**Philosophical Method Day 10: Thought Experiments**

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| **Content:**What Is a Thought Experiment? (10 minutes)Using Thought Experiments (30 minutes)Putting It All Together (10 minutes) | **Method:**1. Lecture/video clip2. Small group discussion |

***Instructor’s Introduction***: Up until this point in the module, students may have the impression that philosophy is the fairly rote application of principles of logic to philosophical questions. There is nothing particularly clever or creative in philosophy, just the rigorous application of logical analysis. Philosophy, however, is far more robust. This lesson introduces students thought experiments, allowing them to see that the philosopher’s toolbox goes beyond the application of logic. It also demonstrates to students the role of intuitions in philosophy.

# *Goals and Key Concepts*

1. Students should understand the concept of a thought experiment.
2. Students should understand different ways in which philosophers use thought experiments.
3. Key concepts: **thought experiment, intuition, intuition pump.**

**1. What Is Thought Experiment?**

Begin by asking students what one might mean by a “thought experiment”. After a brief discussion, provide students the following account of “thought experiment”:

**Thought experiment**: an imagined situation that is used to investigate the nature of things.

Thought experiments can be used as a method to explore our intuitions, illustrate a hypothesis or theory, or to examine and test the consequences of a particular claim. Thought experiments are best illustrated by example.

Here is a classic thought experiment from Lucretius, a Roman poet and philosopher who lived ca. ca. 99 BCE – ca. 55 BCE:

If there is a boundary to the universe, then we can throw a spear at it.

If the spear flies through the boundary, it isn’t a boundary after all.

If the spear bounces back, then there must be something beyond the supposed boundary, e.g., a wall, which stopped the spear.

Because that wall itself is in space, the boundary was not the edge of the universe.

∴There is no edge to space, so the universe must be infinite.

**2. Using Thought Experiments**

Philosopher employ thought experiments for a number of different purposes. The following isn’t intended to provide a complete taxonomy thought experiments; rather it describes the common ways in which philosophers utilize thought experiments. Following the Stanford Encyclopedia of Philosophy, one can divide thought experiments into two main categories: constructive and destructive. Constructive thought experiments may serve to simply illustrate (make more intuitively palatable) a particular claim or they may serve as an argument in favor of a claim. Destructive thought experiments are offered as evidence against a particular claim. Destructive thought experiments often come in the form of clever counterexamples.

In many cases, thought experiments of both types, serve to help us refine our **intuitions** about a particular idea. What do we mean by intuitions? As with many concepts, philosophers are at odds about what exactly intuitions are and how much we can rely on them to establish truth. We can say, however, that intuitions are a type of belief characterized by a sort of immediacy—we don’t consciously go through a process of systematic reflection to form intuitions in the same way that we often do for other beliefs. In everyday language, we often talk about intuitions as a kind of “seeming.” A thought experiment can be used to stimulate critical reflection on intuitions. This is the concept of a thought experiment as an **intuition pump**.

For example, most people have strong intuitions that killing another is wrong. The Trolley Problem is a famous thought experiment tugs on intuitions about killing and forces one to reflect on them in interesting ways:

A criminal has tied five innocent people to a trolley track. A trolley car that cannot be stopped is careening toward them, moments away from running them over. You can pull a lever and divert the trolley to another track. However, the criminal has also tied a single person to that track. Should you pull the lever?

The thought experiment doesn’t immediately overturn intuitions about killing, but it does spur critical reflection on what we mean by killing, circumstances in which it is wrong, etc.

Break the students into small groups. Have each group discuss (for about 5-7 minutes) the ways in which The Trolley Problem helps to refine their intuitions. Part of the discussion can consist in whether or not they think they should pull the lever, but the central focus is not on the right course of action, but what the situation illuminates with respect to their intuitions. Upon reconvening the class, have each group briefly share their insights.

The next part of the lesson presents examples of the two kinds of thought experiments we’ve identified.

**Constructive Thought Experiments**

According to Einstein’s Special Theory of Relativity, whether two events in different locations occur simultaneously is not absolute but depends on one’s frame of reference. In other words, from one point of view it may appear that two events occurred simultaneously, but from another point of view, one event will appear to occur before the other.

Ask the students if this is still a bit vague in their minds. Now, let’s illustrate the principle of the relativity of simultaneity with a thought experiment, as Einstein himself did:

<http://www.youtube.com/watch?v=wteiuxyqtoM>

This is a nice of example of the way in which one can use a thought experiment to illustrate a claim. In doing so, the thought experiment often makes the claim seem more compelling.

**Destructive Thought Experiments**

Most people have a fairly strongly held intuition that the world around them closely matches, in reality, how it appears to them. For example, I have a strong belief that there is a real book on the real desk in front of me. But…

Imagine a mad scientist has taken your brain from your body and placed it in a vat of brain-sustaining fluid. Electrodes are connected to your brain in a vat, and these electrodes connect to a computer that generates images and sensations. Because all of your information about the world is filtered through the brain, this computer can precisely simulate all of your experiences. You therefore cannot be certain that the world around you is real, and you are not just a brain in a vat.

The students may find the “Brain in a Vat” thought experiment familiar as it has been the inspiration for a number of science fiction stories and films, including The Matrix. The strong skepticism which emerges out of the Brain in a Vat thought experiment challenges the often strongly held belief that we can have knowledge of the external world.

**3. Putting It All Together**

Now let’s put the philosophical method into practice:

Suppose we are trying to figure out what makes an action right or wrong. An intuitive starting point is that an action can be regarded as morally right if it does the greatest good for the greatest number of people.

Point out to the students that we are starting here because it is a reasonable intuition and that is where philosophers often start. With ethics, intuitions are often all we have to begin with. However, other philosophical questions are of a different sort and should be informed by what we know about the world. We shouldn’t ignore science in doing philosophy. Rather than just relying on intuitions and making claims about the world in the way that Lucretius did, it is important that philosopher draw upon and account for knowledge of the world that we gain through science, psychology, etc. For example, if I am going to come up with a theory about the nature of the human mind, that theory needs to account for the correlations between brain activity and sensations, etc., that have been discovered by neuropsychology. A *naturalistic philosophy* works side-by-side with science to discover the nature of the world. Put another way scientific facts often play an important role as premises in philosophical arguments.

Let’s go back to our intuitive starting point: an action can be regarded as morally right if it does the greatest good for the greatest number of people. Let’s test this as a starting point by finding a situation in which taking an action that does the greatest good for the greatest number of people doesn’t seem morally right, i.e., in which it conflicts with our intuitions. Suppose that Bad Temper Bill is stuck on an overpass in a horrible traffic jam. A driver from another lane squeezes in front of Bill, despite Bill’s best efforts to prevent it. Bill jumps out of his car, rips the other driver out of the driver’s seat, and tosses him off of the overpass. As it turns out, the guy that Bill threw off of the overpass was a terrorist who was about to detonate a bomb that would have destroyed the overpass and killed hundreds of innocent people. But the man was a complete stranger to Bill, who was simply acting in a fit of rage. Bill’s action did the greatest good for the greatest number of people, but given Bill’s motives, it seems ridiculous to regard his action as morally good.

We have arrived at a point where the proposition from which we started has created a contradiction. We now need to revise the proposition to make it consistent with the intuition that came to light through the Bad Temper Bill thought experiment.

Ask the students: How might we revise the proposition to account for the Bad Temper Bill case?

Once we’ve revised our proposition, we can begin testing it again by analyzing what follows from it. In this way, we combine our intuitions, with logic and creative philosophical thinking to test philosophical claims.

This module in general and this example in particular show that while logic is the primary tool in the philosopher’s toolbox, the philosophical method isn’t the rote application of the rules of logic. Rather, it’s a process of creating clever thought experiments, drawing fine distinctions, reflecting carefully on our intuitions, and the effective use of logical analysis.