ToK Spring Practice Prescribed Essay
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Theory of Knowledge 12
Mr. Haydock
(1581 words)

Collaboration is a necessary element in society. Even from an early age, children are encouraged to work together, whether that be in solving a puzzle or putting the toys away, it is imbedded into them that collaboration is good and necessary. Moreover, collaboration is not always physically apparent; rather, collaboration can be the mere inspiration one receives from others because they relied on information produced by another beyond their own scope. From the creation of the Constitution to TOK discussions where individuals almost always begin their comments with "going off of that," it is clear that we flourish off of each others' ideas. In a validation-seeking society, one cannot get to the truth without help from others, whether this collaboration happened physically or with the use of past, established ideas. Therefore, the production of knowledge is always a collaborative task and never solely a product of the individual. In this argument, the necessity of collaboration will be explored in reference to the natural sciences and the arts, where the natural sciences display communication in the scientific method, while art portrays emotional connections between the artist and viewer.

Before continuing the argument that the production of knowledge always requires collaboration, certain terms that must be defined. Primarily in terms of shared knowledge, "knowledge" is defined as developed and codified insight that is published, accepted and promulgated. This "knowledge" is validated by procedures and methods of inquiry or emerges through commonly held set of norms , beliefs, values and practices in a bigger and broader socio-cultural setting. Therefore, the "production of knowledge" is the process of developing accepted information that will be relevant or valuable for many. The use of "always" emphasizes that knowledge cannot be produced without collaboration and that such "knowledge" that is brought up without collaboration is not true knowledge. Moreover, "collaboration" is the

working together of individuals towards finding a valid acceptance of the truth, so that any progress towards an outcome or "product" can take place. Lastly, "never" portrays that in no means, will knowledge ever be the "product of the individual," or the result of something that is of purely one individual's thoughts and has no external inspiration or connection to others.

In science, part of the scientific method is communication,which entails the publishing and sharing of results with other scientists for the validation of their findings. This collaboration between scientists is what allows for theories to become true shared knowledge, due to multiple perspectives coming together to approve an idea. Additionally, the likelihood of a scientist developing an idea without the influence of others' previous findings is very low. This is seen in formation of Kepler's Laws of Planetary Motion. While Copernicus rightly observed that the planets revolve around the Sun, it was Kepler who correctly defined their orbits. Kepler was the assistant of a wealthy astronomer, Tycho Brahe, who asked him to define the orbit of Mars. After Brahe died, Kepler inherited his lifetime collection of astronomical observations. From Brahe's observations, Kepler found that the orbits of the planets followed three laws, later known as Kepler's Laws of Planetary Motion. Though only Kepler credited, he was not the only one to discover the basis of planetary movement, as Brahe was a significant factor to the production of such knowledge. Brahe was the catalyst for Kepler's findings and through him again was he able to actually define the orbit of Mars. From Brahe's astronomical measurements and Kepler's own drawings of the geometrical relationship between the Sun and Mars in various parts of the planet's orbit, Kepler discovered that planets moved faster when they were closer to the Sun. From this realization, he concluded that the orbit of Mars was elliptical, not circular. Without Brahe, Kepler's discovery may not have been possible, as Brahe prompted his work. This shows

that one cannot have a thought without experiencing something or someone that inspired it. Despite this inspiration not being Kepler and Brahe physically working together to discover Mars' orbit, it is still collaboration with the past to create knowledge. Despite final contributions ultimately being from one person, Kepler also worked in collaboration with the shared knowledge that has been contributed to him, as certain scientific foundations have already existed before Kepler's findings.[1]

To counter, one may say that the discoveries of modern physics are not possible without the initial discoveries of Newton. However, Newton's discoveries were not prompted without the help of others. It was Kepler's third law that inspired Newton, who came up with three laws of his own to explain why the planets move as they do. Thinking on Kepler's laws, "Newton realized that all motion, whether it was the orbit of the Moon around the Earth or an apple falling from a tree, followed the same basic principles."[2] This shows that Newton's "initial" discoveries were not actually the first of its kind. Instead, he used established knowledge from Kepler as basis for his findings, which is a collaborative task. By unifying all motion, Newton shifted the scientific perspective to a search for large, unifying patterns in nature and also presented his law of universal gravitation as a case study of his laws of motion. Newton's laws of motion and gravity explained Earth's annual journey around the Sun and stood unchallenged for nearly 220

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[1] "Planetary Motion: The History of an Idea That Launched the Scientific Revolution." NASA. July 7, 2009. Accessed February 19, 2019. https://earthobservatory.nasa.gov/features/OrbitsHistory/page2.php.

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years until Albert Einstein presented his theory of special relativity in 1905. Newton's theory depended on the assumption that mass, time, and distance are constant regardless of where you measure them. Within a single frame of reference, the laws of classical physics, including Newton's laws, hold true. To describe motion in the situations that Newton's laws can't explain, scientists must rely on Einstein's theory of relativity. For this reason, many scientists see Einstein's laws of general and special relativity not as a replacement of Newton's laws of motion and universal gravitation, but as the full culmination of his idea. From Einstein's perspective its is viable to thank Newton for his contributions. However, before Newton there was already established knowledge from Newton's collaboration with past findings. In retrospect, the creation of knowledge is always a collaborative effort over time, because we take grounded knowledge or proposed ideas and go from there to seek the truth and produce more knowledge.

On the other hand, the arts are valuable due to their ability to create aesthetic experiences while conveying important messages and themes sought by the artist. Art does not rely on facts, or the past, or what others believe; rather, art is what an artist makes it to be, whether saturated with violence or drizzled with desire and passion. Art is a very intimate area of knowledge where the knowledge gained from art is always internal making art in itself is a collaborative task between the artist and viewer. There may not always be a need for collaboration when analyzing pieces because the personal knowledge gained from it was useful, but that personal knowledge was only attained due to the artist sharing their message with you. From an artist's perspective, art is made to share not for an artist's sake of producing personal knowledge. If artists were to make pieces for only themselves, then there would be less art and knowledge in the word. Furthermore, as Tolstoy states that "it is upon this capacity of man to receive another man's

expression of feeling and experience those feelings himself, that the activity of art is based." This shows that from Tolstoy's perspective, art is made to be shared. The knowledge does not lie in what the artist created, but the spread of the artist's emotions and message. The power lies in the ability to effectively convey to others, not to solely produce for oneself. One piece that I was able to have a connection with in the Museum of Modern Art was Die Meistersinger by Anselm Keifer. This work explores the use, abuse, and transformation of culture with the fragile materials and allusions to German cultural touchstones. The 12 clumps of straw allude to the mastersingers from Richard Wagner's opera. Hitler used Wagner's ideas to support his perverse idea of a German empire. This piece explores Germany's painful past, demonstrating how one beautiful thing can be twisted and manipulated to mean another. It is overwhelming, messy, and slightly disconcerting, but the piece is a powerful conveyer of the history that has gone down. A single painting not only produced valuable knowledge on the entire history of a nation, but it also gave its audience the chance to experience some of it as well. A history textbook can inform you on the names of dictators, the number of lives lost, and the conditions the general public faced, but it does not allow you to experience these atrocities in the way that art does. This is a form of collaboration between Keifer and I, as I was able to produce an intimate connection and personal knowledge about Nazi Germany from analyzing the piece.

Despite this paper being solely of my own words and thoughts, I have drawn reference to other sources and collaborated with them to form new knowledge. Additionally, I am sharing this with the reader, who will then gain new knowledge from my paper due to the collaborative tendency that the production of knowledge has. Overall, collaboration can be the workings of shared knowledge from the past that affect the development of knowledge. Therefore,

collaboration is necessary for the production of knowledge, making ideas produced from solely individuals without inspiration from external sources no knowledge.

"Planetary Motion: The History of an Idea That Launched the Scientific Revolution." NASA. July 7, 2009. Accessed February 19, 2019. https://earthobservatory.nasa.gov/features/OrbitsHistory/page2.php.

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