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Art's Beautiful Power

Jack Fuller

Science is a system. A system that describes the natural world humanity resides in so that they can better understand the complexity of it. The goal of science is to express the truth of the world in the form of compact theories and equations based on observation and experimentation. Day by day, science is becoming more and more precise, but some people are incapable of understanding aspects of science because it describes unimaginably complex phenomena. In John Timpane's essay, "The Poetry of Science", he states, "If science explicates the surprising, complex, undreamed of truth, poetry [art] enacts the full impact of that truth on the human consciousness." Art communicates in a way science cannot. Through poetry, brush strokes, rhythm and other artistic devices, the arts connect with the human mind to translate complex topics, such as the independence and dependence of pure and applied mathematics, space phenomena, the nature of humans, or the chaos theory, in a more relatable and easy-to-understand form.

Condensing the overwhelming complexities of the world, such as space and time, into simpler definitions and equations is a way to cope with the chaos around them. Humans have been working on understanding the universe for as long as they have been around. This sense of wonder and desire to know is how science has evolved into what it is today. Alan Lightman is a scientist and writer that has explored this evolution of wonder within the human conscience. He describes science to be "another human language" which defines the natural world (Lightman, 80). Any language is difficult to master. Therefore, it makes sense that science is difficult to comprehend for people unfamiliar with it, but even a slight understanding of this language can fulfill one's desire to

understand. Alan Lightman's book, *A Sense of the Mysterious*, is a great source for those unfamiliar with science to gain some appreciation and understanding of how it works.

In *A Sense of the Mysterious*, Lightman describes the generalities of science, such as the independence and dependence contained in pure mathematics and science. Some mathematicians realize that "the powdery chalk on their blackboards is all they want of material reality," thus, to them, the world of pure mathematics exists alone: independent (Lightman, 67). A physics major may spend a large amount of time becoming familiar with the world of pure mathematics. But to be a physicist, one must be curious as to how the imaginary world of pure mathematics congeals into the real world. Their work furthers the language of the universe: science. One example of the process of application in physics is Newton's invention of Calculus "to aid his study of motions, the velocities and accelerations of pendulums and planets" (Lightman, 68). One could choose to study Calculus alone, but Newton furthered the understanding of the natural world through the use of Calculus' equations and formulas.

Though applied mathematics are used to understand some of the most complex and undreamed realities of the world, they are also used by everyone daily. For example, when children count their fingers, they are using algebra to understand their bodies. When people take shortcuts on their way to work, they are applying math into their lives for efficiency.

The reliance between pure and complex for existence is a theme that is seen in many scientific novels. It appears in *The Complete Cosmicomics*, by Italo Calvino. In the chapter, "Without Colours", two characters, Qfwfq and Ayl, argue over which is beautiful: the colorful or the colorless. Qfwfq's interest in color is a metaphor for the interest in complexity and applied mathematics, while Ayl's desperation for the colorless mirrors the need for simplicity and pure mathematics. Although, the characters are very different, the one that adores complexity falls in love

with the one that desires purity. This replicates the dependence of applied mathematics to pure mathematics.

The dependence and independence of something pure and something applied extends beyond mathematics. All pure ideas or states of being in the world are only pure because complexity exists, and vice versa. This statement proves that there is a dependence by each thing to everything else in order to exist. In the poem "The Leaves of a Dream are the Leaves of an Onion" by Arthur Sze, he expresses this dependence of all things to one another. He says that "a Galapagos turtle has nothing to do with the world of the neutrino" and states that other seemingly irrelevant things have nothing to do with each other (Sze, 130). Then he says, "No. The invention of the scissors has everything to do with the invention of the telescope" (Sze, 130). He follows this statement with more comparisons of random things. The purpose was to influence the reader to feel as though everything is connected. For example, interests may vary from person to person, as seen in the differing personalities in "Without Colours", but without these separate interests, society would lack the variety of attributes which the diversity of people fulfills. For example, a sales company requires accountants, salesmen, managers, etcetera in order to function, just as applied mathematicians require pure mathematicians to function. Art can better explain this than science due to its freedom in ways of explaining. Art can explain through a fictional story, such as *The Complete Cosmicomics*, through paintings, through music, or through poetry, such as "The Leaves of a Dream..."

Phenomena in space can be difficult to understand due to its infinite size and long history, but poetry and literature provide a key to understand the universe through the use of imagery. *The Complete Cosmicomics* is brilliantly creative and paints a realistic image of the universe through its fictional plotline of humanoid characters. This book describes many unimaginable truths that science explicates, including the big bang and the nothingness that existed before. In the chapter

"Nothing and Not Much", the main character, Qfwfq, experiences the instant the big bang occurred -- the moment the universe was created. An infinitely dense atom exploded into the universe that has expanded into what it is now. Nobody knows what this event looked like, but scientists have concluded that far more occurred in this fraction of a second than in the billions of years succeeding it. Qfwfq's imagery of this moment helps to illustrate the beauty of this moment. He says:

"to tell everything that happened in the first second of the history of the universe, I should have to put together an account so long that the whole subsequent duration of the universe... would not be enough; whereas everything that came afterwards I could polish off in five minutes" (Calvino, 377).

In the language of science, this complex topic would be incredibly difficult to picture, but through Calvino's description, any common man or woman can imagine the incredible power of the big bang.

Qfwfq speaks about a time before the bang when there was nothing: no science, no life, no light. He says that the only thing existing was "an infinitesimal pimple in the smoothness of nothing" which eventually would explode into our universe (Calvino, 76). The character has difficulty describing the nothingness that came before because, though he was there, he did not "exist". Calvino uses Qfwfq's difficulty explaining what was before to insinuate that it is impossible to know what happened before the big bang. Science can only translate truth of the world, but art has no bounds to what can be enacted. Therefore, art can describe infinite possibilities of what came before the big bang, but science cannot say anything about what came before because there are no facts. Artists play with this unknowingness and create stories based purely off the wonder of what could have been.

McNeill's poem, "Flaming Forth the Worlds", is another piece of art describing the big bang. She wrote, "one utter density, lost as a seed, but concentrated down to heaviness and potency, its weight hung in the virgin night, and outward burst, and burst again and farther, bursting still..." (McNeill, 23). She encapsulates the reader in the outward expansion of the universe while expressing the beauty of the moment through carefully chosen diction. The ability of literature to enact a moment or concept, such as the big bang, is what allows literature to spread understanding to a broader audience than science can. The reader can use the descriptions in literature as a model to think about when attempting to further understand difficult topics.

Human nature is a topic to which all humans can relate. Science describes human nature through the functionality of the human brain, hormones, the nervous system, etcetera. Human beings are extremely complex, and even though they exist as humans, they may not fully understand humanity. Much of literature is centered around mankind and their actions. Lucretius was a philosophical thinker around 50 BC. He wrote a book called *De Rerum Natura*, which expressed his observational reasoning about the universe, motion, and human nature. In his explanation of human nature, Lucretius describes mankind as applying constant effort to their evolution. For example, he says that language "must have been a collective venture, with one and another adding words and then phrases that came into common usage" (DRN, V 912-913). Although science provides a detailed explanation of how man thinks, why man acts, and what mankind is, *De Rerum Natura* goes a step further and causes the reader to reimagine the whole human development.

The focus of mankind to improve themselves is captured in *The Complete Cosmicomics*. Calvino explains that as the human timeline develops, the past is less and less comprehensible. He states, "Our destiny lay in more, more and more, and we couldn't think, even fleetingly, of less" (Calvino, 377). Because mankind has only ever known complexity, it will never be capable of even a

slight comprehension of the pure nothingness of the void prior to big bang. He even says that as we develop there is "an underlying insecurity in this excitement, a craving almost to cancel out the shadow of our so recent origins" (Calvino, 377). Through specific diction, Calvino captures the "insecurity" certain people might feel because they will never be able to understand what took place before. This ability to influence the reader's emotion can only occur in art. The enactment of a character with feelings causes a reader to feel those same feelings for the same reasons, in this case due to unknowingness.

Another scientific topic explained further through art is the chaos theory. This is the idea that the accumulation of all chaos shapes each moment of our existence. This is a major subject discussed in the play *Arcadia*, by Tom Stoppard. A character, named Valentine, compares the cooling of hot tea to the universe. As chaos continues to shape the future, heat is released and cannot be returned, thus one day it will cool. Valentine explains that when the universe cools, it will be doomed. He soon after says that "if this is how we started, perhaps it's how the next [world] will come" (Stoppard, 82). In this play, there are two different plotline threads, a present and past, that converge. The present individuals are meant to represent the "next world", born from the same chaos and being shaped by the same chaos. By using the individuals as a metaphor for the chaos theory, *Arcadia* provides multiple ways to achieve a higher level of understanding about this difficult theory. Upon understanding the chaos theory, the reader may begin to have realizations about it, such as the fact that time cannot be reversed because the heat lost cannot be returned.

This idea regarding chaos is similar to K.C. Cole's description of wind in *Mind Over Matter*. She describes Wind to be affecting everything. For example, "The universe began when the Big Bang blew space and time into being; that wind of ever-expanding space still blows, sweeping distant galaxies farther away from us, maybe even picking up speed" (Cole, 85). This mirrors the chaos

theory. Cole describes everything to be wind, just as the chaos theory describes everything to be chaos. Cole says that everything creates wind, even roast beef creates a "wind" of aroma and a glacier creates a "wind" of ice. She says, "the winds of dying stars create some of the most beautiful objects in the sky: planetary nebulae" (Cole, 84). This mirrors the idea Valentine, in *Arcadia*, suggests when he describes how all things are created from chaos, thus the next world may come from chaos, or "wind".

Both *Arcadia* and *Mind Over Matter* discuss the complicated idea that all existence occurs because of what occurred in the past. This is similar to the idea discussed earlier that all things in existence, whether complex or simple, depend on one another, but it goes a step farther by saying all things that have ever existed impact one another. Science has explained this concept in the form of the chaos theory; however, these pieces of literature make these topics easier to understand and certain people may find it more interesting to learn about the theory in the form of literature. *Arcadia* creates a story to which reader can relate to and feel the truth of the chaos theory, while *Mind Over Matter* explains this theory in a way that is easy to understand and uses imagery to create a deeper understanding.

The existence of both Science and Art is important because the combination of the two provide for a wider acceptance and understanding of the topics, such as the interdependence of all things, space phenomena, the nature of humans, or the chaos theory. Without Art, science would only impact those willing to put in the effort to study sciences. The combination of the two molds a mankind that is more knowledgeable of the natural world.

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