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Shared knowledge is defined as “the work of a group of people working together either in concert or, more likely, separated by time or geography”<sup>1</sup>. Personal knowledge, however, depends on the experiences of a particular individual, and is gained by experience, practice and personal involvement<sup>2</sup>. There are a plethora of examples that can be drawn from the natural sciences and the arts that demonstrate how shared knowledge contributes to an individual’s own understanding. However, shared knowledge in these areas is expressed and conveyed to the individual in entirely different ways through reason, perception and language.

In science, the relationship between shared knowledge of scientific theory and personal knowledge is closely interlinked, thus the knowledge question ‘how is scientific change possible?’ is important to examine. Thomas Kuhn (1922 – 1966), an American physicist and philosopher of science, developed the notion of paradigm shifts<sup>3</sup>. A paradigm shift occurs when scientists become dissatisfied with the existing paradigm and put forward a completely new perspective, which changes basic assumptions within the ruling of science. For example, there was a paradigm shift when Darwin’s theory of evolution replaced Lamarckism. Lamarck argued that if an organism changes during life in order to adapt to its

<sup>1</sup>[https://ibpublishing.ibo.org/exist/rest/app/tsm.xql?doc=d\\_0\\_tok\\_gui\\_1304\\_1\\_e&part=2&chapter=1](https://ibpublishing.ibo.org/exist/rest/app/tsm.xql?doc=d_0_tok_gui_1304_1_e&part=2&chapter=1) (last accessed 1/11/14)

<sup>2</sup>[https://ibpublishing.ibo.org/exist/rest/app/tsm.xql?doc=d\\_0\\_tok\\_gui\\_1304\\_1\\_e&part=2&chapter=1](https://ibpublishing.ibo.org/exist/rest/app/tsm.xql?doc=d_0_tok_gui_1304_1_e&part=2&chapter=1) (last accessed 1/11/14)

<sup>3</sup>[http://www.newworldencyclopedia.org/entry/Thomas\\_Samuel\\_Kuhn](http://www.newworldencyclopedia.org/entry/Thomas_Samuel_Kuhn) (last accessed 1/11/14)

environment, those changes are passed on to its offspring<sup>4</sup>. Darwin disproved Lamarck by evidencing his theory by experiment, however, Darwin did not fully understand his theory as he did not have a real understanding of genetics. Today's scientists have more extensive knowledge of genetics, and they know that the only way for traits to be passed on is through genes<sup>5</sup>. Although Darwin as an individual shaped shared knowledge in science, which in turn had the effect of shaping personal knowledge as his theory was published and ideas were spread, it was only in the twentieth century that his theory could be proved genetically. Therefore, scientific knowledge evolves constantly and paradigm shifts occur through the work of individuals shaping shared knowledge and also shared knowledge shaping individual understanding. Such shifts can also occur within art, which often contradict traditional views and definitions of art. For example, Dadaism, a form of artistic anarchy born out of disgust for the social, political and cultural values of the time<sup>6</sup>, was a movement that rejected traditional values of art. The Dadaists revolted against the senselessness of WWI, claiming that civilisation had broken down when thousands died in the trenches. My perception of WWI was influenced by a Dadaist sculpture by Raoul Hausmann, called 'Spirit of Our Time' (1920)<sup>7</sup>, which is a figurehead of a dummy that has various items attached to it, including a ruler, tape measure, number and pocket watch. With its blank eyes, the sculpture is a blind automaton that makes me believe that WWI dehumanised people and prevented creative thought. The shared values of the movement

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<sup>4</sup> [http://necsi.edu/projects/evolution/lamarck/lamarck/lamarck\\_lamarck.html](http://necsi.edu/projects/evolution/lamarck/lamarck/lamarck_lamarck.html) (last accessed 05/02/15)

<sup>5</sup> [http://necsi.edu/projects/evolution/lamarck/lamarck/lamarck\\_lamarck.html](http://necsi.edu/projects/evolution/lamarck/lamarck/lamarck_lamarck.html) (last accessed 05/02/15)

<sup>6</sup> [http://www.artyfactory.com/art\\_appreciation/art\\_movements/dadaism.htm](http://www.artyfactory.com/art_appreciation/art_movements/dadaism.htm) (last accessed 05/02/15)

<sup>7</sup> [http://www.artyfactory.com/art\\_appreciation/art\\_movements/dadaism.htm](http://www.artyfactory.com/art_appreciation/art_movements/dadaism.htm) (last accessed 05/02/15)

can have a powerful effect upon personal knowledge by challenging our understanding of reality.

While artistic movements have the ability to influence an individual's view, they do not determine appreciation of art. This raises the question: Is there a shared opinion of the definition of art, and does this shape an individual's appreciation of a work of art? The culture in which one grows up can have a profound influence upon our judgements of what distinguishes good art from bad art. For example, Victorians in Britain saw African sculpture as ugly, but just a few decades later, Edwardian audiences saw it as beautiful. This shared change in taste conveys how we can gradually come to appreciate the subtleties of an artistic tradition that is different from our own, and also that the shared opinion of a society shapes an individual's thoughts and views towards art.

Reason enables scientists to reach rational conclusions when conducting experiments, and the common shared scientific method shapes an individual's understanding in science. Francis Bacon (1561 – 1626) first advanced the idea of inductive reasoning and stressed the importance of empirical observations and experiments<sup>8</sup>. His work stated that science consisted of three stages: description (noting down facts through observation); induction (making generalisations from these observations); and testing (tests against new observations or experiments to see if the generalisation holds true)<sup>9</sup>. Therefore, this general method has shaped the way in which individual scientists conduct their research and influenced their personal knowledge.

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<sup>8</sup> <http://www.kepler.edu/home/index.php/articles/history-of-astrology/item/333-francis-bacon-the-natural-philosopher> (last accessed 19/11/14)

<sup>9</sup> <http://www.kepler.edu/home/index.php/articles/history-of-astrology/item/333-francis-bacon-the-natural-philosopher> (last accessed 19/11/14)

Bacon also argued that just because ideas have been believed for a long period of time does not mean to say that they are true, and so the validity of an individual's knowledge can be hindered by shared knowledge. Bacon claimed that the mind of a scientist had to be freed from fixed, traditional ways of thinking so that pure observation could take place, and the evidence of your eyes would provide an unsullied vision to make inductive laws<sup>10</sup>. This relates to Plato's idea of the prisoner escaping the cave where he is fed illusions and seeing reality for himself instead. For example, Galen's theory of the four humours was believed in for centuries<sup>11</sup> because it had been believed in since Roman times. Although Galen used the method of observation and inductive reasoning, his conclusions were incorrect. Thus shared knowledge can have a detrimental effect upon an individual's knowledge if the shared knowledge claim is invalid.

Since it requires great skill to paint well or to describe something accurately in words, the arts have for much of history been driven by the desire to achieve a perfect likeness. Therefore, using the arts as historical sources can positively expand an individual's knowledge of the past. For example, by reading 'Maus' by Art Spiegelman, a graphic novel focusing on a Jewish man's experiences during the holocaust, my personal knowledge and perception was shaped by giving me the impression that this event was truly horrific. It made me grasp a sense of what it was like to be a Jew under the Nazi regime by imaginatively projecting myself into the situation of the characters. However, a counterclaim would be that this impression is based upon the author's representation and

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<sup>10</sup>Logicworks Publications, *Theory of Knowledge: Natural Science*  
<http://w3.rcnuwc.no/public/theory%20of%20knowledge/Old%20ToK%20folders/Old/ToK/theory%20of%20knowledge%20guide/3.2.%20areas%20of%20knowledge-natural%20science.pdf> (last accessed 19/11/14)

<sup>11</sup><http://www.sciencemuseum.org.uk/broughttolife/themes/traditions/humours.aspx> (last accessed 19/11/14)

perspective of the holocaust, which may either exaggerate for entertainment purposes, or restrict my knowledge of the full extent of its horrors. Art, according to the Russian novelist Alexander Solzhenitsyn (1918-2008), “recreates in flesh experiences that have been lived by another man, and enables people to absorb them as if they were their own”<sup>12</sup>. Therefore, art can be extremely powerful in sharing knowledge and shaping that of the individual.

Science also uses perception to establish personal knowledge, as sense perception is fundamental in the observation process of scientific experimentation. However, expressing ideas may be done more easily in art than in science, which raises the question: Is it easier in art to shape personal knowledge than it is in science? It can be problematic in science to express shared knowledge to an individual because science is often opposed to common sense, going against the evidence of one’s eyes. For example, in developing the heliocentric system of planetary motion, Copernicus, Galileo and Kepler went against immediate visual and sensory experience because it does not look or feel as though we are spinning around at 1,000 mph, and nor does it does appear we are in the centre of the universe where some stars are bigger than Earth<sup>13</sup>. Expression of ideas in art is arguably easier because there is no right or wrong answer and there is more room for imagination. Going against this, however, it may be challenging for an individual to accept the ideas that an artist is trying to portray, making it difficult to shape an individual’s knowledge through art.

Shared knowledge in science and art shape personal knowledge through the manipulation of language. Studying literature makes us sensitive to language and the power that it has to

<sup>12</sup> Van de Lagemaat, Richard. *Theory of Knowledge for the IB Diploma*. Cambridge University Press, 26 May 2011. p.347

<sup>13</sup> Logicworks Publications, *Theory of Knowledge: Natural Science*  
<http://w3.rcnuwc.no/public/theory%20of%20knowledge/Old%20ToK%20folders/Old/ToK/theory%20of%20knowledge%20guide/3.2.%20areas%20of%20knowledge-natural%20science.pdf> (last accessed 19/11/14)

shape thought, and we may become aware of the various literary devices used by scholars in every academic discipline to shape our attitudes and persuade us of the truth. Literature also helps us to understand human nature and gives us a common vocabulary for making sense of the world. There is a tradition in writing scientific articles of using the passive rather than the active voice. For example, rather than saying “We observed” a scientific article is likely to say, “It was observed that”. This device gives the article an air of authority - as if nature itself was speaking to the reader. This by no means discredits the quality of the science that is being presented, but it does create a false conception of the nature of science because it covers over the fact that it is an essentially human and therefore fallible enterprise. Thus, language can mislead the understanding of an individual whilst contributing to their knowledge.

In conclusion, shared knowledge shapes personal in art and science through reason, perception and language. In both AOK, shared and personal knowledge can be bi-directional. An individual scientist’s experiment can influence shared knowledge, and the work of an individual artist can revolutionise movements in the art world, but shared knowledge in both areas has the ability to shape an individual’s understanding and their perception of reality.

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