



**TOK Question 1**

In the production of knowledge, does it matter that observation is an essential but flawed tool.  
Discuss with reference to the natural sciences and one other area of knowledge.

## Initial Thoughts:

The trivial answer of Heisenberg's uncertainty principle comes to mind, as well as the observer effect for the human sciences. A passable essay could be written on the back of these, but that's see what else we can cook up shall we?

## Definitions:

We must begin by accepting that *observation is essential and that it is flawed*. This naturally begets two questions:

- How is observation flawed?
- Does this flaw matter?

Observe that the answer to the second question is entirely dependent on our answer to the first.

Let us begin with a light amuse-bouche of philosophy.<sup>1</sup> Observation is a tool to gain a posteriori knowledge. So what knowledge can be gained without observation of the world? Only of the self, (perhaps) time, (perhaps) space, (perhaps) causality and (perhaps) God. Depending on how many of these we accept our arguments change. For example, if we don't accept causality as intrinsic, then an observed sequence of events is no Law, it is merely custom, and there is no intrinsic need for custom to be followed. There is an alternative school of thought, of *tabula rasa*, where all is dependent upon observation.

## Approaches:

- Is observation flawed on the grounds of the subject changing as we observe it? This would be the simplest approach, but also probably the most common. If we really wanted to dress this approach up, we can start discussing the failures of scientific determinism<sup>2</sup> and how that philosophy influenced the Sciences in general. At the same time, there is no clear, easy rebuttal to this in the Natural Sciences, making for an unsatisfying conclusion.
- Is observation flawed because of us, the observer? Consider a hammer that strikes your thumb. We only know of it as a bundle of perception, of sight, touch, and pain. If we were a mind floating in the void, would we know of the hammer at all? What if it is all a lie perpetrated by some demon? This is a pretty radical approach, but should be manageable with a detailed understanding of Berkeley.
- Is observation flawed because of the logic it supposes?<sup>3</sup> Suppose we see the addition of a carbonate to an acid, and subsequent bubbling. Observation implies that one caused the other, but is this at all necessarily true? In simpler terms, observation can

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<sup>1</sup> The bulk of the dish derives from Hume and Berkeley, with a light sprinkling from Descartes's *Discourses* and Kant's *Critique of Pure Reason*.

<sup>2</sup> Why did scientific determinism fail? That would be an interesting area of research that could well help

<sup>3</sup> You need to be careful that if you use this, it does not overlap with title 6

only show correlation, and not causation. How do we go from correlation to causation?

- Perhaps observation is flawed because of its subjectivity. This has a clear, unambiguous rebuttal, that we must simply invent better and better instruments. You could probably say something pithy that subjective observation is merely a stopgap until we can invent more and more objective instruments.
- In all this, how have knowledge producers tried to correct for the deficiencies of their (supposedly) greatest tool? Surely if there was a better tool, observation would have fallen by the wayside. Examining all the methods that have been built up and are standard practise now should give us a pretty good idea of the issues that are intrinsic to observation as a method of knowing.

AOKs:

Let's begin with what is unlikely to be good. Mathematics would be difficult, as it can be argued to be almost entirely a priori. *Arguing that observation is not important is not the point of the essay.* Arts, on the other hand, is naturally a difficult AOK and probably difficult to approach as you have to seriously consider what (and who) produces knowledge in the Arts. The only area of History that really deals with observation is eyewitness accounts, which, while doable, would restrict you to such a small section of history that it would probably not be worth it.

Natural Sciences: The flaws of observation are well documented in the Natural Sciences. We invented pH meters to deal with the inaccuracy of pH indicators. A multitude of statistical tests have been invented to attempt to differentiate correlation from causation, to turn observations into Law. We continue to rely on observation because *it is the only tool shown to produce results.* We cannot go back to Galen and his humours, or to the miasmatic theory, which are grounded not in observation but in imagination alone.

Human Sciences: Here too, observation is heavily problematic, and yet it remains the only way to do things. Plato's Republic is a strange way to run a society because he neither experimented, nor truly engaged in society. Nietzsche's Genealogy of Morality is hopelessly problematic because he did not feel the warmth of another heart<sup>4</sup>. The way we do things, with experiments, is a definite improvement over the armchair theories of the ancients. And still, there are issues. The observer effect, however much we try to correct for it, continues to plague surveys, or any human subject in a lab setting.

Structure:

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<sup>4</sup> Yes I'm calling him an incel. Sue me.

Now this is interesting, as this question has two separate parts. There is a third *implied question* of how do we mitigate the flaws of observation. This third question should be addressed as part of your answer to the second question, and in the conclusion.

For example, the following structure would be plausible:

Body Paragraph 1: In (AOK 1), observation is a flawed tool because (whatever), and this matters as (whatever)

Body Paragraph 2: In (AOK 1), however, the above flaw does not matter because (whatever)

Body Paragraph 3: In (AOK 2), observation is a flawed tool because (whatever), and this matters as (whatever)

Body Paragraph 4: In (AOK 2), however, the above flaw does not matter because (whatever)

Notice how complicated this gets, with you having to juggle multiple requirements across the different body paragraphs. This could be tricky. The important thing to remember is that why the flaw matters should be the emphasis of the paragraph, and not what the flaw is.

The conclusion would be entirely dependent on what line of argument you choose. I personally would write a rousing call to improved and continuing materialism. It would be important to acknowledge that while observation is flawed, we simply have no viable alternative structure to knowing.

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