# Announcements and Such

- Two Songs — *The Police* (from *Regatta De Blanc*)
  - Regatta De Blanc
  - Walking on the Moon
- **No Lecture Next Tuesday (2/20)**
- **First Essays Due Next Tuesday (2/20)**
  - **Turn-in your papers to your GSI's mailbox in 301 Moses by 4pm Tuesday**
  - **Policy on late papers**: Each late day counts down a third of a letter grade (A+ → A, A → A-, *etc.*)
- Today: Reason (II of III)
  - Empiricism *vs* Rationalism on "truths of reason"
  - First, a brief review of concepts from last time

Review from Last Time I

- Last time, we introduced some classical ways of thinking about "truths of reason":
  - *Analytic* truths: those that are true in virtue of *containment relations* between concepts, *e.g.*, that all vixens are female.
  - *Synthetic* truths: *non*-analytic truths
  - *(Conceptually) Necessary* truths: those that are true in *all conceivable situations* (true in virtue of *some* conceptual relation)
  - *Contingent* truths: *non*-necessary truths
  - *A Priori* truths: knowable *by reason alone*
  - *A posteriori* truths: knowledge requires some *experience* (or *empirical* evidence)

Review from Last Time II — Classical Picture
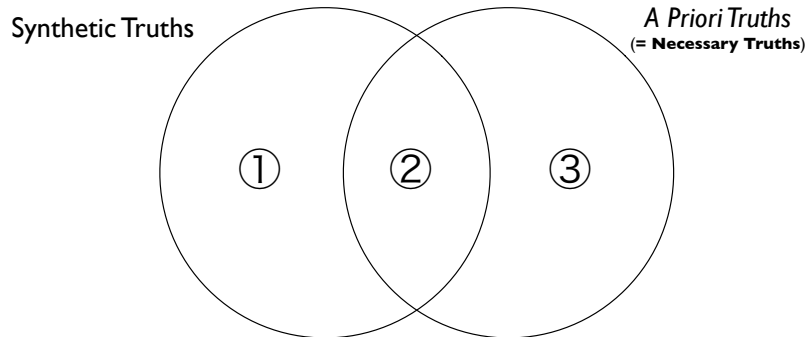
①: Synthetic, *a posteriori*, contingent. "My car is red"

②: Synthetic, *a priori*, necessary. "Nothing is red & green all over"

③: Analytic, *a priori*, necessary. "All vixens are female"

Within the *a priori* truths (②+③), there are three *sub*-kinds:

- Narrow (*self-evident* truth)
- Broad (*self-evident inference from* a self-evident)
- Ultimate (some *finite chain of SEIs* back to a self-evident)

The Empiricist View of Truths of Reason I
Overview

- The classical view asserts that the faculty of reason can *ground a priori truths.*
- This gives reason a very strong role — *not merely* a role of *extending* knowledge, *via inference* from things we know *empirically*
- Empiricists (*e.g.*, Mill) reject this very powerful way of thinking about reason
- Empiricists will *not* deny that reason has *some* epistemological role — *via inference*
- Their gripe concerns the notion "*truth of reason*" — a truth which is itself *grounded* in reason (mainly a problem with *a priority*)
- Both agree that much of our knowledge is *grounded empirically & extended by reason*

The Empiricist View of Truths of Reason II
Rationalism and Empiricism

- The classical view is *rationalist* about the truths of reason. *Empiricists* will *at most* accept (some) *analytic* truths as *a priori*.

- Some (moderate) empiricists (*e.g.*, "logical empiricists" — to be discussed below) allow *logical* truths to be counted as *a priori*.

- But, no empiricist (in our sense) will accept that there are *synthetic a priori* truths.

- Let's here adopt a broader conception of *analytic truths* as "any truth whose falsity logically entails a *logical* contradiction"

- On this understanding of "analytic," the debate is about *non*-analytic *a priori* truths.

- Empiricists don't think there are any…

The Empiricist View of Truths of Reason III
Empiricism and Arithmetic Beliefs I

- Canonical examples of synthetic *a priori* truths (according to the classicist) come from *arithmetic*, *e.g.*, (*p*) that-"7 + 5 = 12".

- Everyone agrees that we know *p*, and that we know it in a way similar to the way that we know that nothing is red & green.

- But, *how* do we know it? *That*'s the question

- An empiricist will say that *either* we know *p* *a posteriori*, *or* *p* is really a *logical truth*

- I'll return to the possibility of *p*'s being a logical truth later. Let's assume it isn't.

- Then, according to the empiricist, *p* is known by *experience* (of *counting objects*)

The Empiricist View of Truths of Reason III
Empiricism and Arithmetic Beliefs II

- On this view, arithmetic develops like a *scientific theory*. We begin with *basic observations*, and then we *generalize.*

- *E.g.*, we notice that in all of our experiences with objects, *whenever* we combine a group of 7 with a group of 5, we end-up with 12.

- Eventually, when many *instances* of this *generalization* are observed, we *inferentially generalize* (*this* is where reason comes in)

- This is analogous, according to the empiricist, to the way in which we might come to know (say) that all ravens are black.

- "7 + 5 = 12" is shorthand for "combining 7 objects and 5 objects yields 12 objects".

The Empiricist View of Truths of Reason III
Empiricism and Arithmetic Beliefs III

- Maybe we can't *imagine* how "7 + 5 = 12" could be false, but the empiricist can.

- What if the world changed in such a way that when we combined 7 apples and 5 oranges, we *always* counted 11 objects?

- The empiricist asks: Wouldn't this "data" give us reason to *revise arithmetic*?

- Three responses the classicist can give:

  - Distinguish *genesis* from *justification*.

  - Can arithmetic can be tested observationally?

  - Argue that *even if* we *can* engage in such "testing", arithmetic can be *preserved*.

- We'll consider these responses in turn.

The Empiricist View of Truths of Reason III
Empiricism and Arithmetic Beliefs IV

- Response #1: We must distinguish the *genesis* of a belief with its *justification*.

- It may be true that our beliefs about arithmetic (*initially*) *arise from* (*genesis*) our experiences of counting physical objects.

- But, it does not follow that they are (now, or ever) *justified by* those experiences.

- Example: I believe something (*initially*) *because of* unreliable testimony, but later I learn its truth from a highly reliable source.

- The empiricist says that's happening here.

- We must also distinguish *acquiring the concepts* "5", "7", "12", "+", "=" and our *subsequent grounds* for believing *p*.

The Empiricist View of Truths of Reason III
Empiricism and Arithmetic Beliefs V

- Response #2: Is arithmetic really testable *by experience* (*e.g.*, counting observations)?

- The classicist will say that we *merely exemplify* arithmetic statements this way.

- Question #1: why think the truth of "7 + 5 = 12" *depends on* facts about collections of oranges & apples (or other physical things)?

- For the classicist, the statement is about *numbers*, *not* groups of objects. As such, its truth *doesn't depend on* physical facts

- Question #2: don't we need **many** *counter-instances* of *p* in order to *empirically disconfirm* it (or any other such *p*)?

- But, then, we must *count* counter-instances!

The Empiricist View of Truths of Reason III
Empiricism and Arithmetic Beliefs VI

- How can we *trust* our counts of counter-instances, if these instances are supposed to provide evidence *against* "1 + 1 = 2"?

- It's not enough that there *be* many counter-instances. Remember, we need to *justifiably believe that* there are many such instances.

- Perhaps we could have a *well*-confirmed *alternative* theory, which *implies p* is false.

- This won't help, since, being *well*-confirmed will require having *many positive* instances.

- In other words, our very understanding of *hypothesis testing* in science *itself* depends on arithmetic truths such as *p* itself.

- So, what should we say here?

The Empiricist View of Truths of Reason III
Empiricism and Arithmetic Beliefs VII

- We must distinguish *empirical* claims like:
  - Whenever we physically combine groups of 5 things & 7 things, we get a group of 12

- And, *mathematical* claims, like:
  - The mathematical function + maps the numbers 5 and 7 to the number 12

- The fact that the former is *contingent*, *empirical*, and *a posteriori* (*not a priori*) doesn't imply that the latter is as well

- Metaphysically*, radical* empiricism *denies* that there *are* numbers (or functions, *etc*) — *only concrete* objects (and groups of them)

- They don't distinguish pure *vs* applied math

The Empiricist View of Truths of Reason III
Empiricism and Arithmetic Beliefs VIII

- Note that *the same mathematics* is presupposed by both true and false (and both confirmed and disconfirmed) theories

- As such, it's hard to see how mathematics could be confirmed or disconfirmed along with our scientific theories of the world

- We don't (now) say that Euclidean geometry is *false because* (as Einstein taught us) space and time are, in fact, *non*-Euclidean.

- Nor do we (now) say that non-Euclidean geometry is *true because* it's presupposed by our best scientific theory.

- After all, it's *also* presupposed by some *false* theories using non-Euclidean geometry

The Empiricist View of Truths of Reason IV
Empiricism and Logical/Analytic Truths I

- The empiricist (if coherent) should say that *everything* — even *analytic* and *logical* beliefs — is *a posteriori*, hence *revisable*

- For instance, they have to tell some story about how it would be possible to learn from *experience* that *some vixens are male*

  - We might decide to change the way we *use* the *word* "vixen", but that's not the same

- They also have to say that *logical* principles such as the law of excluded middle (*p* or not-*p*) are *revisable* in light of experience

- There are some who think that *some* (but, importantly, *not all*!) classical logical principles are false. Let's consider these…

The Empiricist View of Truths of Reason IV
Empiricism and Logical/Analytic Truths II

- Consider two classical logical principles:

  - (LEM) Either *p* or not-*p*, for *any p*.

  - (PNC) Not both *p* and not-*p*, for any *true p*.

- There are those who reject (LEM). *Vague p*'s and *p*'s about *future contingents* are often given as alleged counterexamples to (LEM).

- But, these examples are controversial for *both* empiricists *and* rationalists, so they will not be useful for empiricists *here*.

- Similarly, some think "liar propositions" are counterexamples to (PNC). This is highly controversial, and (again) *not* empiricist.

- The empiricist needs to say this for **all** *p!*

The Empiricist View of Truths of Reason IV
Empiricism and Logical/Analytic Truths III

- I don't think you'll find anyone who really thinks that *all* classical logical truths are false or revisable in light of experience.

- Another tactic for "logical empiricism" is to try to argue that arithmetic (or all of math) is *reducible to logic*. This is called *Logicism*.

- According to Logicism, "7 + 5 = 12" is a *logical* truth (hence, *analytic* on the modern "logical empiricist" notion of analyticity)

- Usually, the *logical operators* are restricted to truth-functional connectives, quantifiers, and identity ("+" is not a *logical* operator)

- Mathematical theories have *proper axioms* for their non-logical vocabulary (*e.g.*, "+")

The Conventionalist View of Truths of Reason I
Truth by Definition and Truth by Virtue of Meaning

- A *conventionalist* will say that "truths of reason" are true by *linguistic convention*.

- There are 2 varieties of truth by convention:

  - Truth *by definition*. Example: "vixen" is *explicitly defined* (by us) as *female fox*. Thus "all vixens are female" is *analytic*.

  - Truth *by virtue of meaning*. *Implicit conventional meanings* of terms can *constrain* their applicability (*synthetically*).

    - The meanings of "red" and "green" is such that at most one of them can be applied to a given point at a given time

- Knowledge of such claims is *empirical*, since *linguistic conventions* are empirical.

The Conventionalist View of Truths of Reason II
Knowledge Through Definitions *vs* Truth by Definition I

- Does conventionalism undercut the classical view? This is not at all obvious.

- Perhaps conventionalism "works" *only because of* something *non*-linguistic.

  - Idea*: In* grasping definitions we *understand the concepts* involved and we (*e.g.*) see that *vixen* **contains** *female*

  - *I.e.*, conventionlism has things *backward*. It is *not because* "vixen" means the same as "female fox" *that all vixens are female*.

- This *fact* would hold *even if* there were *no words* at all expressing these concepts.

- There is a deeper problem. Conventionalism faces an *epistemic regress problem…*

The Conventionalist View of Truths of Reason II
Knowledge Through Definitions *vs* Truth by Definition II

- Knowing that "All *F* are *G*" is true on the basis of linguistic convention sometimes relies on the following *bridge principle*:

  - The proposition expressed by a sentence of the form "All *F* are *G*" is true *if* the concept expressed by the predicate "*G*" is *contained in* the concept expressed by "*F*".

- But, how could we (*conventionalist*) come to know that "All vixens are female" is true *in virtue of* the truth of this bridge principle?

- Presumably, we need to be able to *recognize* that "All vixens are female" *falls under* the principle. But, *that*'s a *logical* fact, which will *itself* depend on a bridge principle, *etc…*

The Conventionalist View of Truths of Reason II
Knowledge Through Definitions *vs* Truth by Definition III

- The idea is that conventionalism must presuppose the (*non*-conventional) truth of *some* (*logical*) truths of reason if it is ever going to get off the ground in the first place

- Another angle: What is the basis of the truth of *conventionalism itself*?

  - Conventionalism (C): "truths of reason" are true in virtue of linguistic convention.

- Is (C) *itself* a "truth of reason"? If so, then (C) implies that *it* is true by linguistic convention. How's *that*? Can they win by "defining their opponent into falsehood"?

- If (C) *isn't* a "truth of reason", then how can it *contradict* the *classical view* (which *is!*).

The Conventionalist View of Truths of Reason II
Conventions as Grounds for Interpretation

- So, while it seems that we can know "truths of reason" *through* definitions, this doesn't show they are true *in virtue of* definitions

- Hence, it also doesn't show that there are no "truths of reason" in the classical sense (*e.g.*, that everything is *a posteriori*).

- Still, the conventionalist is right that *what* we assert when we assert "All vixens are female" *depends on* what "vixen" *means*.

- And, truths of reason can be known when the meanings of the words/sentences expressing them are adequately understood

- Our understanding of *word meanings* is a *route* to our grasping of concepts.

Some Difficulties and Strengths of the Classical View I
Vagueness

- It is sometimes claimed that vagueness is a source of problems for the classical view.

- While there are many vague *statements*, the classicist will claim that there are no vague *concepts*. That is, vagueness is *linguistic*

- This can stave-off some worries about vagueness and "*synthetic a priori*" truths.

- Remember, the classicist just needs *one* example. If you don't like the red/green example because of *vagueness* concerns, try

  - There are no round squares.

- This is *a priori*, for sure. Is it *analytic*? It seems not, and there is *no vagueness* here.