

TOK Essay

**Are disputes over knowledge claims within a
discipline always resolvable?**

According to Oxford English dictionary, knowledge¹ is defined as information acquired through education or experience. Therefore, it could be described as a theoretical or practical understanding of a subject. Due to people's different real-life experience, no one's knowledge can be exactly the same, they often have different opinions to one subject. When people have disagreements or arguments within a discipline at one time, we could say that there are disputes over knowledge claims. To investigate if disputes over knowledge claims within a discipline are always resolvable, the term "resolvable" must be clarified. There are usually two situations for disputes being "resolvable", one is when one opinion overturns the previous knowledge, then becomes the only truth; the other one is that different opinions compromise with one another as they are both reasonable. As "a dispute" is described as a disagreement above, it is better to use the first situation of "resolvable" as the claim for this essay. Thus, it's able to say that the question is actually asking whether disputes always often lead the overturning of previous knowledge. To answer this question, two areas of knowledge, natural sciences and history, will be applied.

The TOK definition of a truth² is a justified, true belief. In natural sciences, truth or a scientific truth³ is an explanation or a theory that correctly predicts new results from new observations or experiments. Therefore, a scientific truth is not a real truth but the closest theoretical or practical conclusion to a true understanding of nature at the time. It suggests that new knowledge can often overturn the previous knowledge in order to improve its

¹knowledge | Definition of knowledge in English by Oxford Dictionaries. (2018). Retrieved from <https://en.oxforddictionaries.com/definition/knowledge>

²(2018). Retrieved from <https://www.tokresource.org/theories-of-truth/>

³Method for Finding Scientific Truth. (2018). Retrieved from <http://homepages.wmich.edu/~korista/scimelhd.html>

authenticity and accuracy, so it is able to say that disputes are always resolvable in the evolution of knowledge in the natural sciences.

Speaking of how disputes become resolvable, disputes over the scientific theories or concepts are usually resolved through empirical experiments. Taking the physics theory of Einstein's static universe as an example, it mentions that it was commonly believed that the size of the universe was an unchanging constant before the scientists posed the notion that the universe was created as the result of the Big Bang. The idea stated that the total volume of the universe was effectively fixed, and that the whole construct operated as a closed system. However, this theory was disproved by Edwin Hubble, an American astronomer. He discovered that the relationship between redshift refers that the way the colour of heavenly bodies changed as they moved away from us and the increasing distance in fact showed us the universe was indeed expanding instead of being constant. As Edwin Hubble's discovery is proved to be more comprehensive by the advanced modern technology, it's closer to the true knowledge, then it becomes a temporary scientific truth through the overturning of previous knowledge. Therefore, disputes over knowledge claims are always resolvable.

By contrast, history allows disputes over knowledge claims to exist at the same time period or even last for centuries because different educational or cultural backgrounds makes people acquire knowledge in different ways and have various interpretations of historical events. In addition, different narrators of the story can cause disputes to a subject with reasonable evidences, it's hard to lead to an overturning of previous knowledge, so disputes in history are not likely to be resolvable. There is a real-life dispute between Chinese people's and Japanese people's opposite understandings to Nanjing Massacre in the World War II history. In Chinese people's point of view, Nanking Massacre was a bloody event of mass murder committed by

Japanese troops against the residents of Nanjing during the second Sino-Japanese War, because its authenticity and accuracy can be proved by a wide range of primary sources and photographic evidences. However, Japanese government insists to deny the fact for several decades and left the history of this period out from the textbooks. Consequently, Japanese students will misunderstand this piece of history due to the lack of education, leading to the occurrence of more disputes over this discipline. Hence, disputes cannot be always resolved by overturning previous knowledge.

Natural sciences is mainly composed of reasoning, since Galileo Galilei⁴, a central figure in the transition from natural philosophy to modern science, has said that "in the question of science, the authority of a thousand is not worth the humble reasoning of a single individual." and William Lawrence Bragg, 1915 Nobel Prize winner in physics, has said that "The most important thing in science is not so much to obtain new facts as to discover new ways of thinking about them."⁵ Whereas there can be more emotion applied in the investigation of history as it is passed from generation to generation through both people's memory and scientific archeological methods. Thus, we can infer that disputes are more likely to be resolvable when people think rationally based on the two arguments mentioned above. When other factors, such as people's own preferences or desires, are considered, disputes are not likely to be resolved. This case implies a potential relationship between disputes and between reason and emotion. Reason makes disputes resolvable whereas emotion makes them agree to differ. Therefore, I'm very interested in if reason outweigh emotion while overturning previous knowledge.

⁴Galileo Galilei. (2018). Retrieved from https://en.wikipedia.org/wiki/Galileo_Galilei

⁵A quote by WilUam Lawrence Bragg. (2018). Retrieved from <https://www.goodreads.com/quotes/166826-the-important-thing-in-science-is-not-so-much-to>

To answer this, a precondition must be stated, an overturning of previous knowledge happens after the authenticity and accuracy of the knowledge have been determined. Thus, what I actually ask if reason outweighs emotion while determining the authenticity and accuracy of knowledge. Authenticity⁶ is defined as the ability of being undisputed and accuracy⁷ is defined as degree of conformity of a measure to a standard or a true value. In the process of determination of authenticity and accuracy, a high standard of logical thinking is required. For the scientists, they can test if the current knowledge is authentic and accurate or not through the experiments, which is a process of logical reasoning. Conversely, historians use existing information to reason or infer then prove the authenticity and accuracy of the corresponding history rather than use emotions to perceive knowledge.

An evidence to support this argument is the disputes about the authenticity and accuracy of the Chinese ancient seismograph invented by Zhang Heng, a scientist in Han Dynasty, as this piece of history has been passed by people's memory for centuries. To prove its authenticity and accuracy, the historians studied "Book of Later Han" which records the history of Han Dynasty, it mentioned that the seismograph was designed to determine where the earthquake came from. Additionally, it described a real-life situation that the seismograph managed to predict earthquake. Therefore, authenticity and accuracy of knowledge are proved by reasonable inference made based on the existing information. Unlike historians, scientists choose to prove the authenticity and accuracy through the proof of its implementability and operability rather than its existence. In 1951, a Chinese scientist, Zhenduo Wang, simulated the first model of seismograph with reference to the historical records. It proves that this technology can be

⁶ authentic | Definition of authentic in English by Oxford Dictionaries. (2018). Retrieved from <https://en.oxforddictionaries.com/definition/authentic>

⁷ Definition of ACCURACY. (2018). Retrieved from <https://www.merriam-webster.com/dictionary/accuracy>

achieved and applied, so it is authentic and accurate. Hence, the disputes are resolvable as the determination of authenticity and accuracy of disputes are more likely to be determined by reasoning to make disputes resolvable lead to an overturning of previous knowledge recognised by the international public.

To be more precise, the term "always" also needs to be considered as it gives an unlimited period to examine the authenticity and accuracy of knowledge. In fact, it considers the duration of authenticity and accuracy of knowledge until it is overturned. Since disputes can be resolvable by reasoning, the progression of atomic theory from the discipline of chemistry would be a trustable real-life example. The disputes in the progression of atomic theory never end, it started with one very early theory that everything was made of four elements, Earth, Air, Fire, and Water. Then, a Greek scientist, Democritus, conjectured that everything was constituted of tiny indivisible particles, "atomon". Later, the substances which cannot be converted into others were discovered as "elements". In the 19th century, a scientist, Ernest Rutherford, created the "nuclear model" of the atom: an atom is composed of a positively charged nucleus and a thinly spread collection of electrons containing all the negative charge. In the early 20th century, Niels Bohr raised an argument that the electrons were arranged in layers or shells around the nucleus to explain the observations of changes of pure atoms. From this process, we can see that disputes don't have to consider the time limit while overturning one another. The only factor needed to be considered is the authenticity and accuracy of knowledge, if they are proved, then disputes are resolvable.

As far as I'm concerned, disputes are unavoidable in our real life, but they are resolvable. Besides, Margaret Heffernan⁸, my favourite international author and TED speaker, has said

⁸Margaret Heffernan. (2018). Retrieved from https://en.wikipedia.org/wiki/Margaret_Heffernan

that "For good ideas and true innovation, you need human interaction, argument, debate."⁹ It suggests the positive relationship between resolvable disputes and knowledge. Once the authenticity and accuracy of knowledge are justified and reasoning will help the overturning of previous knowledge to promote the development for the knowledge as one of the indispensable tools to acquire and strengthen the understanding of knowledge. Thus, disputes over knowledge claims are always resolvable with reasoning regardless of a time limit.

⁹ Margaret Heffernan: Dare To Disagree, by Thu-Huong Ha. (2018). Retrieved from <http://www.dailygood.org/story/1067/margaret-heffernan-dare-to-disagree-thu-huong-ha/>

Bibliography

- knowledge | Definition of knowledge in English by Oxford Dictionaries. (2018).
Retrieved from <https://en.oxforddictionaries.com/definition/knowledge>
- (2018). Retrieved from <https://www.tokresource.org/theories-of-truth/>
- Method for Finding Scientific Truth. (2018). Retrieved from
<http://homepages.wmich.edu/~korista/scimethd.html>
- Google.com. (2018). *einstein's static universe*. - *Google Search*. [online] Available at:
<https://www.google.com/search?client=safari&rls=en&q=einstein%27s+static+universe.&ie=UTF-8&oe=UTF-8> [Accessed 8 May 2018].
- Galileo Galilei. (2018). Retrieved from https://en.wikipedia.org/wiki/Galileo_Galilei
- A quote by William Lawrence Bragg. (2018). Retrieved from
<https://www.goodreads.com/quotes/166826-the-important-thing-in-science-is-not-so-much-to>
- authentic | Definition of authentic in English by Oxford Dictionaries. (2018).
Retrieved from <https://en.oxforddictionaries.com/definition/authentic>
- Definition of ACCURACY. (2018). Retrieved from <https://www.merriam-webster.com/dictionary/accuracy>

- “张衡地动仪”1950年代才被制造出来 非张衡原物_历史频道_凤凰网. (2018).

Retrieved from

http://news.ifeng.com/history/shixueyuan/detail_2010_11/05/3012125_0.shtml

- 关于张衡地动仪你需要了解这五点. (2018). Retrieved from

http://www.sohu.com/a/221291475_99903755

- Dbooth.net. (2018). *Atomic Theory Summary*. [online] Available at:

<http://www.dbooth.net/mhs/chem/atomictheory.html>

- Guthrie, B. (2018). *Details About The Rape Of Nanking You'll Never Unlearn*.

[online] Ranker. Available at: <https://www.ranker.com/list/nanking-massacre-details/brian-guthrie>

- Margaret Heffernan. (2018). Retrieved from

https://en.wikipedia.org/wiki/Margaret_Heffernan

- Margaret Heffernan: Dare To Disagree, by Thu-Huong Ha. (2018). Retrieved from

<http://www.dailygood.org/story/1067/margaret-heffernan-dare-to-disagree-thu-huong-ha/>