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5. "In expanding the field of knowledge we but increase the horizon of ignorance" (Henry Miller). Is this true?  
Ryan Yeh, Old Scona Academic High School

### The Horizon of Ignorance

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"In expanding the field of knowledge we but increase the horizon of ignorance" (Henry Miller). Is this true?

Henry Miller's statement suggests that as we gain knowledge, more questions are presented to us. I believe that although the word horizon suggests an unattainable distance, the phrase "horizon of ignorance" does not mean that our pursuit for truth is futile. Rather, it suggests that the knowledge we acquire guides our investigation for more knowledge. Miller asks us to ponder the nature of knowledge and its discovery. Does the acquirement of knowledge lead to more questions? The pursuit for truth yields knowledge, but also tells us how much we do not know. Several ways of knowing, including math, experimental science, and art will be used to support Miller's statement.

The Greek philosopher Socrates said, "I am the wisest man alive, for I know one thing, and that is that I know nothing."<sup>1</sup> Socrates recognized that the knowledge we possess is a small part of all the knowledge in the universe. Before last December, I had never played poker and knew nothing about the game. For me, knowledge about poker was hidden in the dark, an unfathomable concept. In fact, I naively believed that poker was a simple game with few variations. After I was introduced to the game, I acquired some basic knowledge but also began asking many questions. By knowing that I can choose to "call" or "raise", I was motivated to investigate the conditions necessary for each action. The knowledge I acquired gave me a direction for further investigation. My "horizon of ignorance" had increased because I became aware of how much I do not know about the game. Some might argue that I was aware of my ignorance before being introduced to the game. However, the term "horizon of ignorance" does not refer to blind ignorance. Just as a horizon is filled with gleams of light, this type of ignorance

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<sup>1</sup> Michael Stokes: *Apology of Socrates*, Warminster: Aris & Phillips, 1997, p. 18

means that the knower has an idea of what he is looking for. The acquirement of knowledge makes us aware of our ignorance and guides our investigation for truth.

Henry Miller's statement is applicable on a personal level but also relevant for a society. A person's quest for knowledge is limited by his mortality, but the knowledge he has acquired is passed on as human understanding. As a society, our pursuit for truth also yields more questions than answers. Math as a way of knowing is a classic example of how the more we investigate, the more we realize we are ignorant. The development of mathematical economics demonstrates this process. In ancient times, calculus was first used as a way of using limits to find areas and volumes. One of its earliest uses was by Zu Chongzhi in the 5th century AD, to find the volume of a sphere.<sup>2</sup> At this point, mathematicians only saw a few applications of this field but were aware that this concept holds potential. Their horizon of ignorance grew larger. In the 19<sup>th</sup> century, differential calculus began to be used as a way of predicting and modeling economic behavior. Although not always reliable because human behavior is multi-faceted, the use of math in economic theorems has allowed economists to form testable conjectures. Mathematicians were introduced to a field they could never have imagined. Modern economics uses not only calculus, but incorporates statistical analysis. In the 21<sup>st</sup> century, mathematical economics is considered a rapidly developing field of knowledge. Mathematical economic theories are continually refined and perfected, and more complex applications are introduced on a daily basis. The fact that mathematical investigations have expanded into new fields of knowledge is proof that our horizon of ignorance is constantly increasing. From basic calculus to differential calculus to modern economic theorems, the knowledge we acquire allows us to glimpse what we have yet to discover.

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<sup>2</sup> Helmer Aslaksen. Why Calculus? National University of Singapore.

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Science as a way of knowing justifies Miller's statement. The evolution of atomic physics, leading into quantum mechanics, is proof that we can rarely attain knowledge without more questions. English physicist John Dalton first proposed that atoms are indivisible units of matter.<sup>3</sup> However, he was unable to explain why charged objects repel and attract. His experiments gave the modern definition of the atom, but they also encouraged future scientists to come up with a more suitable model. Before Dalton, one could not fathom what makes up matter. After Dalton, we have a better idea of what matter is made of, but we also have more questions: what does an atom look like? Is an atom made of anything else? How big is an atom? We became aware of our ignorance and this awareness guided the investigation to discover the proton, neutron and electron. The attempt to locate the electron is one of the roads that led to the creation of a new branch of science, quantum mechanics.<sup>4</sup> Quantum mechanics has been used in nuclear physics, chemistry and other science disciplines. American physicist Richard Feynman states, "It is safe to say that nobody understands quantum mechanics."<sup>5</sup> This new science discipline is incredibly complex and difficult to define. However, the creation of this discipline shows our expanding "horizon of ignorance". Our investigations have allowed us to fathom some of the possibilities that lie within this new field. These investigations have led to the creation of new disciplines, proof of our ever-expanding fields of knowledge and the limits of what we have yet to discover.

Art is a way of knowing which allows us to communicate our emotions and insights. How does knowledge about art expand our horizon of ignorance? In order to answer this question, we must recognize that art, like the sciences, is a continually evolving area of

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<sup>3</sup> John Dalton and the Atomic Theory By Elizabeth Chambers Patterson

<sup>4</sup> Marvin Chester, 1987. *Primer of Quantum Mechanics*. John Wiley. ISBN 0-486-42878-8

<sup>5</sup> <http://www.bbc.co.uk/dna/h2g2/A2350216>, visited on January 5, 2009



knowledge. Some of the oldest art objects in the world: a series of tiny, drilled snail shells about 75,000yrs old, came from a South African cave.<sup>6</sup> The 18<sup>th</sup> and 19<sup>th</sup> century saw several art movements, including academic art, symbolism, impressionism and fauvism. In the 20<sup>th</sup> and 21<sup>st</sup> century, contemporary art forms, which are generally abstract and open to interpretation, appeared. The contemporary artist Mark Rothko writes, "I'm not an abstractionist. I'm not interested in the relationship of color or form or anything else. I'm interested only in expressing basic human emotions: tragedy, ecstasy, doom, and so on."<sup>7</sup> Artists are not confined by genres; rather, they seek to improve them. In the pursuit of more effective ways of communicating human emotions, art forms have evolved to encompass many genres. The arts can be expected to evolve indefinitely as we try to find new ways of artistic expression. The evolution of the arts supports Miller's statement because as artists experiment with various forms, they realize the limits of each type of expression. As new art forms are introduced, one begins to understand that many more forms are still possible. For this reason, the "horizon of ignorance" expands for the arts as well.

In almost all the ways of knowing, knowledge leads to more questions and guides people to seek more knowledge. However, might we not approach a time when there is no more knowledge to be discovered? At that point, would the "horizon of ignorance" be non-existent? This counter-argument is difficult to refute, because one would need to prove the limits of knowledge. Practically, we are not close to discovering all the knowledge in the universe. Those who argue that we can anticipate all the knowledge to be acquired must remember that the ancient Greeks who looked at the stars would not have been able to imagine landing a man on

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<sup>6</sup> Radford, Tim. "World's Oldest Jewellery Found in Cave". *Guardian Unlimited*, April 16, 2004. Retrieved on January 18, 2008.

<sup>7</sup> Chave, Anne. *Mark Rothko, 1903-1970: A Retrospective*. New Haven: Yale University Press, 1989

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the moon. Nowadays, there is knowledge that we can expect to discover, just as there is knowledge that we cannot anticipate. The evolution of various ways of knowing, the creation of new disciplines and fields, suggest that for all practical purposes, we are not close to discovering all the knowledge in the universe. As a result, our investigations will continue to yield questions and lead us to discover more.

For me, the awareness that Miller's statement holds true is comforting. Albert Einstein once said, "joy in looking and comprehending is nature's most beautiful gift."<sup>8</sup> I believe that one of the most important goals to which we should aspire is the discovery of knowledge and the application of knowledge to benefit human-kind. To recognize that our investigations lead to more questions is also to recognize that we will always have the joy of discovery.

Henry Miller's statement "in the expanding field of knowledge, we but increase our horizon of ignorance" communicates the extensive nature of knowledge. As investigations lead to knowledge, they also lead to questions. These questions guide the pursuit for more knowledge. The development of calculus opened up the discipline of mathematic economics, an area with unimaginable depth. The attempt to define a model for the atom gave rise to quantum mechanics. The evolution of various art forms suggests that there are many more forms to come. In the pursuit of truth, human beings have found that the process is endless. Knowledge we pursue opens the door to unfathomable possibilities. Each piece of new information is an accomplishment but also shows us how much we have yet to discover.

Word Count (1593)

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<sup>8</sup> Guskey, Thomas. Evaluating Professional Development. Corwin Press, 1999. Pg 121.