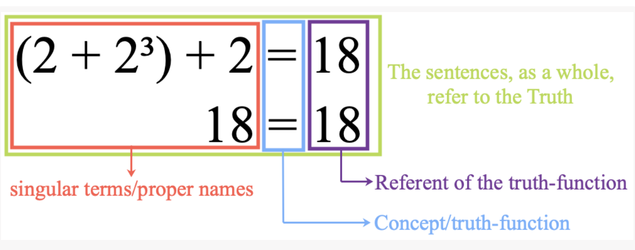
Chapter 2
Frege on Sense and Reference

- **Recap**
  - Locke's Assumptions
    - **Frege agrees with [p.21]:**
      - (L1) The nature of language is defined by its function;
      - (L2) The function of language is to communicate;
      - (L3) What language is meant to communicate is thought;
    - (L4) Words signify or mean the components of what language is meant to communicate;
      - **Lockean Interpretation of (L4)**: Individual words, or most of them, stand for self-standing Ideas in the mind of the speaker, and these are combined into something sentential by an action of the speaker's mind.
      - **Fregean Interpretation of (L4)**: Sentences are more basic and individual words only make sense in the context of sentences
    - **Frege blatantly rejects**
      - (L5) The components of thought are IDEAS.
- **Psychologism & the Context Principle**
  - Frege Against Psychologism
    - **(F1) It is not true that all words mean or refer to IDEAS (Vorstellungen)**
      - **Argument I**
        - People who understand a given word may associate different ideas with it [p.23] — 比如说，我们都理解「鸟」这个词，但是我联系起来的IDEA是「麻雀」，你联系起来的是「猫头鹰」
        - No, if they associate different ideas with the given word, they do not understand it in the same meaning
        - But, if we do not understand the word in the same meaning, then communication is impossible
        - Therefore, we have to distinguish between
          - the meaning of a word
          - its associated IDEAS
      - **Argument II: we are not concerned with IDEAS**
        - Mathematics has nothing to do with IDEAS: in arithmetic, we are concerned with numbers, not IDEAS of any kind
        - Aeronautical engineer is concerned with aeroplanes, not with IDEAS of aeroplanes
        - Gardener with plants, not with IDEAS of plants
      - 我不太理解为什么argument II是有效力的：我完全可以concern一个东西但同时又不得不通过IDEAS来代表我的concern呀?
        - In Lockean theory, the word 'gold' means an Idea or concept of gold. But that is unnatural, because we just want to say that 'gold' means gold, the metal. Fregean theory solved this unnaturalness. 'Gold' refers to/bedeutet gold, the metal, but it expresses the Sense of 'gold', a certain way in which the metal is presented to us. [p.36]
    - **(F2) The meaning of a word is what is known by someone who understands the word.**
  - **Context Principle [p.24]**
    - First Formulation — Never to ask for the meaning of a word in isolation, but only in the context of a sentence.
    - Second Formulation — It is only in the context of a sentence that words have any meaning.
    - **(CP) There is no more to the meaning of a word than its contribution to the meaning of sentences in which it may occur. [p.24]**
    - Reasons to accept (CP)
      1. If we don't accept (CP), we will be driven to accept that "words mean IDEAS" [p.24] — If a word could have meaning, then it have an isolable correlation between itself and something extralinguistic → our mind
      2. Provide a response to The Problem of The Unity of Sentence [p.25]
         - **The Problem of the Unity of Sentence**
           - A sentence : words cannot be arbitrarily added or removed while retaining the sentence meaning
           - A list : words can be added or removed arbitrarily without affecting it being a list
           - → **Implies that the unity of sentence is generated from more basic meaningful parts**
         - (CP) suggests that the unity of sentence is more basic, and the meaning of its parts is derivative
    - Converse of (CP): Principle of Compositionality [p.25]
      - **(PC) There is no more to the meaning of a sentence than what is determined by the meanings of the words of which it is composed and the way in which they are arranged.**
      - (PC) is a basic fact of language and semantics
      - Here's the trouble: CP says that sentences are basic; PC says that words are basic; CP & PC cannot be both true.
        - One Response: The basicness involved in (CP) & (PC) is different
          - **Basicness in CP**: Sentence is basic in our understanding of the relation between language and what is outside language. Only in whole sentences we get language to engage with the world
          - **Basicness in PC**: Word is basic in our understanding of the relation between each sentence and the rest of the language to which it belongs.
- **Frege & Logic**
  - Validity in Fregean System — (V) An argument is valid iff it is impossible for all of its premises to be true and its conclusion false.
  - Two Layer of Fregean Logic System
    - **Sentence Logic** — concerned with argument depend on relations between whole sentences

      Two Basic Kinds of Sentences

Sentences	true or false
Singular terms	which objects they refer to
Predicates	difference they make to truth or falsity of sentences

      - **Singular Terms**
        - An expression whose business is to refer to an individual thing
        - include
          - proper names & definite descriptions ('Vincent', 'Paris')
          - some demonstrative expressions ('that ship', 'this water-pistol')
          - some other indexical expressions ('I', 'you', 'she')
      - **Predicate**
        - A predicate is the result of removing one or more singular terms from a sentence
        - - (S1) Vlad was cruel; - (S2) Vlad was at least as cruel as Tamerlane ↓ - (P1) x was cruel; - (P2) x was at least as cruel as y.
          - (P1) is named a monadic predicate; (P2) called a dyadic predicate; there can be n-adicity predicate
    - **Predicate Logic** — concerned with arguments which depend on relations between parts of sentences.
- **Frege's Mature System: (i) Reference**
  - Terminology
    - **Frege uses these two words interchangeably before 1890s**
      - Bedeutung f. / bedeuten v. normal meaning in English: significance/signification/meaning (1)
      - Sinn m. normal meaning in English: sense (1)
  - Later in 1890s, Frege made a distinction between Bedeutung und Sinn
    - **Bedeutung → Reference**
      - Proper names: It's natural to say they refer to referents.
      - Predicates: They refer to functions of a particular kind, e.g., to f(x, y) = x + y. The objects whose names might replace the variables are the possible arguments of the function referred to by a predicate.[p. 29]
        - Two predicates will have the same reference if they are true of the same things [p.32]
          - H(x): x has a heart
          - K(x): x has a kidney
          - every creature that has a heart has a kidney
          - H(x) & K(x) have the same reference
      - Sentences: They have referents too. True sentences refer to the True, and false sentences to the False. Frege treats the True and the False as things [pp.30-31]
- **Frege's Mature System: (ii) Sense**
  - **Sinn → Sense**
    - An extra dimension of meaning
      - A dimension for the cognitive aspect of linguistic meaning, defined as what enables one to understand two linguistic expressions and not realize they have the same reference
      - Sense = the mode of presentation of the referent
      - Sense is related to the informativeness
      - 补充：telescope analogy
        - "Somebody observes the moon through a telescope. I compare the moon itself to the referent; it is the object of the observation, mediated by the real image projected by the object glass in the interior of the telescope, and by the retinal image of the observer. The former I compare to the sense, the latter to the conception or experience." Frege, Sense and Reference, p.213
        - 所以说Sense是介于主观的idea和客观的reference之间的，月亮本身是referent，完全客观，留在望远镜物镜上的像是sense，而最终被视网膜接受的像是idea。
        - 为什么说sense是不完全客观的呢？因为Sense 虽然如同望远镜的物镜，但却是 "one-sided, and dependent upon the standpoint of observation; but it is still objective, inasmuch as it can be used by several observers. At any rate it could be arranged for several to use it simultaneously. But each one would have his own retinal image (idea)." Ibid.
    - Examples
      - An Example in math, used in Function and Concept [p.33]
        - (1) $(2 \times 2^3) + 2 = 18$
        - (2) $18 = 18$
        - Sense
          - Eqn.2 is obvious, we can see that it's true without thinking.
          - Eqn.1 requires a bit of arithmetic to work out that it's true. Eqn.(1) is informative, while Eqn. (2) is not.
        - Reference

          [p.33]
      - An example in natural language [p.35]
        - Assume that "Alpha" and "Ateb" are two names for the same mountain. Aphla = the mountain's appearance viewed from the south; Ateb = the mountain's appearance viewed from the north.
        - (3) Alpha is the same mountain as Ateb.
        - (4) Alpha is the same mountain as Alpha.
        - (3) ≠ (4) because (3) could be news to a traveller, but (4) is no news at all.
          - 可能的问题 (4)
          - 对可能问题的可能回应 (1)
          - 对可能问题的可能回应的可能回应 (10)
          - 对可能问题的可能回应的可能回应的可能回应 (2)
- **Two Further Uses of Sense**
  - Evan's Intuitive Criterion of Difference [p.36] — A true sentence is informative if you can understand it without thinking that it's true. Two sentences differ in informativeness is you can understand both without thinking that they have the same truth-value.
  - Problem I
    - About singular terms which don't refer to any real thing.
    - (5) "Odysseus was set ashore at Ithaca while sound asleep" [p.37]
      - The proper name 'Odysseus' has no referent, and so does the whole sentence. But yet the 'Odyssey' is meaningful to us. Why?
      - Because 'Odysseus' has Sense, and (5) expresses a Thought, though without truth value
    - "the least rapidly converging series" [p.38]
      - such thing does not exist in math
      - has no referent but has Sense
  - Problem II — Indirect Contexts/Self-report of Beliefs
    - Example [p.39]
      - (6) Carol thinks that the evening star appears in the evening. → **(6) is obviously true**
      - (*) The morning star is the evening star, which both refer to Venus. → **(*) is also true.**
      - (7) Carol thinks that the morning star appears in the evening. → **If Carol is ignorant of (*), then (7) would be false.**
    - Frege's Response
      - You can only swap expressions contained in these contexts if they have the same Sense [p.40]
      - In this context, the parts of the sentence does not refer to their normal reference but to their norma Sense.
- **Questions about Sense**
  - **(L3) What language is meant to communicate is thought**
    - **Lockean Thoughts** — Lockean IDEAs are a private thing, perceptible only to the person whose Idea they are, dependent on that person's psychology. [p.41]
    - **Fregean Thoughts** — Fregean Thoughts/Senses are objective [p.41]
      1. Same Thoughts/Senses can be grasped by different people
         - E.g. If A believes the the morning star is illuminated by the sun, and B has the belief that the morning star is illuminated by the sun, then A and B share the same Thought/Sense.
         - Two Difficulties
           1. If people can pick out the same object in different ways, they would associate a different Sense with any name of that object. Consequently, it will be unlikely/impossible for two people to think the same Thought. [p.42]
           2. It is possible for someone to understand any two words (which refer to t he same thing) without realizing that they refer to the same thing → any two words seem bound to differ in Sense.
      2. Thoughts/Senses can exist independently of human beings
      - **Colouring / Tone**
        - Two words could have the same Sense, while differing in colouring [p.42]
        - Good translation is expected to preserve Sense but cannot be expected to preserve colouring
        - Colouring is a matter of the Ideas associated with words, and is the concern of poetry rather than science
        - Colouring is not objective
  - **Problem with singular terms**
    - **(F3) Ordinary proper names and definite descriptions are singular terms [p.43]**
      - (ST1) The business of a singular term is to refer to an object.
      - (ST2) A sentence containing a singular term has no truth-value if there is no object corresponding to that singular term.
    - **(F4) Ordinary proper names and definite descriptions all have Sense (and perhaps have reference)**
    - **Problem with (ST2) [p.44]**
      - (9) Whoever discovered the elliptic form of the planetary orbits died in misery.
      - The assertion of (9) will presuppose the truth of: - (10) There was someone who discovered the elliptic form of the planetary orbits.
      - This seems to be a inevitable characteristic feature of sentences which contain singular terms → **Their assertion will presuppose but not assert the existence of an object corresponding to the singular term [p.44]**
    - **Problem with (F3)**
      - A definite description first specifies some conditions, and if there is an object that meets all of them, the that object is the referent of the definite description [p.44] — Thus sense can exist without reference because conditions/properties can exist without instances
      - The Sense of an ordinary proper name is given by a definite description, therefore it functions similarly to a definite description
      - **False Presupposition [p.45]**
        - If definite descriptions are singular terms, then sentences containing them will have no truth-value if the descriptions refer to no objects.
        - (11) Earth's second moon is made of cheeses.
        - By (ST2), (11) has no truth value. But, (11) is supposed to have Sense, while being neither true or false.
        - If we accept (F3) & (F4), we have to contend that (11) does say something. But what is (11) saying?
      - One potential response [p.46]
        - Definite descriptions cannot give sense to some unstructured singular terms (i.e. proper names), e.g. "Alpha", "Ateb"
        - **Revised notion of "mode of presentation"**
          - A mode of presentation is a way in which a particular object is made available to us
          - We cannot have a mode of presentation without a referent (reference is a pre-condition of Sense)
        - But fictional names do not have referents, yet we think they have sense!
          - Fictional names have fictional Senses and fictional referents
          - 可能的问题 (1)
- **Sense and the Basic Worry**