:

It is natural, now, to think of there being connected with a sign (name, combination of words, letter), besides that to which the sign refers, which may be called the reference of the sign, also what I should like to call the *sense* of the sign, wherein the mode of presentation is contained. (24)

In the time that has passed since Frege(1993) published his paper, this distinction has become fully established: it is well accepted to distinguish a sign’s *reference* – the object designated by it – from its *sense* – an additional aspect of the object that is revealed by the sign. In other words, the sign represents both the object itself and the new knowledge that the object reveals to us when we observe it under specific conditions. Frege can be given full credit for identifying this very important trait of signs. Nevertheless, I would like to present some comments about his concept, which I believe are very significant. These comments relate to issues that arise when we analyze this topic from a purely semiotic point of view rather than a logical one.

2 Does an Object Always Remain Itself?

Frege (1993: 23) asserts that an object remains itself over time and under varying conditions: “The discovery that the rising sun is not new every morning, but always the same, was one of the most fertile astronomical discoveries”.

I doubt that this is correct for every state of every denoted object. If we photograph an object from different points of view, we undoubtedly produce pictures of the same thing, even though it looks different. So, in this case, the statement is clearly true. But consider photographs of a single person at different stages in his life: does this person stay the same or become different?

The irreversible burden of becoming older, which each of us experiences, forces us to cast a doubt on Frege's categorical statement. Aging is one example of the fact that individual human beings *change*, and change rather quickly, to boot. Indeed, I must contend that the sun itself does not remain the same at all times, either. It is just that its rate of change is not noticeable in the spans of our lifetimes, so we can say that, for all intents and purposes, our sun remains the same from one day to another. But, in the long run, alas, even the sun changes.

So, what is the correct answer to our question? Does an object remain itself regardless of how or when we look at it? I believe the answer must be "yes and no". The apparent paradox that Frege brought up is actually a reflection of the dual nature of signs. Every sign has two opposite and yet complementary facets. The first facet, its most basic quality, is its ability to *denote* objects. This quality embodies the power of the sign to represent something other than itself, and reflects the unchanging identity of the object denoted by the sign. The second facet of every sign is its ability to reveal the *qualities* that are associated with its referent under particular conditions. This property of a sign gives it the potential to convey changes in the features of its referent, and reflects the changeable nature of the denoted object. Furthermore, it is this latter property of signs that enables us to receive new knowledge from them about things and processes that exist in ontological and semiotic reality. This new knowledge can be gained from signs because each sign registers the features of its referent from a particular point of view or from a distinct stage in its existence.

2.1 Which Aspects of an Object are Chosen for Representation by Signs?

There can be many reasons why particular aspects of an object are chosen for representation by signs. The situations that lead to alternative presentations of a single object by different signs have to do both with the observers of the object and with the object itself. The most important of these are, I think, differences in the observers' goals, changes in the object, changes in the observer's viewpoint or methods, and the individual characteristics of the observer.

2.1.1 Differing Aims of the Observer

The purpose for which we use a sign affects the *mode of presentation* of the sign. For example, consider the various ways we might choose a sign to represent a

chair. If we are choosing a sign for students in a foreign language class, we will choose a very simple, *stylized picture* of a chair. On the other hand, if we want to prepare a catalogue of chairs for a furniture shop, we would prefer *exact images*, like photographs of each type of chair we plan to offer. If, however, we want someone to hand us a particular chair, we may use a *gesture*, like pointing at the chair, and then say, “Please pass me that chair”. And if we are ordering chairs from a carpenter, we might give him a *sketch* of the chairs we would like him to make for us. Finally, if we are performing a show in a particular hall, and we want to tell people which seats to sit in, we could label each of the chairs using *figures* (numbers). In each of these cases, we are dealing with the *same* object, but we present it differently because our goal is different. These are all alternative modes of presentation of the same material object we call a “chair”.

To collect all of these signs under one rubric, in our minds we construct special signs for “general objects” like chairs. These signs, called *notions* or *concepts*, behave as if they exist in reality. In our minds, these notions correspond to oblique images that encompass all their possible concrete manifestations. Our thoughts switch between the imaginary all-encompassing *ideas* (as Plato called them) and their various concrete manifestations in ontological reality. We construct our notions when we observe specific objects in ontology, and use signs that are themselves *material and tangible* (like the image of a chair) to represent them in our minds. Thus, *modes of presentation* bring another feature of signs into focus: their ability to embody special traits of denoted objects, traits that do not exist in ontological reality, but which we need in order to think about real phenomena.

2.1.2 Aging of Objects

As I have already mentioned, all material objects age, and during this process they change internally. Over limited periods of time, their aging does not alter the fact that they remain the *same things*. But when the relevant time period is surpassed, they cease to be the same, and then their signs also cardinally change.

“Collective” signs exist that encompass all the various manifestations of the particular objects they represent. I call these signs *polysemic*. Polysemic signs can include many classes and subclasses of the objects they denote. When a polysemic sign is employed in a particular situation, one of its *monosemic* variants is substituted for it, as appropriate to that situation. These variants are called *isotopic signs* in relation to their polysemic antecedents.

Material objects age at different speeds. That is why many objects seem to us to be immutable and even immortal. In reality, everything declines over time and degenerates in the long run. Nonetheless, the fact that some objects change much more slowly than we, do allows us to treat some material entities as if they are constant, leading us to draw conclusions about them that we call “laws of nature”. In actuality, these laws are simply our mental constructs, structures that let us control real phenomena as long as these entities keep their initial forms and contents. When enough time passes that we detect changes to these objects, we apply other “natural laws” to them, using different signs.

2.1.3 Changes in Observer's Location or Viewpoint

Under varied circumstances, material objects appear differently to us. This makes us change the sign constructions we use to denote them, to match the shifts in our observations. Frege himself gives an example of this – the terms “evening star” and “morning star”, both of which refer to the planet Venus; the change in our perception of Venus from evening to morning makes us not only alter the name we use for the planet but also show it in different positions on our maps of the sky. The morning Venus is put in different surroundings in the sky than the evening Venus, even though it is one and the same celestial body, and we can assume that it did not change from the morning to the evening.

The same happens when we observe an object from different locations. For example, a single object is revealed to us differently when we climb a hill or a tree in order to see it in greater detail. The object remains the same, but the amount of information we receive about it changes considerably. Even when we just look at an object from a different angle, we see something different from what we saw before, and gain additional information about the object.

2.1.4 Different Methods of Observation

We are constantly developing new methods for observing objects in our environment. These new methods lead us to discoveries that require new signs. Before Anthon van Leeuwenhoek (1632-1723) discovered the microscopic world, we were not aware of its existence. Only when he constructed a new optical tool, which he called a *microscope*, used it to observe various substances, and saw the millions of tiny organisms that lived there, did people become cognizant of these creatures. Until then, they were unseen and hence unknown and unnamed. Once they became known, new signs were associated with them.

Microscopes have been improved greatly since they were invented, and telescopes have also been developed. We are now armed with a range of instruments that reveal a host of things to us that were not previously suspected. Whenever we need mightier and more sophisticated tools, we build them at any cost – like the Hubble telescope that was recently launched into the space. Every new tool brings about new revelations. We study them, assign new signs to them, and use these signs to help us discover new laws of nature.

2.1.5 Individual Characteristics of Observers

All of the factors mentioned above have significant impact on the exact data we acquire about phenomena we observe. But the most important factor, the one that governs all the others, is the human mind and its conclusions about the facts we seek and discover. To begin with, we have intellectual biases that lead us to accept particular notions and ignore others. Even if we manage to remain unbiased, many obstacles affect our judgment; including our personalities, our IQs, our backgrounds, and our professional abilities. It is no accident that Sherlock Holmes and Pathfinder became such popular literary heroes: they saw things that were concealed from everyone else.

2.2 Material Objects only Partially Reveal Themselves to Humans

All of the above is relevant for understanding how and why knowledge about matter is extracted, but it does not explain the process itself in detail. There are a number of angles to this process. I will describe two of them, which I think are the most important.

2.2.1 “Absolute” vs. “Relative” Truth

The most penetrating philosophical explanation I have found for the problem is the theory about *absolute* against *relative* truth that we gain in researching ontological or semiotic realities. It was very popular in the Marxist philosophy during the Soviet Union rule. It propagated that every material object, whether it is in the ontological or semiotic world, contains in itself some *informational content*. People can observe and understand this content, but only to a limited

degree. Complete comprehension is hindered by the factors I mentioned above. Let us describe this complete content, at any given time, as *100% informational content*. This 100% information about the object is defined as complete knowledge about it, its characteristics, and its ties with its surroundings. Let us call this knowledge “the thing in itself”; this is the maximum possible information about the observed thing at a *given moment* of its existence and for a *given observer*.

But, as I explained above, the informational content of a thing is not static. It changes depending on many things: the environment in which it is observed, the point from which it is observed, the tools used to observe it, and who the observer is. But it is still *observable*, and thus given to human understanding and explanation based on this understanding. Naturally, in these circumstances, our investigation will not enable us to extract the whole of its 100% informational content; its whole remains “the thing in itself”, while the part we manage to extract becomes the “thing for us”. Thus, the thing always remains, even partially the “thing in itself”, that is, it preserves its partial informational content in all its permutations, until it is destroyed and passes on into another category. Until that point, it keeps its inner self, which Kant calls its *transcendental essence*.

As long as it exists, regardless of what state it is in or how we view it, our object continues to be *the same and not the same* at every moment in time. It is *not the same* not only because at each moment it possesses different informational content, but also because part of it is always the “thing in itself”. Nevertheless, since we know something about the object and its qualities, we can influence it and change it to our advantage. As a result, we can never extract its informational content completely. As long as it exists, the thing always remains its own self, and we can endlessly study it from different angles. It will remain a source of information and knowledge till the end of its existence. In this idea, I see the relativity of our knowledge about the material world.

2.2.2 The Semiotic Aspect of the Theory of Knowledge

There is another point in epistemology that can be called the semiotic aspect of the theory of knowledge.

We just reached the conclusion that, by observing things (in the broad sense of the word), we can extract partial knowledge about them. Once we have done this, we can formulate opinions about them and their properties. By doing so, we transfer the things we observe to another plane, to semiotic reality, a reality that depicts our inner mental world. In semiotic reality, we designate

things by special signs and work with these signs as prescribed by the rules of the sign-systems to which the signs belong. These rules are quite different from those that are applied in practice when we work with the objects designated by the signs. Compare, for example, the image of a planned road that is drawn on paper with the actual road itself. The first can be created in a few minutes using a pencil, while building the real road takes a great deal of time, toil, and money. Signs are easy to produce and easy to change; that is why we follow the adage, “measure ten times, cut once”. The measurements are in the realm of signs; cutting takes place in ontological reality.

But it is not only these properties that distinguish working with signs from working with actual objects. Using signs allows us to think far more freely than we can when we deal with empirical actions. It lets us try out a variety of alternatives easily and without much effort, and it allows us to *imagine* things that cannot exist in ontology, like the notions we mentioned above. Most importantly, using *abstract ideas*, which arise easily in our thoughts but are nonexistent in the physical world, helps us reach correct conclusions about material objects that exist outside of our minds.

Let us begin clarifying this idea by going all the way back to the ancient Greek thinkers. As is well known, the notion of the “ideas” of things and their qualities was formulated by Plato. His ideas contained the heart of all matters, since they contained their essence. The chief advantage of these ideas was that they were *general*; that is, within their boundaries they included all manifestations of the class of similar objects. Once we knew the idea, we could deal with each concrete manifestation of the class without researching it anew. Plato declared that these ideas really existed someplace in the heavens. After we die, our souls travel in the heavens, enter the sanctuary where the ideas are stored, and remember the ideas they see there. When the soul receives a new human body, it recollects these images and utilizes them in practical life. In a nutshell, this was Plato’s theory; that is, this is how he explained the appearance of general ideas in our minds.

Many philosophers who were contemporary to him ridiculed his approach. Especially active in this regard were the philosophers of the school of Cynicism. Thus, Antisthenes said that “general notions and ideas are pure nonsense” and added that “a horse I see, but the idea of ‘horseness’ I do not see” Another Cynic – Diogenes of Sinope – disputed with Plato in the same way: “Look, Plato. Here I see a table and a bowl, but there is nowhere ‘tableness’ and ‘bowlness’”. To this Plato responded: “To see ‘a table’ and ‘a bowl’ you need only your eyes, but to see ‘tableness’ and ‘bowlness’ you need also some mind and imagination, which you have not got”.

Since then, many centuries have passed, and philosophers have returned to this same issue again and again: how do we get *general* ideas about things? Many of them did not believe in the heavenly receptacle of ideas, so they sought other answers. My answer to this problem is simple: we get general ideas from our imaginations and from semiotic reality, which allows us to create general ideas even though they do not exist in external reality. In external reality, we can only deal with concrete objects and not with general things.

The process works like this: Once we have transformed real objects into signs and included them in semiotic reality, we can deal with them according to the rules of that reality. These rules make it possible to think about things in any fantastic way we want, something that is not possible in real life. We can guess about their qualities, their ties, and their transformations as much as we like. Some of our guesses may initially appear correct, while others seem wrong. Once we have formulated our guesses, we can test them empirically, and, based on the results of the tests, we can select the guesses that proved to be correct and draw conclusions from them. These conclusions can then be brought into ontological or semiotic reality and used to change and improve these planes of reality.

2.3 Logical Devices for Formulating Definitions of Words in Languages

As we have shown, *empirical testing* is the primary method for evaluating the usability of our mental constructions. However, there is another important component in this process, one that helps prevent our thoughts from deviating too far from “right thinking”, and ensures that our ruminations will ultimately lead us to correct conclusions. This component is a set of rules that we create for ourselves, rules that mediate between our imaginations and reality. These rules are called the *rules of logic*. When we follow the rules of logic, we filter out obvious fallacies that are characteristic of human thinking before we begin our analysis.

The first rule of logic is to correctly formulate the definition of each sign that may later be used for expressing laws of nature. This begins with clearly defining the words of our spoken language, because these words are our most important tools for formulating the laws of nature; they are the signs we use as we think about whatever problem we are currently dealing with. Every word in the language must have a definition, so that speakers of the language can use the word with its proper meaning. This helps make every word that is used by

speakers of the language comprehensible to every other member of the community that uses the language.

Let us look at some of the logical devices that are used to formulate definitions for various words in natural languages. Different methods must be used for different types of words.

The simplest method for defining a word is to show either the real thing that is denoted by the word (i.e. its referent), or a picture of the thing, and then say, for example, “This is a horse”. This is the simplest way to create a fixed bond between the thing and its linguistic designation in the word “horse”. It is the best way to teach about an object and the sign that is assigned to it. Still, it does not guarantee that the sign will be understood as a general one, applicable to all “horses”. On the contrary, the sign may be seen as designating only this specific horse, the one that was shown to the interpreter. This mistake is especially likely to be made when the definition is given by pointing to a real horse (a *natural* sign); if a picture of a horse (an *iconic* sign) is used, it is less likely. This difference is important, because it hints at how the differences between signs designating a single item can be significant.

The two methods mentioned above for defining a word – using *natural* and *iconic* signs – both employ signs that resemble their referents (see Solomonick 2010). Many signs do not resemble their referents at all, and are linked to their referents by convention; that is, the users of the sign systems in which they exist have agreed to use them. The logic for defining these *conventional* signs differs from the logic of natural- and iconic-sign definitions. Their definitions must be based on other signs that are already in use in the same sign-system (in this case, the same language). There are a number of variants for this kind of definition:

One type of definition for a conventional sign is based on comparisons with the names of other, related objects, which we assume, or hope, are known to the listener. Thus, to explain the word “horse”, we could say, “You know, a horse is like a mule or a donkey and can carry people and goods”. In this way, we put together some qualities of a group of denoted objects and not only clarify the meaning of the word we are defining, but also add some common characteristics of all the things we mention in the definition. These additions also provide some clues for how to build a *general definition* of the item under discussion. In our example, the comparison places the item in a row of similar entities, i.e. horizontally. In scientific jargon, this is called defining a word by alluding to its synonyms. In some cases, the word’s antonyms are also included in the “horizontal definition”.

Another type of definition for a conventional sign inserts the word into a vertically hierarchical framework. That is, it locates the word within a series of

notions, arriving at the meaning of the word by successively diminishing the breadth of the notions. Thus, the word “horse” can be inserted into the following vertical hierarchy: *living beings – animals – domesticated animals – domesticated animals that are used for carrying people and goods – horses – racers – draught horses*, etc. (Below “horses” is a horizontal list of entities in the “horses” category.) By placing the word “horses” in a column like this, the word is endowed with a collective sense. If we connect all the concepts in the column together, we are well on our way to comprehending the whole class of things, i.e. to creating a *collective sign*. Once we structure a definition in this way, we naturally start to apply it to our surroundings, reconstructing our view of our environment in light of the collective notions.

Proof that this process really occurs can easily be found in any dictionary that contains general definitions of words in an existing language. I have randomly chosen an English dictionary, the *Chambers Family Dictionary*, published in Edinburgh in 1981. The word “diode” is defined there as “the simplest electron tube with heated cathode and anode”. In this definition, the notion “tube” logically precedes our item in the vertical structure, while “with heated cathode and anode” distinguishes this tube from all other similar objects in horizontal row. There are thousands of such definitions in this and other dictionaries, definitions that, together with synonyms and antonyms, serve to create *general notions*. The structure itself is called the *Porphyrian Tree*, named after Porphyry of Tyre, the philosopher who suggested it in the third century A.D.

2.4 Other Logical Devices for Creating General Notions among Various Types of Signs

Other sign-systems demand different types of logic for creating collective notions. Thus, mathematical sign-systems, whose signs are much more abstract than language signs, use only equalities for the transformation of signs. To do this, we begin with the left side of the equation, transform it according the rules of the system, and arrive at the result. Math demands much more rigorous procedures for dealing with its signs, because comparisons like those used above are not appropriate for it.

Even in geometry, whose signs are more self-evident and tangible than arithmetic or algebraic ones, the logic for using its figures is much stricter than in linguistics. This is evident, for example, in cartography, which uses the framework and signs of geometry in its maps. Cartography uses the geometric

coordinate system to define the locations of places or other items in maps, and inserts statistical data inside circles in order to make the information more visible and comprehensible. It is worthwhile to note that the coordinate system enables us to identify the boundaries and exact locations of concrete substances; that is, it provides an abstract substructure in which we can organize and place detailed information. The coordinates help us delineate the space in which we can place particular things. This allows us to study the information we have in a concrete setting, though such set of coordinates obviously does not exist in the ontology.

The examples above describe different ways of creating *general concepts* in the semiotic realm. These methods are constructed for this purpose within the semiotic realm, and do not exist in the realm of ontology.

3 The Added Value of Semiotic Reality

Conclusions that are expressed using signs have added value in that they are objectified and tangible, so that anyone who masters the sign-system in which they were formulated can understand and appreciate them. In this way, the ideas of individuals can quickly be transformed into public domain. Anyone can then discuss them, express an opinion about them, accept them, or reject them. In the long run, it is this property of signs that can transform some of our private thoughts into generally accepted truth. It can also help prevent individuals from maintaining biased, one-sided opinions. Once an individual's idea is subjected to the scrutiny of many other people, it very often attains greater depth and stature. In fact, it is because people believe this to be true that they share their private views, views that are very vital to them personally, for other people with greater knowledge to consider and revise.

This, then, is how humanity proceeds in expanding its knowledge. We have succeeded in many endeavors in this way, especially over the past few centuries, in which we applied scientific approaches to the process of extracting knowledge. Still, as I tried to show above, the process of acquiring knowledge is far from completed. It is endless, because the problems that have already been solved tend to open up innumerable new horizons for us to attempt to answer. The provisional and relative character of our knowledge about the material and semiotic worlds surrounding us should not deter us from trying to glean their secrets, since even partial knowledge brings about great advantages for humanity. Perhaps, in fact, it is best that we can only ever achieve partial

knowledge, because there is always so much left to be investigated and learned in future.

Notes

1. The quotations in this article are from the English translation by Max Black in Moore (1993), which is also available at: http://mind.ucsd.edu/syllabi/00-01/phil235/a_readings/frege_S&R.html.
2. Thus in <http://voices.yahoo.com/philosophy-summary-explanation-freges-sense-and-5379805.html> we read:

Frege advocates differentiating two different kinds of meaning for some terms. A word's reference is the specific object to which it refers, so that the reference for "desk" would be a desk. A word's sense is the way that a word refers to a particular object. Frege also demarcates the criteria of "sign" or "name" to designate a proper name that refers to a specific member of a class or group of objects.

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