

Introduction to Philosophy

Philosophy 110W

Fall 2014

Russell Marcus

Class #10: October 1

Smart, “The Tenseless Theory of Time” aka the B-Theory
With Some Discussion of the A-Theory too!



Business

- Juliet is doing the first presentation this Thursday.
 - Notes for preparation
 - Don't forget meetings with Jackson!
- Compare and Contrast Paper is due next Tuesday.
 - Newton and Leibniz; or
 - Zimmerman and Smart
- But first...
 - Ken Bain anyone?

Ken Bain

Message to the Faculty

- Surface and strategic learning is unsatisfying for everyone.
 - Just passing the class
 - Memorizing some facts
- To do deep learning, we have to be motivated, to own the questions.
- Faculty know what questions are the interesting ones and students don't.
 - (Or anyway, we get to choose the questions.)
- So: how do we (faculty) get students to own the questions?
 - Space and time!
- My goals for you:
 - Master even the most obscure, uninteresting, complicated arguments
 - Transferable skills:
 - Academic superhero
 - I can take on anything!



Other Things from Ken Bain

1. Fixed v flexible intelligence research
2. Mistaken models of the world
 - ▶ Make people uncomfortable
 - ▶ What models do I want you to change?

A Quick Writing Thing

- In order to understand the process by which we obtain ideas, Locke asks us to first make a distinction between our ideas, and the external bodies from whence they came. Perceiving or knowing the ideas of colors, for example, must be considered separate from the “particles” that produce these colors. The former is an ‘idea’ which exists exclusively in the mind and would not exist without it, whereas the latter is part of the external object, a quality of it, which can exist without the mind perceiving it. A further distinction must be made between ideas and qualities. Ideas are the “immediate objects” of “perceptions, thoughts, or understanding”, which are derived from our senses. Qualities are “the power to produce any idea in our mind” belonging to the external bodies, such as the ability of a snowball to evoke our perceptions of “white, cold and round”. To Locke, it is essential to make this decision before one can understand the process by which ideas are formed.
- In order to understand the process by which we obtain ideas, Locke asks us to first make a distinction between our ideas, and the external bodies from whence they came. Perceiving or knowing the ideas of colors, for example, must be considered separate from the particles that produce these colors. The former is an idea which exists exclusively in the mind and would not exist without it, whereas the latter is part of the external object, a quality of it, which can exist without the mind perceiving it. A further distinction must be made between ideas and qualities. Ideas are the immediate objects of perceptions, thoughts, or understanding, which are derived from our senses. Qualities are the power to produce any idea in our mind belonging to the external bodies, such as the ability of a snowball to evoke our perceptions of white, cold and round. To Locke, it is essential to make this decision before one can understand the process by which ideas are formed.

Time

The A-Properties and the B-Relations

- The A-Properties
 - Future
 - Present
 - Past
- The B-Relations
 - earlier-than
 - at the same time as
 - later-than
- We saw that some sentences which refer to time invoke the A-properties and that others invoke the B-relations.

The Present

- A-theories distinguish the present as a particular time property different from all others, from the past and from the future.
- The B-theorist is indifferent among different times.
- The A-theorist believes that the present time is in some way more important or more accessible or more real than other times.

Absolutism and Relationalism

- In the Newton-Leibniz debate, we wondered whether we should be absolutists or relationalists about space.
- Now, we want to know whether we should be A-theorists or B-theorists about time.

Three A-Theories

1. The growing-block theory;
2. The moving spotlight theory; and
3. Presentism.
 - ▶ Only the A-theory can support presentism, so any claim for presentism is a claim against the B-theory.

The Intuitive Argument for Presentism

“It is simply *part of commonsense* that the past and future are less real than the present; that the difference between events and things that exist at present, and ones that do not, goes much deeper than the difference between events and things near where I am and ones that are spatially far away...” (Zimmerman 221).

My Headache



- Call my current headache Crash.
- Crash seems to have certain temporal properties or relations.
- Apparent A-Properties
 - ▶ It began a little while ago.
 - ▶ It will end a little while from now.
 - ▶ So Crash seems to have one A-property of being several minutes old and another A-property of being only a few minutes away from ceasing to exist.
 - ▶ In an hour, Crash will have different A-properties.
- Crash always has the temporal relations that it does.
 - ▶ It always comes before the final exam for this class and after our high-school graduations.
 - In 1950, Crash was before the final exam for this class and after our high-school graduations.
 - In 2050, Crash will be before the final exam for this class and after our high-school graduations.
 - ▶ The temporal relations of any event are eternal.
- The A-theorist and B-theorist agree on the B-relations.
- The B-theorist thinks that the A-relations are illusory.

Us and the A-Theory

- According to the A-theorist, what's most interesting about Crash is that it is happening right now.
- In 1950, Crash wasn't a very interesting event.
- In 2050, Crash will be a not-very-interesting event.
- But, right now, Crash is interesting.
- After it goes away, I will be relieved.
- "Thank goodness that's over."

Science and the B-Theory

- The eternality of events, says the B-theorist, accommodates our best scientific theory of time, Einstein's theory of relativity.
- According to the theory of relativity, reality consists of a four-dimensional space-time manifold.
 - "One of the most important kinds of [spatiotemporal] structure is exhibited by sets of points that constitute a "straight line" running in a time-like dimension... But these lines are composed of points that must come from different instantaneous slices; so according to the presentist, when one of them exists, none of the others does. This leaves nothing to exhibit the important spatiotemporal structure of a straight line in a time-like direction" (Zimmerman, 218-9).
- There is nothing in contemporary physics that supports privileging the present over other times.

Tenseless Time

- Smart argues that we should prefer a theory of time which is tenseless.
- “The tenseless and minimally token-reflexive language enables us to see the world, in Spinoza’s phrase, *sub specie aeternitatis*” (Smart 101).



Three Tensed Sentences

1. Bonnie bopped Bobby at 4pm yesterday.
 2. Bonnie is bopping Bobby right now.
 3. Bonnie will bop Bobby tomorrow at noon.
- Zimmerman: these events have intrinsic temporal properties.
 - Smart: these events have only relational temporal properties.
 - How can we understand these sentences without appealing to their intrinsic temporal properties (A-series)?



Reichenbach and the Token-Reflexive Solution

1. Bonnie bopped Bobby at 4pm yesterday.
2. Bonnie is bopping Bobby right now.
3. Bonnie will bop Bobby tomorrow at noon.

- ▶ TR1. There is a time t such that Bonnie bops Bobby at t and t is earlier than the utterance of 1 (by some measure of temporal distance between 4pm yesterday and the utterance of 1, in arbitrary units).
- ▶ TR2. Bonnie bops Bobby simultaneously with the utterance of 2.
- ▶ TR3. There is a time t , such that Bonnie bops Bobby at t , and t is later than the utterance of 3 (by some measure of temporal distance between the utterance of 3 and noon tomorrow, in arbitrary units).
- All references to time are rendered in terms of 'earlier than', and 'simultaneous with'.
 - ▶ We can also invoke 'later than'.
- No uses of 'past', 'present', or 'future' are required for the characterization of times.

Tenseless Verbs

- No uses of tenses, other than the present tense, are used by the tenseless theory.
- Present-tense verbs are to be understood tenselessly.
 - We are taking a four-dimensional view.
 - The block theory
- We need, from a grammatical standpoint, some tenses for our verbs.
- We think of them as mere grammatical artifacts.
 - Verbs are grammatically present-tense, but logically tenseless.
 - “When we say that two plus two *equals* four we do not mean that two plus two equals four at the present moment. Nor do we mean that two plus two always equaled four in the past, equals four now, and will always equal four in the future” (Smart, 94-5).

Presentism and the B-Theory

- Zimmerman claims that the presentist can maintain that present events are the only real ones while accepting that other time-slices of the spatiotemporal manifold still exist.
 - “It is past and future *objects* and *events* that stick in my craw. The four-dimensional manifold of space-time points, on the other hand, is a theoretical entity posited by a scientific theory; it is something we would not have believed in, were it not for its role in this theory; and we should let the theory tell us what it needs to be like” (219).
- There are lots of facts about the world that physics does not represent.
- Physics only really commits to the existence of the most fundamental particles and relations.
- Composite objects, like trees and people, are not really the subject matter of physics.
- Only their component particles are.
- So, we can't look to physics for all of our commitments.
- Since the A-theorist privileges the present, picks it out as more important than other times, where the B-theorist is indifferent to the present, or any other particular time, it follows, according to Zimmerman, that the A-theorist has a more intuitive view of time.

Three Weaknesses of Zimmerman's Argument For Presentism

Problem #1: Limits of Intuition

- The more-intuitive view is not necessarily the correct view.
 - For a long time, people believed that the sun revolving around the earth was more intuitive than the reverse.
 - Wittgenstein
- People have had some pretty bad intuitions about moral facts, as well.
- The last part of Zimmerman's article defends his method.

Problem #2: The A-Theory May Not Be More Intuitive Anyway

- “Point to something in the world,” the objector says, “that *makes it true* that a dinosaur walked past this place 150,000,000 years ago. It *is* true, but there is nothing about the way the world is now that *requires* that it be true or that *makes it true* (218)
- Zimmerman calls this objection the truthmaker objection.
 - There must be facts which make propositions true or false.
 - For ‘Some beachballs are red’ to be true, there have to be beachballs and there has to be some property of redness.
 - If you think that the sentence ‘God exists’ is true, then there has to be some truthmaker for that fact.
 - God?
 - Ray Charles?
- The truthmaker objection is that if you think that propositions about the past are true, as we ordinarily do, then there have to be some facts about the world that make them true.
- But, on presentism, there are no facts about the past, since only the present is real.
- So, presentism is false.

Problem #3: An Argument Against the B-Theory is not an Argument for Presentism

- Three different kinds of A-theories.
 - A defense of the A-theory against the B-theory is not in itself a case for Zimmerman's presentism.
- Not all A-theories privilege the present equally.
 - A-theorists say that time is a property of individual events.
 - Presentists differentiate between the reality of the present moment and the unreality of past and future moments.
 - One could believe that time is a property of individual events, that time is not merely relational, without believing that the past and future are unreal.
 - So, not all A-theorists are presentists.
- To support presentism, Zimmerman has to defend it against other A-theories, ones which support privileging the present over other times to varying degrees.
- Some of these other A-theories would be more intuitively consistent with the time-travel tales.
- That is the purpose of the majority of Zimmerman's article.

Moving-Spotlight Theory

- Augustine?
- All temporal moments are equally real.
- There is a kind of spotlight on the present which illuminates it.
- The spotlight doesn't change the present, make it more real or more important.
- We just see the present more clearly.

Moving Spotlight Advantages

- No constant process of creation and destruction.
 - ▶ According to the presentist, as events come into the present, they move from an unreal future state to a real present state: creation.
 - ▶ Then, as they move from being present to being past, they are destroyed.
 - ▶ “And that is just what it is for an event or thing to “move” from the future into the present, and from the present into the past: It is to come into existence and then go out of existence” (212-3).
- According to the moving-spotlight theory, all moments are equally real, and are not in a constant state of change.
 - ▶ Agrees with the B-theorist that we can, for the purposes of our beliefs about what exists in the world, treat all moments in time as equally real.
 - ▶ Differs from the B-theorist in believing that there are individual temporal properties of events.

Growing Blocks

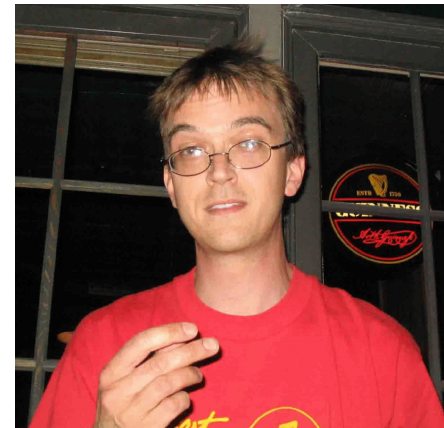
- The past and present are more real than the future.
- The growing-block theorist accepts the moving-spotlight account of the past.
 - The past is just as real as the present.
 - Once an event becomes present, it becomes real, and stays that way.
- But future events are not real.
 - Leaves the future open
 - Freedom to decide the course of the future?

Zimmerman Against Moving Spotlight and Growing Blocks

- Any version of these two A-theories has to give up important claims about the differences between the present and other times.
- “A table yet-to-be-made has no shape or mass or color; and when it is destroyed, it will lack these properties as well” (215)
- “[These views have] less appealing consequences... Headaches can exist but not be truly painful; a horse can exist although it is not actually alive or even spatially located. What’s left of these past things is extremely thin: a physical object can survive a change in which it ceases to have any shape or size; an explosion can continue to exist when all its energy has dissipated” (215-6).
- “When I notice that a headache, or some other painful episode, has become part of the past, I am relieved that this is so; and when a pleasant experience becomes past, I am often disappointed. If a theory of time makes such changes in attitude utterly mysterious, we should have grave doubts about its adequacy” (214).
- The question is whether the B-theory (or an A-theory which does not privilege the present) makes such changes utterly mysterious.

Summary: The A-Theory and Presentism

- All A-theories privilege the present.
- Zimmerman relies on his intuitions about the importance of the present.
 - “Thank goodness that’s over.”
- When some thing or event passes from the present into the past, we ordinarily believe that it disappears.
 - It becomes unreal.
 - We lose it.
- Yesterday’s breakfast
- Next Thursday’s dinner
- These words



Intuition and Philosophy

- Appeals to intuition are controversial.
- Smart prefers scientific evidence to intuitive evidence.
 - More strongly: the only evidence is scientific evidence.
- The most fundamental scientific theories are best understood tenselessly.
 - Mathematics contains no references to time.
 - Physics takes time as a variable, but prefers no particular time.
 - The physical laws are indifferent to the direction of time.
- Physical theory makes no reference to the present or the past or the future.
- I'll say more about intuition if we have time, later.

The Block Theory

- Smart urges a four-dimensional view.
 - Not to be confused with the A-theorist's growing-block theory.
- There is a static block, the entire temporal history of the world, past through future.
- We can imagine ourselves peering from apart at that block, describing all that happens within it.
- The block theory underlies time-travel fiction.
 - Moving among different portions of the block

Token-Reflexiveness: A Problem

- Time seems to outrun all possible utterances.
- We might want to say meaningful things about the future that are not simultaneous with any utterance.
- We can measure temporal distance from a current utterance.
- But, we can not say anything about utterances simultaneous with such events.

Supernova

SN: The sun's becoming a supernova is future, will be present and then will be past.

- Three things we might say:
 - ▶ SN1: The sun will become a supernova, in the future.
 - ▶ SN2: The sun is becoming a supernova, now.
 - ▶ SN3: The sun became a supernova, in the past.
- On the token reflexive approach we might understand SN1-3 as SNTR1-SNTR3.
 - ▶ SNTR1. There is a time t such that the sun becomes a supernova at t and t is later than the utterance of SN1 (by some arbitrary measure of temporal distance).
 - ▶ SNTR2. The sun becomes a supernova simultaneously with the utterance of SN2.
 - ▶ SNTR3. There is a time t , such that the sun becomes a supernova at t , and t is earlier than the utterance of 3 (by some arbitrary measure of temporal distance).
- SNTR.1 is fine.
- SNTR.2-3 are false because there are no persons or utterances at the time of or after the supernova.

A Solution

- We might relativize all temporal claims to some claim, whether an utterance or an instance of a sentence, in the present.
- In other words, we stick to measurements like SNTR.1.
 - SNTR1. There is a time t such that the sun becomes a supernova at t and t is later than the utterance of SN1 (by some arbitrary measure of temporal distance).
- Smart is not just translating A-theory sentences into B-theory sentences.
- Some A-theory sentences will have to be eliminated altogether.
- Put aside this problem for the token reflexive theory.

The B-Theory and Eliminativism

- The central claim of the B-theory is that we can do away with appeals to ‘past’, ‘present’, and ‘future’.
- Zimmerman’s presentist relies on claims about the exceptional nature of the present moment.
 - ▶ Sentences about the past and future are legitimate because ‘past’, ‘present’, and ‘future’ refer to intrinsic properties of events in respect of which events change.
 - ▶ The A-theorist sees SN as ordinary and obvious.
- The B-theorist denies that there is any such exception.
 - ▶ The present is just one moment among many.
 - ▶ The tenseless theory avoids parochial egocentrism.
 - ▶ The B-theorist sees SN as ill-formed or nonsensical.

Change and the A-Theory

- For the A-theory, objects undergo changes as they become real by moving into the present.
 - ▶ They become unreal by moving into the past.
 - ▶ Object thus do not endure through time.
- Smart believes that this aspect of the presentist view is implausible.
 - ▶ “A man or stone or star is commonly regarded as a three-dimensional object which nevertheless *endures* through time. This enduring through time clearly brings a fourth dimension into the matter...” (94).

Change and the B-Theory

- The B-theorist's view of change may not be any more plausible.
- Change is ordinarily thought of as an active process.
- But, the B-theorist's view of change is static.
 - ▶ “Our notion of time as flowing, the transitory aspect of time..., is an illusion which prevents us seeing the world as it really is” (94).
- The B-theorist must understand what we ordinarily take to be change as the comparison of different temporal slices of four-dimensional objects.
 - ▶ “When we think four-dimensionally...we replace the notions of change and staying the same by the notions of the similarity or dissimilarity of time slices of four-dimensional solids” (95).
- This static notion of change does not appear to be the ordinary notion, but Smart believes that it is better.
 - ▶ “The inability to translate talk of events changing in respect of pastness, presentness, and futurity into our tenseless language can be taken simply as a proof of the concealed token reflexivity of tenses and of words such as ‘past’, ‘present’, and ‘future’.”

The Rate of Time

- Once we introduce change over time, we can start asking uncomfortable questions about the rate at which time passes.
- Can time speed up or slow down?
- Such questions, Smart believes, lead to an unintelligible infinite regress.
 - “We should need to postulate a hyper-time with reference to which our advance in time could be measured (seconds per hyper-seconds)... Moreover, anyone who thought that time-flow was necessary for time would presumably want to say that hyper-time-flow was necessary for hyper-time. He would therefore be driven to postulate a hyper-hyper-time, and so on without end” (97).

Taking Stock

A-theory vs. B-theory

- On the side of Zimmerman and the A-theorist
 - ▶ Intuitions about the asymmetry of our access to the present moment and to past and future moments.
 - ▶ The ‘thank-goodness-that’s-over’ feeling
- On the side of Smart and the B-theorist
 - ▶ The laws of physics express the ultimate nature of reality.
 - ▶ In contrast, the terms of the A-theory are biased.
 - ▶ “The concepts of past, present, and future have significance relative only to human thought and utterance and do not apply to the universe as such. They contain a hidden anthropocentricity. So also do tenses. On the other hand, the concepts of ‘earlier’, ‘simultaneous’, and ‘later’ are impeccably non-anthropocentric” (94).
- “Every event is ‘now’ at some time or another, and so the notion of ‘now’ cannot be that of an objective property in nature which singles out some events from others” (96).

Translation

- Smart urges us to translate away the A-theorists's uses of 'past', 'present', and 'future', by using constructions such as TR1-TR3.
- But translations work in two directions.
- One could try to reduce the B-relations to A-properties just as easily as we turn sentences referring to A-properties into ones invoking B-relations.
- To counter that attempt, Smart introduces his fable of the king.

The Fable of the King

- In the imagined kingdom, the people recognize three classes of entities, alphas, betas, and gammas.
 - ▶ Alphas are numbers less than the king's age.
 - ▶ Betas are numbers equal to the king's age.
 - ▶ Gammas are numbers greater than the king's age.
- Every year, betas become alphas and gammas become betas.
 - ▶ When the king turns twenty-six, say, the baseball team (which we would say has 25 members), which was Beta is now alpha.
- Alphas, betas, and gammas are taken as primitive terms.
- They could define our term 'number' as anything that is either an alpha, a beta, or a gamma.
 - ▶ "Would this show that the notion of number had anything to do with the age of the king? It has indeed been introduced by reference to notions that have to do with the age of the king, but in such a way that this kingly reference 'cancels out'" (98).

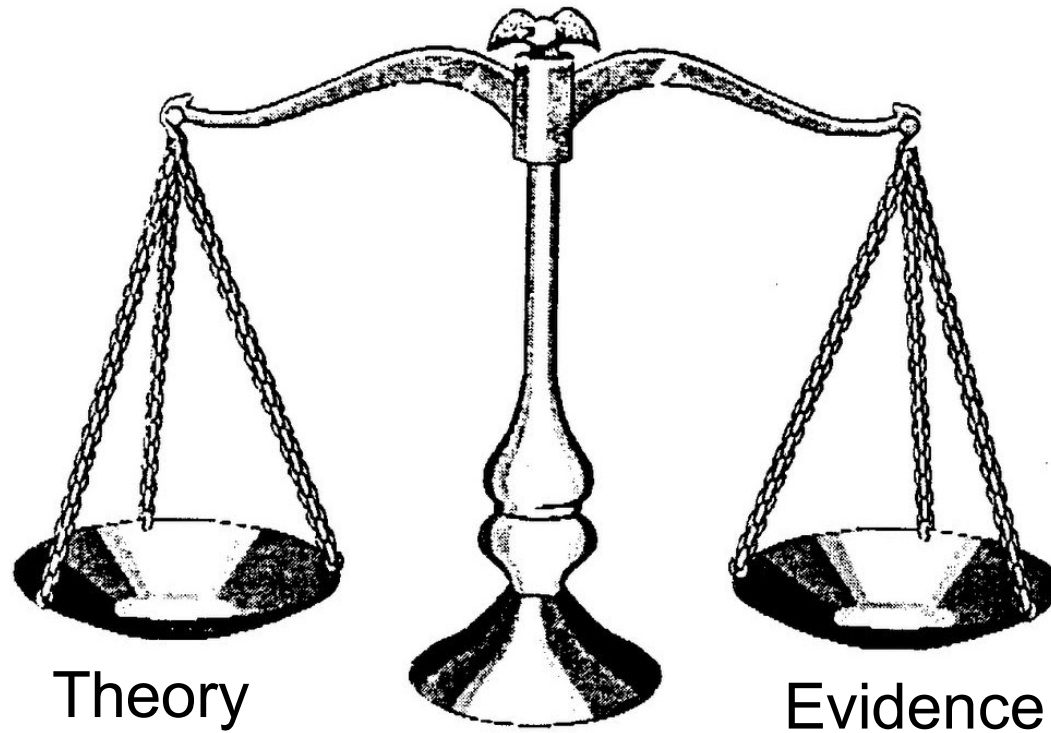
The Unimportance of Translation

- Smart believes that our ability to define the B-terms in by using the A-terms does not show that the A-terms, like the king, have anything to do with the ultimate nature of time.
- We must choose the scientific view.
- “I advocate my way, because it fits our ordinary way of talking much more closely to our scientific way of looking at the world and it avoids unnecessary mystification” (Smart, 99).

Temporal Intuitions and Science

- Recall that Zimmerman defends the A-theory by relying on our intuitions about the present.
- Smart instead focuses on details of the construction of scientific theory.
- It looks like we're contrasting philosophical intuition with science.

Reflective Equilibrium



Philosophical Evidence

- In science, the evidence is supposed to be observational.
- In philosophy, the evidence is often intuitive.
 - Many philosophical claims are modal, about necessity and possibility.
 - We have no observational evidence of modality.
- Intuitions are often the results of thought experiments.
 - What if there were a sixth sense inaccessible to humans?
 - What if we lived in a cave?
 - What if we melted a piece of wax?
 - What if we moved the universe over three inches or ahead ten minutes?
 - What if there were another world just like ours except...?

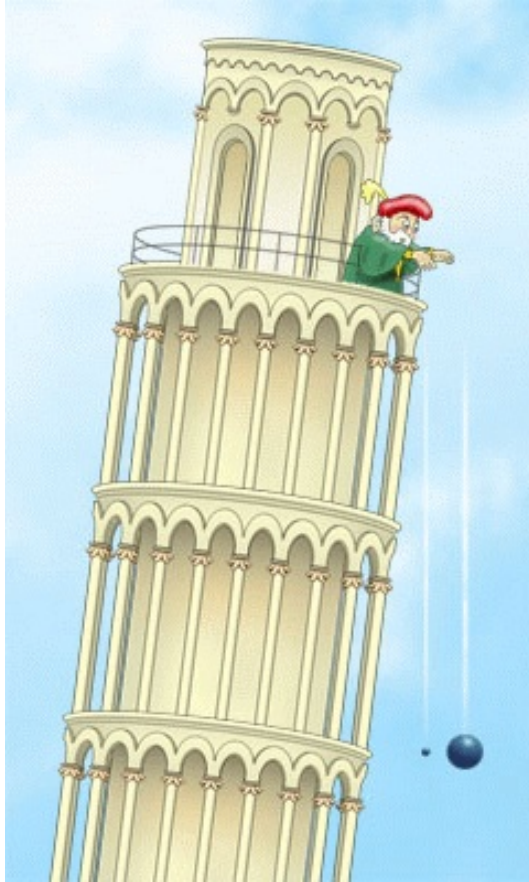
Philosophers on Intuitions

- “We do not mean a magical power or inner voice or special glow or any other mysterious quality. When you have an intuition that A, it *seems* to you that A... a genuine kind of conscious episode. (George Bealer).
- “The term ‘intuition’ here is not being used in the sense of Spinoza, Bergson, or Husserl. It does not describe a cognitive act that is somehow superior to sensory perception. Nor, on the other hand, does it refer merely to hunches that are subsequently checkable by sensory perception or by calculation. Nor does this kind of intuition entail introspection, since it may just be implicit in a spoken judgment. Its closest analogue is an intuition of grammatical well-formedness. In short, an intuition that p is here just an immediate and untutored inclination, without evidence or inference, to judge that p ” (L. Jonathan Cohen).
- “We will call any judgment an *intuitive judgment*, or more briefly an intuition, just in case that judgment is not made on the basis of some kind of explicit reasoning process that a person can consciously observe” (Alison Gopnik and Eric Schwitzgebel).
- The Elephant and the Rider
 - ▶ “The elephant dwarfs the rider, who will have a hard time getting the elephant to do anything it doesn’t want to. Still, one might think that the rider is basically in charge. Yet Haidt points out that the analytic system is a recent - and still somewhat buggy -evolutionary innovation, appended to a basically intuitive brain that previously managed pretty well without it... It’s not that intuition is a tool that a rational creature often employs; it’s rather, to put it crudely, that reason is a tool that a basically instinctual creature often employs to accomplish certain ends. For the most part, the intuitive system sets the agenda” (Haybron).

Science and Philosophy

- A standard view:
 - science proceeds empirically, from observation
 - philosophy proceeds *a priori*, from intuitions
- But proper scientific method is actually not empirical in the way that the standard view depicts.

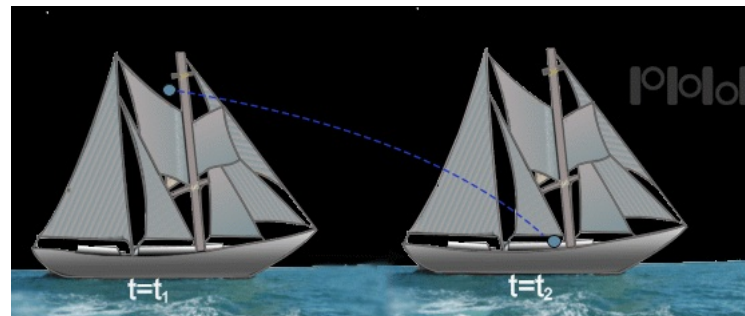
Galileo's Balls



- Aristotle had claimed that a heavier body falls faster than a lighter one ($H > L$). But...
- Consider a system consisting of the two bodies attached by a string.
- The rate it falls is S .
- Since, the light body falls more slowly than the heavier one, it should act as a drag on the system.
 - So, $S < H$.
- But, since the system is heavier than the single heavy body, it should fall more quickly.
 - So $S > H$.
- That's a contradiction.

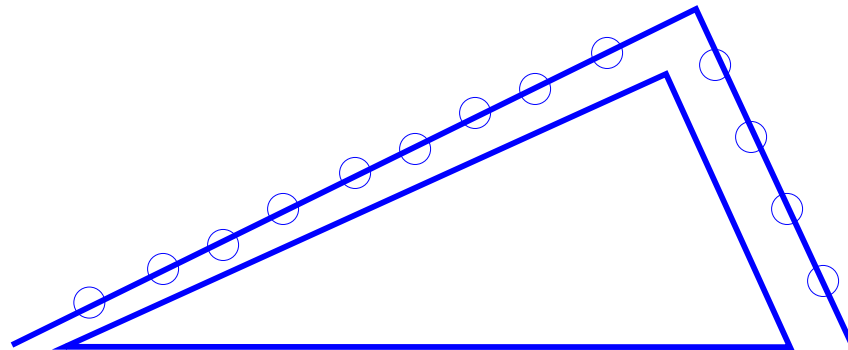
Evidence

- In science, unlike in philosophy, evidence is supposed to be observational.
- But, where is the evidence in Galileo's experiment?
- Regarding the dropping of a rock on a ship (Galilean relativity):
 - ▶ “So, you have not made a hundred tests, or even one? And yet you so freely declare it to be certain?... Without experiment, I am sure that the effect will happen as I tell you, because it must happen that way” (Galileo, *Dialogue Concerning the Two Chief World Systems*)

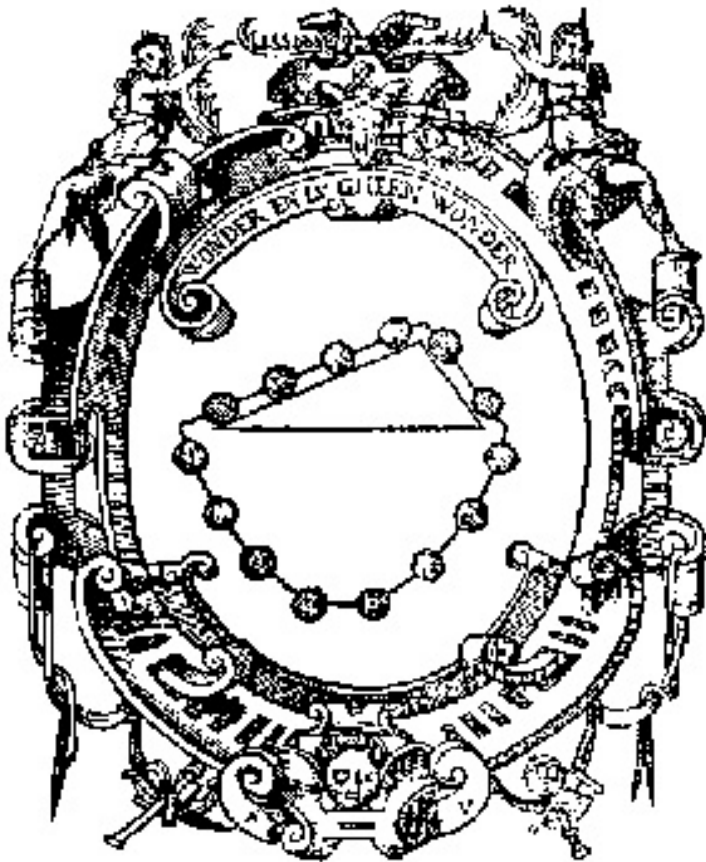


Stevin's Chain

Which way does the chain fall?



Stevin's Solution (1605)



- “Unquestionably in the assumption from which Stevin starts, that the endless chain does not move, there is contained primarily only a *purely instinctive cognition*” (Mach).

Methods

- In philosophy, unlike science, our evidence is not even supposed to be observational.
- Traditionally, we rely essentially on intuitions, on the results of thought experiments.
- This method has lately been derided as armchair philosophy.
- In contrast, experimental philosophy is supposed to avoid some of the pitfalls of traditional methods.