

Is there solid justification for regarding knowledge in the natural sciences more highly than knowledge in another area of knowledge?

We often put natural sciences on a pedestal. This is because of the importance of the results it yields, and the rigour in which knowledge is developed through the scientific method. However, stating that the natural sciences should be more highly regarded than other areas of knowledge (AOKs) is not simple as there are arguments to be made that other AOKs might hold the same importance as the natural sciences

Before analyzing this question, it is important to define the parameters for solid justification. Solid justification is based on what we value. If we value objectivity and accuracy, the natural sciences are held in higher regard than other AOKs. However, if we put usefulness at the core of what we value, natural sciences could be at par with a different field of study. To explore this question let's compare "natural sciences" and a human science like "economics."

If we look at objectivity, the method of obtaining data/results in the natural sciences is considered the most objective of all fields of studies. This is because scientists use the scientific method. This is an empirical method of acquiring knowledge, wherein a problem is introduced, a hypothesis is made, tested and lastly conclusions are drawn from the results. Furthermore, following the unbiased testing of a theory it is then reviewed within the large scientific community. The initially tested experiment is repeated multiple times by different scientists until a theory becomes a fact. A good example is a simple concept like the mechanics of our heart. For centuries, Greek doctor Galen believed that the blood was produced in the liver and filtered through tiny pores into the heart. However, then came along William Harvey who found a problem with this theory. He theorized that a porous septum which allowed Galen to bypass the need for circular blood movement did not exist. To support his theory, Harvey conducted a series of experiments that involved dissecting various animals, ligating their arteries and veins, exerting pressure on their hearts, and quantitatively measuring the amount of blood channelled to and fro. After reviewing his data, Harvey came to a conclusion that debunked both Galen's passable septum and his blood-producing liver. This theory then travelled through the scientific community and only years later after much discussion within the scientific community did this theory come to be a fact. What happened here is an example of the scientific method - unhindered by cultural bias and assumptions, Harvey proved his theory with empirical evidence.

On the other hand, if we look at economics, all the basic fundamentals, the building blocks, are based on the incorrect assumption that man is rational. The economic principle that demand falls when price increases only applies to this fictional man. The laws of supply and demand do not account for the fact that consumers don't always know where the cheapest goods are, and often when it comes to basic items such as groceries consumers factor in a wide array of variables such as location and convenience. In fact, all economic theories are based on this lie. Furthermore, the economic principles we study are universal for all people. This universality affects accuracy, however, as when it comes to economics, culture plays a large role. People spend differently in different parts of the world. For instance, the goods most consumed in Sub-saharan Africa compared to North America are vastly different, but economics does not account for these differences. Take a look at the markets for capital goods in both regions, which include electronics, luxury items etc. The US imported \$69629m worth of capital goods (trading economics) in September of 2021, while sub-saharan Africa imported approximately 30 percent of that (UNU). Despite having a greater population, individuals spent significantly less on capital goods than in the US. This illustrates that the fundamentals of economics are based on generalization, and do not account for the individual experience. While in the scientific method we see accurate and precise data that has been collected from thorough experimentation. Looking at these flaws of economics it is safe to say science collects more objective and accurate data.

Nonetheless, the natural sciences are not perfect either. In this field there is much emphasis on the aforementioned scientific method. However, the scientific method is not applied in all aspects of science. Take the big bang theory, the scientific community now regards its occurrence as a fact, but this theory was never tested and can never be tested due to technological limitations. Henceforth, it is based on scientists' observations of the expansion of our galaxies. To base a fact on mere observation defies the scientific method and takes away from Science's accuracy making some aspects of science as theoretical as economics. Like the big bang theory much of the physics world is theoretical, taking away from the experimentation step of the scientific method. Another flaw within the natural sciences is that even though individual theories or the fundamentals of science are not affected by culture like economics is, cultural bias is still evident in the scientific community. This bias comes in the form of what is researched by the community. Just this year, The American Academy of Pediatrics stifled debate on gender dysphoria. In this year's convention a group of clinicians who wanted to present evidence that pediatric gender treatments rest on a foundation of questionable evidence were unable to because they were denied a booth. Although culture did not directly impact the scientific theories, it impacted what was researched and what was told to the public. In this case, part of the truth was hidden for a reason other than objectivity and so the public was not warned of the possible problems that could arise following the intake

of puberty blocking hormones. This is not a one-off case of scientific discovery being held back by culture. Another example on the opposite side of the spectrum is many conservative countries choosing not to research the science behind transgender surgeries or providing the surgery itself. This defies the natural sciences appeal of being objective as cultural bias is manipulating what we can learn about. Therefore, even though the scientific method itself can be considered completely objective, not all science follows this method as seen with the examples above, the natural sciences can be influenced by external factors just like economics can. Despite this as a whole, it is still a fact that as an area of knowledge, the natural sciences are the closest we get to objectivity and accuracy, and is the reason other fields of study like the human sciences look up to them.

If we look at this question from a different angle, one might put purpose or usefulness as their core value. Many would argue that no field of knowledge can compare to the usefulness of the natural sciences. Science is at the center of innovation. Critical infrastructure all require science to be built, human life is protected by science. During Covid-19 it was science that provided vaccinations to save lives. However, if we look at economics we can see similarly important functionality. Economics keeps our world running. With the study of economics, figures of authority can take actions to keep their citizens fed, employed, and happy. Some of society's most pressing issues like hunger and poverty, can be mitigated using the study of economics. When analyzing both AOKs it is impossible to say which field is more important. It all comes down to what is needed. A good example is climate change. 60 years ago we needed the natural sciences to explain rising temperatures globally and its impact on the world. Scientific experts came together to discover the cause of global warming which led to the discovery of climate change's fatal consequences. Scientists then provided us with solutions to prevent the possibility of a catastrophic future. At that time economics would have been of no use as the natural sciences were valued. Years later we know the solutions and the consequences, so the problem moves towards financing. Governments need to calculate their opportunity cost, and find their methods of funding. Economics' usefulness can be seen when looking back at covid vaccines. Following the creation of vaccines, the rollout on such a mass scale required economics. The United States was the first country to get an influx of vaccines because of the efficacy of Operation Warp Speed, a massive public-private partnership in charge of purchasing vaccines from private firms, in contrast the European commission used a different economic approach, as they did not collaborate with the private sector and looked for vaccines at lower prices. In the end the EU ended up with vaccine shortages. As of June 2021, only 28% of Europeans were fully vaccinated (BBC) compared to 66% in the US (JAMA). In this situation, despite the importance of the natural sciences in developing the vaccine, economics was more important in distributing it to the public.

In the end it comes down to what we value. If we value efficiency or the natural science's predictive capabilities, then the natural sciences should be regarded as superior to other areas of knowledge. If we put objectivity as our parameter for comparison then despite its flaws there is solid justification for the natural sciences to be regarded more highly. However, if we put purpose or usefulness as our parameter for comparison that answer could vary person to person or case by case. In summation, the answer to this question really depends on the way individuals define the term solid justification, and this essay analyzed two such definitions of the word and their outcomes on the two different areas of knowledge.

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