

Some remarks on the definitions of page 1 of Prof. Odell’s handout:

- **Symbols:** Why must a symbol be an expression that does not refer to itself?
Answer: Consider the following sentence, expressed as: “This is a false claim.” This expression refers to itself. But look what happens: If we accept the claim as true, then the claim is false, and vice versa. Therefore the sentence is true if and only if the sentence is false. (This is an example of some of the logical paradoxes that occur in the case of self-reference.)
- **Sentences and claims:** Keep in mind that a sentence is only truth-evaluable (i.e., can be shown to be true or false, or T or F) if it’s a **claim**. A **claim** is a sentence used by the speaker to describe a state of affairs (i.e. used by the speaker in the *declarative* sense). Sentences in the form of commands or questions (i.e. by the speaker in the *imperative* or *interrogative* sense) can’t be evaluated in terms of T or F.
- **Apriori/aposteriori, analytic/synthetic.** Consider the following 16th century verse by Trahearne: “In every joy in love abides, a thousand woes or more reside.” (I.e., subject S: “Every joy one experiences in love,” predicate P: “has at least a thousand woes.”) a.) **Is it analytic?** In other words, does it express a claim which is a tautology, or one that is always true? In other words, is the very *meaning* of the joy of love contained in the notion of suffering at least a thousand sorrows? Unless one is cynical about love, or very unlucky in love (the two often go together ☺) one would have to answer “no.” There’s nothing about the *meaning* of any particular joy associated with love that renders it *equivalent* with the *meaning* of great misery.¹ So the claim is a contingency. Moreover, it’s a **posteriori**, since *experience* here (for the poor lovesick fellow) plays a crucial role in the truth or falsity of the claim.

Consider the table:

	Analytic claims	Synthetic claims
A priori claims	Example: ‘A triangle is a three-sided figure.’ Its truth is independent of experience and the meaning of triangle is equivalent to the meaning of 3 sided figure	Kant believed such kinds of claims can exist. He was basically arguing, for example in the case of mathematics, that mathematicians <i>can</i> create new knowledge (and therefore make synthetic claims). But of course the truth of mathematical claims don’t depend on experience
A posteriori claims	No such claims can exist ² Experience is what adds to the predicate information not contained in the subject.	These are the most commonly occurring in everyday usage. (Consider Trahearne’s above verse.)

¹ Though perhaps one may think otherwise!

² Though logician Saul Kripke thinks otherwise, in his book *Naming and Necessity*.(1981)

- **Soundness/Validity:** Consider the argument: “All humans are mortal, and all students are humans, therefore all students are mortal.” In standard form:

All M are P	where: M (middle term): “humans”
<u>All S are M</u>	S (subject term): “students”
∴ All S are P	P (predicate term): “mortal beings.”

First of all, this is a standard form categorical syllogism (SFCS) in figure 1 and mood AAA (since the major premise, minor premise, and conclusion are all universal affirmative or A-standard form propositions.)

Certainly, as was asked by Christina Larmon (Section 0203), the minor premise is dubious. For instance, one can train an intelligent primate in simple language acquisition, and such a primate would certainly be considered a ‘student.’ Christina, in other words, found a *counterexample* to “All S are M” by considering, as one ought to do, the term ‘student’ as referring to the most general possible class of beings, which, as we see, doesn’t include just humans. So the minor premise is **false**.

Nevertheless, we can ask ourselves: *If* both premises are true, is the truth of the conclusion guaranteed? If so, then the argument is **valid**. We test for its validity by running Rules a) – e) (see Handout I and Answers Exercises II handout for further examples.) Suppose we found the argument to be **valid**. Then we’d say that the above argument is **valid** (since *if* all its premises were T, then the truth of its conclusion is guaranteed) but not **sound** (since at least one of its premises are false.)

- **Type/Token.** There were many questions about this distinction asked by students in 0207 (Daniel Namm, Deanna Measday, Christine Archer, Brittany Galanis, etc.) To clarify: one must distinguish these *logical* notions from *metaphysical* theories pertaining to questions surrounding what kinds of things they are.

Consider the following examples:

1. **Example 1:** The name: “Mississippi” is a sequence of letters (symbols): (Denote $\langle \dots \rangle$ as a **sequence**, where the order of tokens matters and repetition is allowed. Denote $\{ \dots \}$ as a **set**, where the order doesn’t matter and repetition is not allowed.):

$$\langle M_1, i_2, s_3, s_4, i_5, s_6, s_7, i_8, p_9, p_{10}, i_{11} \rangle$$

(The subscript indexes the place of the letter in the sequence). We see 11 total **token-instances** of the things (Roman alphabet letter symbols). However, there are only 4 instances of letter **types** (let’s denote a type with the notation: $[\dots]$): $[M]$, $[i]$, $[s]$, $[p]$. The letter-tokens are classified according to the types by the instantiation (into subsequences) below:

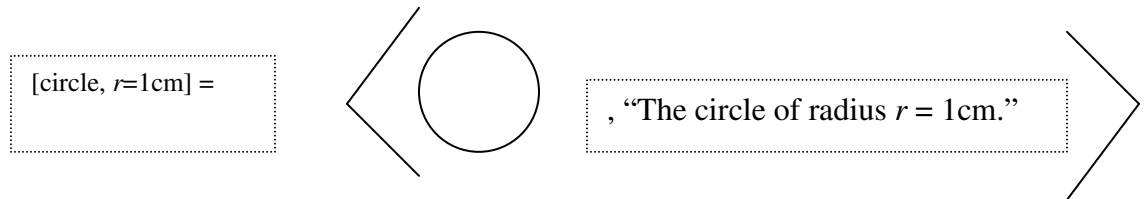
$$[M] = \langle M_1 \rangle$$

$$[i] = \langle i_2, i_5, i_8, i_{11} \rangle$$

$$[s] = \langle s_3, s_4, s_6, s_7 \rangle$$

$$[p] = \langle p_9, p_{10} \rangle$$

2. **Example** Consider the (token) sentence “The circle of radius $r = 1$ cm.” Denote its *proposition* (standard meaning) by. [circle, $r = 1$ cm]. This proposition expresses a *type*. Such a type, for example can be instantiated by the following two tokens:



In other words, the proposition expressing this type can be instantiated by a token-instance of an actual drawing of a circle with such a radius, or by a phrase describing such a circle.

So a type refers to a *class* of objects. The objects in that class are the type’s token-instances. Seems straightforward enough, at the outset, at least. There are objects one encounters in the world, which can be token-instances of some type. Consider [tiger]. Such token-instances of [tiger] are obviously easily recognizable! So what this says is that there are many *natural kinds* according to which objects in the world can be classified by such types.

But as with much in philosophy, what seems at the outset simple enough actually turns out to be quite subtle. For suppose we were to ask ourselves: is a type merely a convention, or is it some kind of super-duper-universal object? This is a metaphysical question, for we are asking: *what kind of thing* is a type? (Or is it even a ‘thing’ at all?) In the first example, it’s easy to see that letter-types are decided by convention: the Latin alphabet, for example, has 26 such types, but other alphabets would have different classes of letter or character-types. But what about [tiger]? Is it strictly a matter of convention? Biologists would disagree, certainly! [tiger] is a species, and certainly a species isn’t arbitrarily decided by

convention. There are *traits*. Or take, as Plato did, the example of [circle]. For Plato, we recognize token-instances of circles (in the forms of imperfect drawings of them, etc.) *only* because the *type* is 'more real' than the token. That is to say, for Plato, there is a *universal ideal* (or Form) ["circle"] by which we get to know specific token instances of circles. For Plato, our soul was in contact with some hyper-real World of Forms, which, upon birth into the not-as-real world of matter, our soul 'forgot' its contact with such Forms. Hence the job of education is assist the soul in 'recollecting' such prior acquaintance with such Forms.

Plato's theory of Forms is an extreme example of metaphysical idealism: he's stating that the world of spirit, in which the Forms (or universal ideal, types) are what is truly real. Tokens are of a 'degraded' nature, and we understand them *only* because types exist in some hyper-real sense that the physical senses cannot access (only contemplative activity of the soul can give us access to the World of Forms.)

Now certainly Plato's metaphysical theory may strike one as a bit loopy, but one cannot underestimate its significance in influencing Western thought. (For example, Christian theology, from approx. 350-1350 (AD) was almost entirely Platonist)

A materialist, on the other hand, would argue the exact opposite: Only tokens really exist, and types are just abstractions (i.e. ways of thinking about token) so that our minds can easily classify them. If you believe that such abstractions are entirely based on contingences like arbitrary definitions, then you're a *nominalist*. A nominalist is one who argues that types are not only abstractions our mind makes on token, *but* these abstractions are *entirely* dictated by language conventions.