

**Philosophy 308**  
***The Language Revolution***  
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**Hamilton College, Fall 2014**

**Class #14**  
**The Picture Theory of Language and**  
**the Verification Theory of Meaning**  
**Wittgenstein, Ayer, and Hempel**

# Wittgenstein's *Tractatus*

- The founding work of logical empiricism
- Wittgenstein seeks the limits of language, in distinguishing between what can and what can not be said.
  - §7. Whereof one cannot speak, thereof one must be silent.
- How can we think about the boundary of thought?
- What is outside of the boundary is inaccessible to us.



# Wittgenstein's *Tractatus* Picture Theory

- Both the world and our language consist of independent atomic elements, which are combined according to strictly logical principles.
- The world is a collection of independent states of affairs.
- If I am standing to the right of you, we could have two atomic facts (my standing and your standing) and a logical relation (standing-to-the-right-of) between those facts.
- I could stand to the right of you, or to the left of you, or on the other side of the planet, all of which are independent of you.
  - §1.2. The world divides into facts.
  - §2.06. From the existence or non-existence of one state of affairs, it is impossible to infer the existence or non-existence of another (Wittgenstein, *Tractatus*).
- Language consists of atomic statements of those facts, connected into more complex statements by logical principles.



# Language Mirrors the World

- Language provides a logical structure which is isomorphic to the structure of the world
  - ▶ §2.16. If a fact is to be a picture, it must have something in common with what it depicts.
  - ▶ §2.17. What a picture must have in common with reality, in order to be able to depict it - correctly or incorrectly - in the way it does, is its pictorial form (Wittgenstein, *Tractatus*).



# Analysis and Atomism



- My standing in a place is not an atomic fact, it is a complex fact.
  - I am a complex
  - standing is a complex
  - you are a complex
- The true analysis of the world will involve analyzing these complexes into their simple (atomic) components.
  - Russell and his logically proper names
- What are the atoms?
- Wittgenstein never gives a clear example of an atomic fact.
  - The color of a spot in my field of vision?
- The representations of atomic facts are the foundational elements of the *Tractatus*.
  - Postulates of Euclidean geometry (points, lines, planes)
  - Descartes's synthetic presentation of the *Meditations* (self, imagination, thought)
- A theory of the world that analyzed all of the myriad complexes into their atomic elements would present a veridical and secure picture of the world.
- Analytic philosophy

# Logical Truths as Necessary

- One of the most important advances in modern logic was its ability to characterize properties of logical truth.
- In propositional logic, all logical truths are tautologies, complex statements which are true no matter the truth values of their component variables.
- We might characterize these statements as necessary truths.
  - ▶ The certainty of logic and mathematics provided essential support to Descartes's claim that our minds have substantial content built into their structures.
  - ▶ From the claim that logic and mathematics are innate, it is reasonable to ask whether there are other innate ideas, including the idea of God.

# Wittgenstein: Logical Truths are Nonsense

- The only statements that can picture the world are those that have sense, that can be either true or false, that can picture accurately or not.
- Tautologies are empty of content.
  - ▶ §4.46. The proposition shows what it says, the tautology and the contradiction that they say nothing. The tautology has no truth conditions, for it is unconditionally true; and the contradiction is on no condition true. Tautology and contradiction are without sense.
  - ▶ §6.1251. Hence, there can *never* be surprises in logic.

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# Tautologies Resist Foundations

- §6.127. All the propositions of logic are of equal status: it is not the case that some of them are essentially primitive propositions and others essentially derived propositions. Every tautology itself shows that it is a tautology.
  - ▶ If they can not be placed into an order, they are outside of the realm of knowledge.
  - ▶ But, they are not unknowable in the way that, say, God's goodness would be unknowable, or whether we have free will.
  - ▶ They are unknowable because they are too thin to be objects of knowledge.
  - ▶ They don't picture any fact.

# Frege and Logical Empiricism

- There is a direct line from Frege through Russell and Wittgenstein to the logical empiricists.
  - Carnap studied with Frege.
  - Frege sent Wittgenstein to study with Russell in Cambridge (1911).
- Wittgenstein's *Tractatus* was the culmination of the anti-psychologistic enterprise of logical analysis begun by Frege.
  - And has the first truth tables!
- Carnap's *Der Logische Aufbau der Welt*, was patterned on Whitehead and Russell's *Principia Mathematica*, which had, like Frege's *Grundgesetze*, attempted to reduce all of mathematics to logic.
- It would be a mistake, though, to take the logical empiricists as completely aligned with Frege.
- Fregean senses, in their third realm, were the kinds of metaphysical objects that the logical empiricists were deriding.
- The logical empiricists were much closer to Russell, who denied the existence of senses, than to Frege.
- They were largely behavioristic about meaning.

# British Empiricism, Logical Empiricism, And Language

- The logical empiricists presented a verificationist theory of meaning, inspired directly by Hume and Locke.
- Hume: for a term to be meaningful, it had to stand for an idea in one's mind that could be traced back to an initial sense impression.
  - ▶ Commit to the flames, as meaningless, any speculative metaphysics.
- The logical empiricists replaced Hume's theory of language (which we saw originally in Locke) with a verifiability theory of meaning.
  - ▶ Locke and Hume: meaning attaches to sub-sentential terms.
  - ▶ Frege and later: meaning attaches to sentence-sized things.
- Combining Frege's logical tools and his context principle with Hume's empiricism

# The Verification Theory of Meaning

for a sentence to be meaningful, it must be verifiable

- All our justifiable claims are traceable to a core set of claims which refer only to things or events that we can experience.
  - or derived from axiomatic observations
  - or introduced by definition
- All and only meaningful statements will be analytic, observable, or derivable (using logic) from observable axioms.
- Any sentence which is unverifiable, including especially claims related to the examples A-G, is meaningless.

- A. The meaning of life
- B. The existence (or non-existence) of God
- C. Whether the world was created five minutes ago
- D. Why there is something rather than nothing
- E. Emergent evolutionary theory and the *elan vital*
- F. Freudian psychology
- G. Marxist theories of history

# Verifiability and Metaphysics

- Some metaphysical questions can be re-cast as scientific ones.
- Many philosophical problems, like the problem of free will, should be dissolved, rather than solved.
- The challenge for the logical empiricists was to clarify what it meant to verify a sentence.
  - ▶ more difficult than it seems
  - ▶ philosophy of science

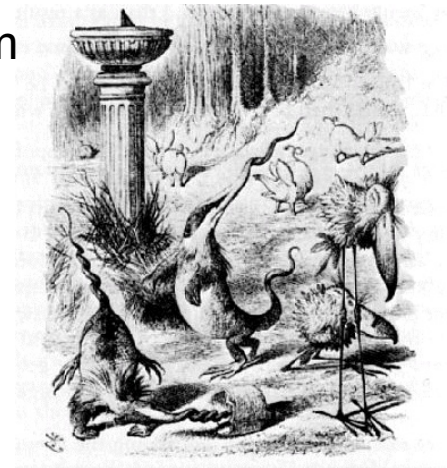
# Nonsense and Metaphysics

- There seems to be a difference between real nonsense (gibberish) and metaphysical claims.
- Metaphysical claims can be grammatical, and composed of terms which otherwise might refer.
- They can combine with other claims in consistent ways.
- Some terms which are supposed by the positivists to be meaningless do appear to have content.
- Put this concern aside.

# Verificationism and Circularity

## The Bigger Problem

- The verification theory claims that a proposition is meaningless unless it is verifiable.
- But, to know whether the statement is verifiable, we need to know what it means.
- “Kichwa chake kikubwa.”
  - ▶ If we know that it means that the meaning of life is 42, we can claim that it is not verifiable.
  - ▶ If we know that it is Swahili for ‘his head is big’, then we can claim that it is verifiable.
- Are the toves in fact slithy?
- If we know what a proposition (or sentence or statement) means before we verify it, then verificationism is not doing any semantic work.
  - ▶ The circularity problem



# Ayer on Grammar and Metaphysics

- To try to avoid the circularity problem, Ayer distinguishes sentences, statements, and propositions.
  - ▶ Sentences are individuated grammatically.
    - questions
    - commands
    - assertions
  - ▶ Statements are sentences which can be used to make assertions.
    - Again, grammatical criteria
- Problem: some grammatical sentences can be used to make metaphysical statements.
  - ▶ Some grammatical statements are nonsense.
  - ▶ ‘Quadruplicity drinks procrastination’.
- Solution: Only some statements express meaningful propositions.
  - ▶ To express a proposition, a statement has to be meaningful.
- Semantic theory applies only to propositions.
  - ▶ It is not exactly clear what he means by ‘proposition’.
  - ▶ Not a third-realm kind of thing
- The verification theory is supposed to tell us which statements are propositions.



# The Circularity Persists

- We can not know whether we can verify a statement if we do not know antecedently its meaning.
- Ayer recognizes the problem.
  - “If a sentence expresses nothing there seems to be a contradiction in saying that what it expresses is empirically unverifiable; for even if the sentence is adjudged on this ground to be meaningless, the reference to “what it expresses” appears still to imply that something is expressed” (Ayer 6).
- He doesn't seem to grasp the depth of the problem.
  - “This is, however, no more than a terminological difficulty...” (ibid).
- Ayer's so-called solution seems like no solution at all.
- Still, even if the verification theory is circular, not all circles are vicious.
- Let's put aside the circularity objection and look more closely at how we might refine the notion of verification.

# Meaningfulness, Analyticity, and Syntheticity

- Ayer starts with: A statement has meaning if and only if the proposition it expresses is either analytic or empirically verifiable.
- Two ways for a statement to be meaningful.
  - ▶ analytic statements: verifiable strictly by logical analysis
    - the concept of the attribute is contained in the concept of the subject.
    - e.g. ‘bachelors are unmarried’
  - ▶ synthetic statements: verifiable empirically
    - The meaning of a synthetic statement consists in the way that we would verify, or test, the statement.
- Sharp distinction between analytic statements and synthetic ones.
  - ▶ Observation
  - ▶ Analysis
  - ▶ “Whether it is possible to make a sharp theoretical distinction between logical and extra-logical terms is a controversial issue related to the problem of discriminating between analytic and synthetic sentences”  
(Hempel, 61, fn 9).
- Let’s look at analyticity first and come back to empirical verification.

# Analytic Statements

- Among the analytic statements are truths of logic and mathematics.
  - Essential to the construction of scientific theory
  - Maybe
- Frege and Russell: mathematical truths are analytic.
  - Following Hume and Leibniz, using the principle of non-contradiction
  - Against Kant who claimed that mathematics is synthetic *a priori*.
- The logical empiricists follow Frege and Russell.
- Arithmetic and logic are justifiable strictly by analysis.
  - Conceptual containment
  - Wittgenstein's nonsense
  - Frege actually follows Kant for geometry, but put that aside.

# Two Versions of Containment

- Kant: beams-in-the-house containment
- Frege: plant-in-the-seed
  - ▶ “The more fruitful type of definition is a matter of drawing boundary lines that were not previously given at all. What we shall be able to infer from it, cannot be inspected in advance; here, we are not simply taking out of the box again what we have just put into it. The conclusions we draw from it extend our knowledge, and ought therefore, on Kant’s view, to be regarded as synthetic; and yet they can be proved by purely logical means, and are thus analytic. The truth is that they are contained in the definitions, but as plants are contained in their seeds, not as beams are contained in a house” (Frege, *Grundlagen* §88).
- Frege: if one statement follows by purely logical principles (a proof) from another, then the entailment is analytic.



# Verification and Empirical Claims

- We have still to determine how the logical empiricists believed that we verify an empirical claim.
- Ayer first proposes observation as the core of verification.
  - RS A statement is verifiable if some possible sense-experience would be relevant to the determination of its truth or falsehood (Ayer, 11).

# Modality, RS, and Chauvinism

RS: A statement is verifiable if some possible sense-experience would be relevant to the determination of its truth.

- Ayer neglects the difficulties with 'possible' in RS.
- Does it, for example, exclude or include the sense experiences of creatures with different sensory apparatuses from ours?
- If we include the sense experiences of Martians, or other aliens, or robots, then we may never know whether a statement is verifiable.
- If we only include our sense experiences, then meaningfulness becomes chauvinistic.
  - Unacceptable as the basis for scientific theory.
  - We want science to cut nature at its joints, not our joints.
- Either interpretation of 'possible' in RS is undesirable.
- Still, Ayer believes that RS needs refinement.

# Deducibility

DO: “A statement is verifiable, and consequently meaningful, if some observation-statement can be deduced from it in conjunction with certain other premises, without being deducible from those other premises alone.”

- In lieu of RS.
- A claim with empirical content will have some observable consequences.
- Statements about atoms or dark matter in deep space have observable consequences.
  - Color swatches in my field of vision
  - Readings on a measurement device
- Claims without empirical content will have no observable consequences.



# Hempel's Alternative to DO

- “A sentence has empirical meaning iff it is not analytic and follows logically from some finite and logically consistent class of observation sentences” (Hempel, 51).
- The deduction of a sentence must come from finite sets of observation sentences.
- We have only a finite number of experiences from which to derive any further claim.
  - ▶ Any empirical theory is likely to have a finite set of laws as its axioms.
- A problem: scientific theories are generally couched within mathematical theories.
  - “The book of nature is written in the language of mathematics” -Galileo
  - Mathematical theories strong enough for scientific purposes are not finitely axiomatizable.



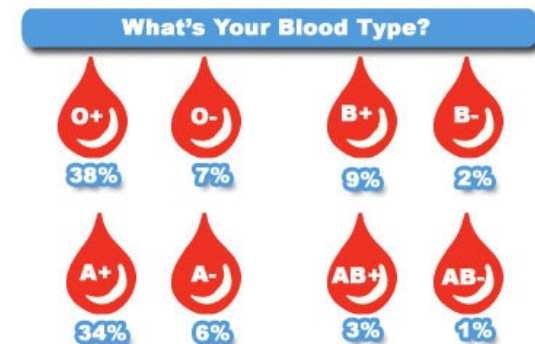
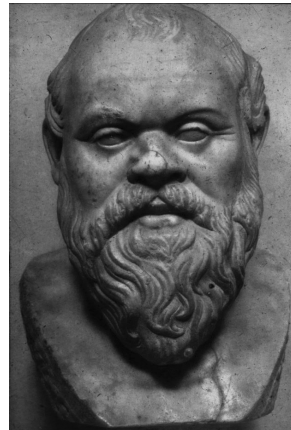


# Verifiability and Observation

- The core element of DO is the explanation of verifiability in terms of observation statements.
- Goal: reduce all synthetic statements to statements whose terms refer to macroscopic objects and properties.
  - ▶ “An *observation sentence* might be construed as a sentence - no matter whether true or false -which asserts or denies that a specified object, or group of objects, of macroscopic size has a particular *observable characteristic*, i.e. a characteristic whose presence or absence can, under favorable circumstances, be ascertained by direct observation” (Hempel, 51).
  - ▶ “We shall understand by an *observation term* any term which either (a) is an observation predicate, i.e. signifies some observable characteristic (as do the terms ‘blue’, ‘warm’, ‘soft’, ‘coincident with’, ‘of greater apparent brightness than’) or (b) names some physical object of macroscopic size (as do the terms ‘the needle of this instrument’, ‘the Moon’, ‘Krakatoa volcano’, ‘Greenwich, England’, ‘Julius Caesar’)” (Hempel, 53).

# Implementing the Verifiability Principle (DO)

- “It is chilly now.”
  - ▶ Immediately justified
- “This water is made of H<sub>2</sub>O”
  - ▶ Verified by its observable consequences.
- “The world was created just now, with all its history and memories as they are.”
  - ▶ unverifiable
  - ▶ no observable consequences to the claim
- Socrates’ blood type
  - ▶ No way for us to observe it.
  - ▶ Still, he certainly had one.
  - ▶ Uh-oh.



# Verifiability in Principle?

- We might ascribe to the logical empiricists the claim that meaningful statements must be verifiable, not in fact, but in principle, as a friendly amendment.
  - ▶ We could, in principle, verify Socrates' blood type.
  - ▶ We could not, in principle, verify whether the Absolute is lazy, or whether the world was created five minutes ago with all its historical remnants and memories in place.
  - ▶ “It [is] characteristic of the metaphysician, in my somewhat pejorative sense of the term, not only that his statements do not describe anything that is capable, even in principle, of being observed, but also that no dictionary is provided by means of which they can be transformed into statements that are directly or indirectly verifiable” (Ayer, 14).
- So, a factual statement is meaningful if it is, in some way, under some principle, connected to observation.
- But, the proposed amendment of ‘in-principle observation’ leads the logical empiricist back to the chauvinism of possible sense experience.

# More Problems with DO

- Given the proper other premises, a meaningless metaphysical statement can logically entail meaningful statements.
  - Take ‘S’ to be a meaningless metaphysical statement.
  - Take ‘O’ to be a fully legitimate observation statement.
  - Counter-example to DO: If S then O; S; therefore O.
- DO renders all universal laws meaningless.

“Let us assume that the properties of being a stork and of being red-legged are both observable characteristics, and that the former does not logically entail the latter. Then the sentence

(S1) All storks are red-legged

is neither analytic nor contradictory; and clearly, it is not deducible from a finite set of observation sentences. Hence, under the contemplated criterion, S1 is devoid of empirical significance; and so are all other sentences purporting to express universal regularities or general laws. And since sentences of this type constitute an integral part of scientific theories, the verifiability requirement must be regarded as overly restrictive in this respect” (Hempel 52).
- Universal laws do not follow deductively from any finite set of observation sentences.
  - But they are essential to all good science.

# Universal Claims and Verification

- A statement is meaningless if and only if its negation is meaningless.
- The negation of every existential claim is a universal one.
  - ▶ There are balls of uranium greater than a mile in diameter.  
 $(\exists x)(Bx \cdot Ux \cdot Hx)$
  - ▶ There are no balls of uranium greater than a mile in diameter.  
 $(\forall x)[(Bx \cdot Ux) \supset \sim Hx]$
- The existential assertion is meaningful, though false.
- The negation (universal) claim is universal.
  - ▶ Can't be finitely derived from observations.



# Dispositions and Verification

- Dispositional terms are not reducible to observational terms.
- We define fragility in terms of what would happen if an object were struck.
  - Brad Pitt is fragile if he would break if he were struck.
- If Brad Pitt is never struck (stunt men, bodyguards), he would be categorized as fragile.
- The conditional 'if he were struck, he would break' would be vacuously true.



# Summary

## Problems with Verificationism

- Difference between nonsense and metaphysics
- The circularity objection
- Difficulties refining the notion of verification
- The even bigger problem: holism

# Verification, Meaning, and Foundationalism

- The core idea of the principle of verification is that all our legitimate claims are traceable to a core set of claims which refer only to things or events that we can experience.
- “There is a class of empirical propositions of which it is permissible to say that they can be verified conclusively. It is characteristic of these propositions, which I have elsewhere called “basic propositions,” that they refer solely to the content of a single experience, and what may be said to verify them conclusively is the occurrence of the experience to which they uniquely refer... Propositions of this kind are “incorrigible,” ...[in that] it is impossible to be mistaken about them except in a verbal sense” (Ayer, 10).
- Logical Empiricism:
  - ▶ All of science (and philosophy) can be founded on the basis of observation statements in conjunction with the logical and mathematical principles used to regiment and derive those observations.
  - ▶ That’s an empiricist foundationalism.



# Observation Statements and Analytic Ones

- A fundamental presupposition of logical empiricism is that one can make a clear distinction between an observation statement and an analytic one.
  - Wittgenstein's distinction between sensible statements and logical nonsense
- Analytic truths are purely logical.
- Synthetic claims trace back, in some way, to observation.
- The whole of the atomist movement, from Locke and Hume through Wittgenstein and the logical empiricists rests on this distinction between analytic and synthetic propositions.

# Holism

- Quine's holism devastated the logical empiricists' project.
- Quine attacks the presupposition that one can make a clear distinction between an observation statement and an analytic one.
- The worries about isolating observation statements are already present in Hempel's article.
  - ▶ "In the language of science, and for similar reasons even in prescientific discourse, a single statement usually has no experiential implications. A single sentence in a scientific theory does not, as a rule, entail any observations sentences; consequences asserting the occurrence of certain observable phenomena can be derived from it only by conjoining it with a set of other, subsidiary, hypotheses" (Hempel, 56).

# Holism and Atomism

- Wittgenstein and the logical empiricists presented a system on which individual sentences, pictures of states of affairs, were verified or not, and connected only by logic into a big theory.
- The holist's claim is that the meaning of a single expression is elliptical, incomplete on its own.
- It requires, for its meaning, reference to an entire linguistic framework, a theoretical context which forms the background to that expression.
- “If...cognitive significance can be attributed to anything, then only to entire theoretical systems formulated in a language with a well-determined structure” (Hempel 57).
- Semantic holism: the unit of empirical significance is not the individual sentence, but the entire theory.