Common Application - Essay Portion - 2nd Attempt

Due Date Unknown

James Harbour

August 18, 2020

Some students have a background, identity, interest, or talent that is so meaningful they believe their application would be incomplete without it. If this sounds like you, then please share your story.

Upon finally understanding the ingenious proof of Cantor's theorem, I once again felt that familiar sense of wonder towards the giants whose shoulders I now recklessly aspire to stand upon. Always following this moment of reverence, I experience the ineffable pleasure of rightly viewing mathematical beauty.

For background, Cantor's theorem lies in the subdomain of mathematics called Set Theory: a subject which concerns itself with the study of objects called sets. A set is a collection of objects, called elements, viewed as an object itself. Cantor's theorem asserts that, no matter how large a set is, there exists another set necessarily larger than it. The ingenuity behind this statement lies in the fact that it applies to infinitely large sets.

After furiously writing the next line of the proof in my notes, I stopped. My professor continued his exposition, but I did not continue writing. My stubborn mind refused to acknowledge the passage of time. The line did not make sense; however, that is not to say that I did not understand what the line proposed, quite the opposite, in fact. Omitting the finer details, the line involved the construction of a set with peculiar, but completely unmotivated conditions placed upon its elements. Due to this lack of motivation, I simply could not fathom the object's place in the overall proof.

The argument appeared to be a standard proof by contradiction, where arriving at an absurdity after only assuming the falsity of a statement necessarily implies the truth of said statement. Yet the construction of this object threw any familiarity with this proof

method out of the window.

But then I remembered that it was precisely this argument that began a revolution in the field of mathematics as well as philosophy. It was precisely this argument that solidified the immortality of its creator, Georg Cantor.

Realizing that such a revolutionary proof must assuredly contain fundamentally new and foreign ideas, I accepted my lack of understanding and continued following along with my professor.

As the proof neared the end, the argument finally landed upon the desired absurdity: the existence of an object which is simultaneously in and not in the previously constructed set, an obvious contradiction.

Following the argument's conclusion, the shuffling of college students towards the exit signaled the end of the lecture, but I stubbornly continued to stare at my notes. My mind refused to quit until I was certain that I understood how the strange object's appearance led to such an obvious absurdity. Scanning over each line, searching for an inkling of insight, I trudged onward. Likely thanks to Einstein, any awareness of the passage of time flew out the nonexistent window of the basement classroom. By the time I had finally grasped the idea of the proof, the room was quite barren. Noticing me looking up, my professor simply asked me if I understood. Nodding, I simply responded, "Wow."

When gazing upon the development of scientific thought, I used to only see unreachable giants as the impetus for dramatic changes. In that moment, when I emerged victorious against the gibberish in my notes, I sat upon the shoulders of a giant and realized that he was just a mortal, but his idea was immortal. It is immortal ideas such as these that ultimately go on to dramatically change history, and, in doing so, grant their

immortality to the mortals who conceived of them.

Thinking back upon this experience over and over, I eventually ascertained that I too desire to create something immortal.

The above experience