Popper & Truth - DA2210

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1 Science as falsification

I have chosen to take a closer look at the fourth conclusion of Popper, that "A theory which is not refutable by any conceivable event is non-scientific. Irrefutability is not a virtue of a theory (as people often think) but a vice."[1]. As an example where this conclusion is applicable, I have chosen the Marxist theory. Popper [1] explains in the text that a theory like the Marxist theory, could explain every possible event that happened in society, if you used the theory as a prism to view the event through. This fact seems to make the theory irrefutable or non-falsifiable. Popper [1] continues by arguing that an objection to the theory very easily could be denied, because of the fact that the objection might stem from your class background, which disabled you from seeing the truth in the theory. The explanatory power of the theory is thus what makes it weak, since it it is applicable to every situation, it is very difficult to conduct an experiment that would render it either true or false.

As an example of a scientific theory that where actually falsified, I have chosen the theory of a static universe by Albert Einstein. Einstein proposed a theory in 1971, be applying his model of general relativity, that the universe was actually static. Einstein held this belief for quite some time before it was falsified. An example of the theory being falsified was in 1922 when Alexander Friedman suggested that the universe was expanding by applying Einsteins own theory of relativity, and showing that it was compatible with an expanding universe. In 1927 the Belgian physicist Georges Lemaître concluded that this was the case by using general relativity and astronomical observations. [2]

2 What is truth

In this section, nine different statements will be analyzed and divided into four different categories of truth. These categories are correspondence truth, coherence truth, intuitive truth and pragmatic truth.

The program statement while (true) gives an infinite loop - I would argue that this is a coherence truth. The truth of the statement depends on what we mean by while and true. It depends on what programming language we use, and what definitions we have for a while loop, and the true boolean value. So, if the statement is logically correct while following on previous definitions, then it is true in a sense of a coherence truth.

Mergesort has complexity O(n log n) - It seems that this could be both a coherence truth and correspondence truth. It needs to follow our previous definitions of ordo notation, natural logarithm, and how we define the number n for it to be considered a coherence truth. If these definitions are clear, then we can actually prove and measure if mergesort has complexity O(nlogn), which would make it a correspondence truth, if the statement corresponds to reality it is in fact true. And I would argue that the statement is true in both of these senses.

Apple suffered losses in the consumer market last year - I would argue that this is a coherence truth. We can actually measure what losses Apple made in different areas, and see if the statement corresponds to reality.

Comments make it easier to modify programs - This could be seen as a intuitive truth I would say. It is a quite subjective fact, if you believe that it is easier to modify the program by inserting comments in the code, then it is true for you.

Agile development provides greater job satisfaction - It seems to me that this actually could be measured in a work environment, and would thus be

a sort of correspondence truth. But job satisfaction could also be seen as quite subjective and ranging form individual to individual, and in this sense I think it could be seen as an intuitive truth.

Two doses of the mRNA Covid-19 vaccine BNT162b2 give a 95

P is a strict subset of NP - This statement builds a lot of what our definitions are about how we define the two sets P and NP. So thereby I would argue that this is a coherence truth. On the other hand we can prove this to be the case when our definitions are applied, and thus I would also see it as a correspondence truth.

This statement is true - I would say that this statement doesn't correspond to any of the categories, except perhaps intuitive truth. If one believes that the statement is true, of course it is going to be true for that individual.

This statement is false - I would say that this statement doesn't correspond to any of the categories, except perhaps intuitive truth. If one believes that the statement is false, of course it is going to be false for that individual.

References

[1] K.R Popper *Conjectures and Refutations*. Routledge, 1963.

[2] Springer Science+Business Media (2014, Feb. 17). *Einstein's conversion from a belief in a static to an expanding universe*. Available: https://www.sciencedaily.com/releases/2014/02/140217102545.htm