

Preferential States of the Dichotomy of Human Nature: Art and Science

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Abstract

It is essential that the roots of the division in western culture presented by CP Snow's Two Cultures be examined in order to view their many present day ramifications and solutions. The purpose of this paper is to explore the dichotomy of our artistic and scientific origins biologically, socially, economically, spiritually and emotionally. This will also bring into question the validity of these preferential attitudes. Is this division an empirical shared reality or more of a perceived orchestrated reality? By examining these origins and the subsequent paths leading to the contemporary state in western culture one may perhaps be able to focus on the benefits of striking a balance between the arts and sciences in our educational systems as well as in our daily lives. This reflection on our dual nature hopes to shed some light on the principals of our universal connections and solutions in our multi-layered human existence. As a visual artist and art educator, I will also illustrate this division or lack there of throughout past and contemporary art examples. The culture that Snow talks about carries itself many questions as to exactly who he is talking about. The multiplicity in our society is so diverse that it is hard to classify Snow's definition of culture. For the sake of this paper I will try to loosely target the mainstream of western culture.

A familiar eastern axiom speaks of the parts of a whole as being crucial aspects to a complete unity. It is prefaced by the prudent warning that no part is greater than their sum. If the arts and the sciences analogously are the parts to a complete scope of humanity, segmenting and elevating one over the other will fragment our perspective and render humanity's heirs unfortunately incomplete.

Introduction

All too often the necessity of the arts and creative thought is relegated a subservient role to the sciences in current western societies. Yet in many other regions across the globe, the arts hold a different more prominent and integrated role. Throughout human history the vast works of art are indicative of the intertwined nature of the arts with the sciences. The division of these two fields may have increased over time by circumstances arising out of cultural attitudes, propaganda, financial directions, and an increasingly stringent world of specialization. Science and technology are companions not adversaries with art. Both define and preserve what it means to be human as well as challenge our meaningful existence.

Many questions regarding this inquiry about the preferential states of our artistic creative mind and analytical scientific mind arise. Are we predestined to have tendencies favoring either the artistic or the scientific? Do we naturally prefer to be more of a scientist or an artist? Are we in fact nurtured or conditioned to have a preference? Is this division more perceived than actual? Who exactly is Snow directing his argument to? Is this a true dichotomy in our human nature? Or is it a more accurate assessment that we fluctuate between two extremes and we are the result of a healthy combination of our two natures.

Arts and science as a true dichotomy of human nature

A thorough investigation starts with the common terminologies engaged. Any evaluation of these two divisions, as CP Snow ¹ determines, must examine the term *dichotomy*. Oxford's American English dictionary defines the word dichotomy as the stated below:

Dichotomy: ²(n) a division or contrast between two things that are or are represented as being opposed or extremely different.

The example given along with the definition in the dictionary is “a rigid dichotomy between science and mysticism.” Are we then to believe that art is synonymous with mysticism? The arts may have elements of the mystical in some facets but certainly is not and does not mean the same as mysticism. So does this accurately describe western culture in regards to the arts and sciences? The two fields are not a true dichotomy. The danger is when beliefs become overly polarized by extremists' tendencies.

The definitions for art and science illustrate further that the two fields are not clear cut polar opposites at all.

Art ³(n): an expression or application of human creative skill and imagination, typically to a visual form such as a painting or sculpture producing works to be appreciated primarily for their beauty or emotional power.

Science ⁴(n): The intellectual and practical activity encompassing the systemic study of the structure and behavior of the physical and natural world through observation and experiment.

The terms art and science as clearly described by their definitions do not reflect a split into mutually exclusive parts, nor are they opposing entities. Plainly, they do not define one another nor are they polarities. The two fields both express humanity's need to understand and express their internal and external relationships with the universe through human perspectives. Both employ keen observations, some measure of experimentation, procedure, and are vitally integral to the survival and definition of being human. Seemingly the two differ in their specific intent and exact execution. Science serves to understand our relationship with our physical world from an empirical point of view. The methodology of the arts can be similar to many scientific

¹ C. P. Snow, *Two Cultures*. (Cambridge University Press, 1998)

² The Concise Oxford American Dictionary. (Oxford University Press. Inc. 2006)

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processes and vice-versa. Some argue that the precise order of mathematical formulas is itself a work of art and akin to the balance and order found in classical art forms. In fact many artistic endeavors require a formulistic approach with sturdy rigid structural components that are time tested through repeated experimentation similar to scientific trials that are designed to achieve a predictable outcome. Such is seen with academic paintings and the golden section or composition.

The arts allow us to express and explore beyond empirical data. If an extra-terrestrial life form were to try to grasp the meaning of the human experience, the arts would be a great choice to give a full representation of humanity. Both art and science are facets of the same unique human component of creativity. We can analytically reason out our existence as well as express it through the arts. Creativity gives reason a reason to be pursued. It offers goals to problem solving, fosters inventions, gives rise to possibilities, stimulates and challenges our life. Our creative minds led to a command of fire, inventing the wheel, computers, and medicine. It has also led to paintings to record our past and present and imagine the future. The power to create separates us from other earthly creatures. The power of human ingenuity can be viewed as the reason humanity still persisted as well as ultimately meet its own end.

Perhaps it is in the basic approach of the two fields respectively where the greatest differences lie. Since the sciences proceed with a predominant analytical approach led by facts and data exclusively with little or no room for emotional content the tendency was to marginalize anything other than scientific aspects. The arts governs above all, that creativity operates subjectively and all opinions are accepted as valid art facts. This anything goes attitude is strictly forbidden in the ordered testing world of science. Here is where much of the division can be derived. Yet science notes in fields like quantum-physics, that the rules of the physical world do not follow strict laws all the time. There are instances in the universe where one plus one does not equal two. Einstein's theory of relativity only works to a certain point in the universe. Light, time and space ultimately change at far reaches of the universe.⁵ Perfect constant scientific rationality and order does not truly exist. Even reality itself may be a fluid fragile concept that science can only partially explain. Additionally, where would science be without visuals created by artists to aid in understanding and teaching their subjects and findings? The arts has helped to give form to the concepts of science.

⁵ Stuart Chase, *What Science Is, From The Proper Study of mankind* (Harper& Brothers 1956)

So this view of the two approaches, the data only driven science and the emotionally driven arts has been taken to an extreme and thusly has created a seemingly polarized division. The bigger question is the how and why. Are we a society that is defined by our proclaimed professions, jobs, or daily practices without room for varying degrees of interests? Do we all fit into a specific category exactly and neatly? Who decides what classification or profile we belong to? Is this divide possibly orchestrated? Do we even have a choice? Have our mindsets become inflexible to change, different perceptions, and modes of thinking?

The answers are very difficult to attain. Perception is everything. Misdirection and illusion are key components as is apathy. If society is engrossed and to some degree content in a sequenced predestined routine, the masses will not clamor for a revolt. The investigation really hinges on what and how people think.

The Duality of Mankind

There are multiple layers of existence within the human construct. One can demonstrate both artistic and scientific tendencies. This duality is a constant characteristic of humanity and permeates through other areas in our lives.

The idea of dual natures is not to say we exhibit a form of schizophrenia, but rather we possess a unique capability to function multiple varied tasks through different mindsets without diminishing our core characteristics of our personality. Examples of dualities in our human condition have been illustrated throughout human history. We are both offspring and parents at the same time. Some who are educators will profess that they are students first and always. We perform multi-tasking activities constantly. If I may draw any conclusion about our human condition it is that we possess dualities and dichotomies that often make us ironic beings. Our whole being is assembled by many contradictory qualities.

Good and evil are polarities that exist as dualities and as potentials in all humans. In eastern philosophy the Ying and Yang elements exemplify this duality. Both extremes contain elements of the other striking a balance and an accord with the harmony of the universe. Both define one another yet are diametrically opposed. Allusions of light and dark forces are found in religious texts as well as in literary passages in virtually every culture. Chakra biophysical energy philosophers state that there are two major opposite life force energies found along every energy center of our spinal alignment. Most religions profess dichotomies consisting of

intangible matter (soul) and physical matter (body) nearly always in a state of conflict but combine to make us one person. Often our bodies crave what our minds or souls deem as harmful elements.

Science tells of various physical dichotomies such as positive and negative charges, as well as matter and anti-matter energy. Psychologists state that humans constantly sway between the opposing forces of fulfillment and anticipation. Another ironic situation is our upright erect ambulatory posture. This unique stance defines us in comparison to other primates but inevitably causes spinal pain. It is the ‘backbone’ to our evolution, but biologically it is unsound and places severe destructive amounts of stress on our spine. Many Christian denominations further demonstrate these ironic dual states of our being. For example many Christian doctrines claim that we are born so we may die in hopes of being reborn. Our dualities are not only concurrent but equally ironic. We are in fact full of dichotomies or forces of opposing dualities.

The relationship of the arts to the sciences cannot be analogous with these examples. The arts and sciences do not demonstrate our ironic composition of polarities. In their definitions the two are not opposites. The two are not a true dichotomy at all. For example, science often delves into many the behavioral aspects of humanity that until recently were considered liberal arts in nature.⁶ The arts also make plenty of use of scientific methods and technological tools. If anything the arts and sciences need each other and continually grow on the other’s achievements. They would be more appropriately phrased as two distinct mindsets with intertwining commonalities that can be expanded to fuller independent fields of study and processes rather than true dichotomies.

A historic overview to this divided culture

The drive for survival has prompted our brains to creatively devise methods and technologies to ensure the ongoing propagation of the species. Once that objective was realized some moments of leisure allowed this creative mind to ponder existence. In these situations, art became the language to interpret the human spirit. The big humanoid brain had this creative element that saw beyond mere survival. Consumed with the creative impulse humans were in

⁶ Stuart Chase, What Science Is, From The Proper Study of mankind (Harper& Brothers 1956)

need to articulate themselves for both expression and physical continued existence. Logically the order of priority rests with survival. Language and symbolic thought would assist in everyday communications that would enhance everyday survival. Symbolic thought would lead also to art.

Some of the earliest cave paintings by human hands are found in Lascaux, France. Here the ancient humans created images of animals on a grand scale. Generally the cave paintings are considered as having ritualistic overtones. The spiritual nature of man is evident here in prehistory, but so is technology. Technology is used in the creation of large scale work, the actual usage of pigments and its application. The only representation of a human figure is portrayed with a spear, the technological scientific tool of prehistoric man.

Over centuries of developing this godlike ability, humanity compartmentalized both tasks and people into divisions of labor, hierarchy of leadership or authority, and started to optimized people to their best abilities. Once human beings became self-aware, the recognition of time and immortality set in. This brought on a sense of urgency prompting humans to use their brief existence efficiently. In some instances this meant strictly specializing people to their best talents, or sacrificing a portion of leisure time activities such as art making in favor of more physically and economically productive endeavors. Yet still, other historic motivations for a division in a society would be for political, economic and religious control over a mass population achieved by curtailing the circulation of free creative thoughts. Such attempts were by totalitarian and communist governments, ruling religious factions, or wealthy conglomerates.

In visual artistic chronology, themes of the duality of science and art appear repeatedly. Ancient examples of the Pyramids, Stonehenge, seafaring vessels, and virtually all early human fashion and architecture demonstrate feats of science and technology as well as art. The scientific developments of making paper, pigment extraction by mining, paint application, flexible supports, musical notation, etc. have enhanced the arts. The early Christian and Medieval period witnessed art being transformed into a teaching tool as well as a spiritual translation. The European Renaissance movements perhaps were the most balanced time for the arts and sciences aspiring to reach the ideal well-rounded complete man. The following centuries would demonstrate Western European's growing obsession with the representation of the optically real world. Artists like Velazquez, and Vermeer painted with brilliant keen observations of the optically real world with the precision found in a scientific approach. The Flemish paintings between the 1400's to contemporary days often included the scientific achievements of their

countrymen. Vermeer would include cartography, which the Flemish were known for at the time in some of his masterful works. Technological devices like the *camera obscura* aided artists in capturing reality.

With the arrival of the Impressionists and photography the visual arts would change and consequently change the western art world. The Impressionist would turn away from narrative content as the prime importance of painting and focus on physical properties of light and color. Western art would embrace the logical, analytical, scientific world with open arms. The Post-Impressionists Cezanne would give modern art its manifests of structure and order. Cubists like Pablo Picasso would utilize Einstein's Theory of Relativity to depict multiple vantage points simultaneously in a single picture plane. Surrealists would explore the power of dreams, the subconscious, and the psychological aspect of human nature. The future abstraction of forms and content removed art from the relationship with recognizable representational imagery into a more cerebral process like analytical cubism or the abstract work of de Kooning, as well as turning to a purely personal reflexive spontaneous art form like the work of Jackson Pollack. Pollack's intuitive action art harkens back to the essence of the right hemisphere's intuitive creative capabilities.

The arts, however, did become introverted. In contrast, the sciences became more a part of everyday practical life. Integrated into schools, and making its way into homes through electricity, electronic appliances, the internet and medicine, science became more practical and therefore more important. This situation may have alienated the visual arts from large segments of the masses and increased the need and intimacy of science with the general population. This vastly contributed to a larger rift and the alleged dichotomy.

Physiological origins of the dual nature

This duality is physically mirrored in the human body. From an anterior and posterior view, the body lengthwise is divided in half with near symmetry. We have two ears, two eyes, two arms, two legs, etc. Incased in the skull our brain consists of two halves or hemispheres notably the right and left. The unique creative mind flows from our partitioned brain. Scientific research concludes that the two hemispheres have specific regions that perform specific tasks, thus giving us reason to believe that biologically we contain a division between the artistic and

analytical. Listed below are some functions of the brain. The ironic divisions of labor that our brain performs strangely harkens back to the ironic nature found in our dualities.

- The right side controls the left side of the body
- Conversely, the left side of the brain controls the right side of the body.
- The right side of the brain is attributed to
 - Nonverbal, visual spatial relationships, intuitive behaviors, creativity artistic behavior/tasks
- The Left side of the brain is attributed to
 - Logic, verbal, analytical behavior/tasks, mathematical skills⁷

So, are the hemispheres so different and specialized that they operate exclusive of the other? These distinct attributes are hotly debated within the scientific community. Research has also discovered that artists may have utilized more often the creative portion of their brain than people in the sciences. If the brain can be viewed similarly to a muscle then could the artists have in effect simply exercised their creativity more than others? Or is this a case where we are pre-designed genetically to have either more creative ability as opposed to having more analytical talents and thusly naturally incline one way or the other. Do we prefer to be more artistic or scientific or does our genetics choose for us? Many scientific researchers conclude that we do in fact exhibit cerebral hemisphere dominance, but are hesitant to assign it as the result of genetics or conditioning.

However, these distinctions are not as polarized as commonly believed. Interestingly enough some studies show that while the brain is active in one sphere more than another during a specific task, both sides are involved in just about all tasks.⁸ Thusly, it provokes one to ask or contemplate whether or not our brain itself operates as a true dichotomy or as a single thinking machine with specialized parts.

Betty Edwards and Drawing on the Right side of the Brain

⁷ Salley P Springer, Georg Deutsch.. *Left Brain, Right Brain: Perspectives from Cognitive Neuroscience Fifth Edition*,: W.H. Freeman Company New York 1998)

⁸ IBID

Betty Edwards's attempt to bridge the gap between supposed left and right hemisphere dominant thinkers is demonstrated in her practices found in her book "*Drawing on the Right Side of the Brain*"⁹. The following are some of her key points:

- The right side of the brain is where our ability to draw lies.
- She also states that it is the analytical, labeling left side of the brain interferes with artistic efforts. Her methods are generally designed to limit the involvement of the left side of the brain so we may utilize our natural right-side capabilities.
- One of her early drawing lessons is to copy a pencil drawing of a person with the drawing to be copied held upside-down thus limiting our analytical side to label and rationalize the image and just focus on the act of drawing.

While very little scientific research can validate her claim, the results of her work are widely well received. Perhaps she has found exercises that can specifically stimulate creativity and artistic practices, awakening abilities that many people may have underutilized or never considered. These beliefs may stem from discouraging events in one's educational rearing that led to a reduced usage of their creativity. Social and educational systems are conditioning young people to either stop or reduce the usage of their creative brain limiting their individuality, original thinking, and problem solving skills.¹⁰

In Robert Ornstein's *The Psychology of Consciousness* a point about western culture and its heavy left brain active thinking is made. He argues that westerners utilize just half of their brain's potential. He states that western mentality focuses on the rational, verbal aspects exercising the left hemisphere. Following this he contrasts the western material driven culture with that of the mentalities of the mysticisms, and religious, spiritual aspects of the eastern cultures. Ornstein states this as an ongoing situation over many generations in western culture.¹¹

Are we being conditioned?

⁹Betty Edwards. *Drawing on the Right Side of the Brain*. (New York: Jeremy P. Tarcher Inc. 1989)

¹⁰ IBID

¹¹ Robert Ornstein. *The Psychology of Consciousness*

Are we being *conditioned* into this false dichotomy intentionally? Conditioning of western culture may be a major factor to the validity of the “*Two Cultures*”. There are no shortages of reasons leading to this, yet; in my estimation, the major factor is economics. As C. P. Snow also states the Industrial Revolution and the rise of a middle class has changed the structure of western economy and henceforth, social culture. It is exemplified with social mobility, spread of literacy, and the advancement of technology with specific regards to practical living. The Enlightenment brought about a renewed respect and reverence for reason and science that was far and beyond The Renaissance. Reason and science grew to have a close relationship with the economy. Since economics governs daily life any association with bettering either the economy or daily life would naturally be elevated. As science and technology are associated with economic growth, science and technology would obviously be pushed to the forefront. Parents are continually proud of their children forging futures in science related fields.¹² The scientific and technological fields do improve the quality of life. So naturally the merit of these fields would be elevated to a higher status.

Snow also discusses such generational conditioning. He claims these divisions are being perpetuated generation after generation and the social and family constructs would encourage subsequent lineage to follow or to pursue the prestigious financially rewarding prospects of the sciences. Children would be encouraged to follow in successes of doctors, lawyers, engineers, business, etc.¹³ Funding for the arts has been severely dwindling over many past decades. More resources are being allocated toward educating young people for futures in the sciences which are the powerhouses of the western world’s economy.

This is a vicious cycle where the people in control of the economy can dictate how and where finances can be directed. In a sense the educational system is a training facility for a labor force that will contribute to the cyclical advancement of the financial regimes. There is little to steer these resources into areas like the arts that are of no interest to big business unless they are looking to enhance their image or garnish a tax relief. The school day is designed to mimic a work day. Instructions are given; students absorb and regurgitate the material, take a mid-day lunch break, go back for more instruction and then do it again tomorrow. We are breeding drones.

¹² Daniel H. Pink, *Revenge of the Right Side of the Brain*. *Weird* 13 No 2 (February)

¹³ C. P. Snow, *Two Cultures*. (Cambridge University Press, 1998)

The work days are virtually the same. There are models and systems of business and labor that have been successful in the past and are employed to keep industry going. The technological integration into the classroom and work environment has been outstanding thus insuring the next generation has a chance to compete and perpetuate the industry. But there is no room for the free thinker. The conditioning is entrenched into the fabric of the free enterprise system. Innovation is rare and if you want to try something new, you are brave and bold since the deck will be stacked against you.

Writer, Daniel H. Pink has predicted that these traditional left brain- Jobs are being lost to cheaper labor rates in Asia. What might be left for the western job seekers are the jobs that can offer right-brain inspired opportunities such as accountants with possible life planning strategies, bankers who can creatively maneuver the art of the deal¹⁴ not just fill tax forms, as well as positions for people who can provide problem solving capabilities.

The American diet is designed to not only fit this lifestyle but perpetuate this machine. Industry keeps gaining profits, people keep gaining weight. People become physically addicted to the fast foods, consume large quantities of trans-fat laden foods, become unhealthy and then turn to the sciences, particularly the health-care sciences for remedies. Pharmaceutical companies, food and dietary companies and the health care sciences are giants in the financial and political industries. It is beneficial to the economy, politics, and government that things do not change¹⁵. Social conditioning through nutrition is also abetting the conditioning of the science and art dichotomy.

Recently, New York City, arguably the United States' largest urban education system, announced that large sums of money would be allocated towards the sciences along with arithmetic and literacy. The plan proposes that more than \$30 million will be provided over then next few years towards the sciences in the public school system¹⁶. There is little or no mention of aid to the arts. With art education cutbacks, supporting the arts and art education have become largely a matter for the private sector. The public schools systems are given funds based on test scores. In order to maintain prestige and their positions, school administrators are relentlessly pushing for outstanding test scores. Therefore the schools aren't really interested in teaching at

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¹⁵ Kevin Trudeau, *Natural Cures "They" Don't Want you to Know About*, Illinois 2004)

¹⁶ New York One – Television News Company (aired in April 2007)

all, but rather interested in creating a nation of great test takers, and drones to perform a task repeatedly.

Studies show that the arts benefits cognitive abilities in education. Studies have shown that young people exposed to the arts are four times more likely to be recognized for academic achievements.¹⁷ Likewise this following statement from authors/researchers Shaw, Rauscher, Levine, Wright, Dennis and Newcomb in a publication entitled “ Music training causes long-term enhancement of preschool children’s spatial-temporal reasoning” also promotes the importance of the arts in education.

“Research made between music and intelligence concluded that music training is far greater than computer instruction in improving children’s abstract reasoning skills”¹⁸

Perception and reality

It is widely accepted that people often align themselves with a group of whom they share a common set of beliefs, or identify with, such as a religion, a political party, a sports team, etc. Allegiances without self-scrutiny contribute to the divide; however it may also be a matter of contrived social conditioning over many generations and centuries. There are splits in social classifications, but the perception and the projected perception by others aids in transforming a particular perception into a commonly accepted reality.

It has become suggested through the media, Hollywood, and other various forms of mass communication, that being an artist is a most predictable path to financial failure. If in fact these divisions exist between the artists and the scientists, it can be clearly seen among the youth. A child’s self-perception often entails identifying oneself with a certain social category generally aided by peer pressure. When the adult role models and educators are not promoting creative thought and the other children are not actively engaged in the arts it becomes an increasingly large obstacle for aspiring young people to maintain their artistic drive and often leads to private or greatly reduced artistic activity.

¹⁷ (Shirley Brice Heath,. “Living the Arts through Language and Learning: A report on Community-based Youth Organizations” Stanford University and Carnegie Foundation for the Advancement of Teaching, Americans for the arts Monograph., November 1998.)

¹⁸ (Shaw, Rauscher, Levine, Wright, Dennis and Newcomb, “ Music training causes long-term enhancement of preschool children’s spatial-temporal reasoning” Neurological Research, vol. 19 February 1997.)

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I can say as an artist, it takes some courage to be an artist especially with the negative perceptions accompanying it. Many times the young artist is an anomaly, the non-conforming different kid who thinks outside the box, or colors outside the lines. This behavior is discouraged and the cycle of thwarting creativity is perpetuated. The art making process, in general, is an emotionally charged investment that exposes the artist's vulnerabilities to the audience. Comedians, musicians, painters, writers, etc. bare their soul to the audience. American culture has long precluded itself from promoting the vulnerable sensitive personality as anything but ideal. Shielding vulnerability such as exposing one's deepest emotions is a lesson learned early in childhood. Instead the strong silent type was and to some degree still today is the ideal heroic American figure.

This emotional disconnect may be in part responsible for perpetuating the dichotomy. Being in touch with one's feelings carries negative connotations. The reserve demeanor would perceptually favor the no-nonsense approach of rational scientist or number crunching businessman. Stereotypical portrayals of western culture machismo often depict the admirable heroic figure as anyone other than artists by profession. These admirable figures are often cowboys, policemen, heroes, secret agents, businessmen, doctors, etc. It may be that the individual's emotional disposition aids in determining one's preference for either the ordered manner of scientific rationality or the emotional haphazard nature of artistic expressiveness. Artists have been portrayed as aloof, spontaneous, edgy, flaky, high-spirited, and unreliable individuals full of emotional mood swings. Often they are depicted as substance-users, social outcasts or eccentric enigmas as well as border-line psychotic nervous wrecks. These associations may also contribute to some form of subliminal social conforming. Plenty of artistic personalities throughout time, who to some degree fit this profile, have been portrayed through the media and entertainment fields. These include the mysterious genius Leonardo da Vinci, the violent Caravaggio, the alcoholic tendencies of Edgar Allen Poe, the irascible behavior of Mozart, and the countless actors, actresses and musicians of the twentieth century.

Contemporary stereotypical portals of scientists and artist project a particular sense of intelligence associated with each profession. Furthermore, the scientific community often is depicted as having extremely high "book" intelligence or rational analytical intelligence while artists are portrayed as having a mysterious misunderstood creative "artistic" intelligence level. Oddly, both groups are seemingly depicted as lacking any practical knowledge. Maybe the

division should be artists, scientists and everyone else. If we are in fact a culture divided as Snow states, the question of intelligence becomes an important issue. Snow alludes to the comparative intelligence between the groups as one root of the division. The specialized intellectual prowess of one group almost invariably alienates them from another group. A lack of understanding of the other's intellectual jargon or methodology may also contribute to this divide. Likewise questions of one group's intellectual superiority are always looming in the argument.

A recent television program attempted to evaluate the intelligence level of the artist and the scientist. With obvious controversial issues concerning the creditability of intelligence testing, the endeavor used various testing methods. Firstly, the test conducted conventional intelligence quotient examinations followed by more unconventional experimental intelligence examinations. The random contestants of scientists and artists produced some intriguing results with the unconventional intelligence examines. The overall position of the top level intelligence resulted in a tie between a quantum physicist and a dramatist/artist. Another surprising result is that both creative and scientifically classified contestants did well in fields that required scientific people to use their creative artistic abilities as well as artist to utilize their analytical rational scientific capabilities.¹⁹

The preferential states in a global perspective

Cultures, outside of western cultural influences generally do not make such hard divisions between science and art. Other issues command greater importance and dominate their lives. Much of traditional Polynesian, Native American and Sub-Saharan African Art forms focus on outward creations demonstrating their relationships with gods, ancestors, nature, their rituals of ceremony and rites of passage. In many of these cultures science and technology is just another facet of life as is art. Art isn't even viewed in the same capacity as in western cultures. It would be out of place to hang an African ritual mask or a totem pole in a gallery for those respective cultures. In many areas of the world art like science is a tool or method to be used for greater purposes. Some cultures perceive art works as being alive and must be part of the culture actively. Much of the western cultures place a heavy emphasis on material worth thus the

¹⁹Discovery Channel Television Network, Battle of the Brains (aired August 26, 2007)

galleries are obtaining art for financial transactions not ritual engagement. Some Native American tribes do not have a word for art but rather a term that describes an artist a kin to a person who accomplishes a task better than anyone else.²⁰ This difference is important in understanding that the division of art and science stems in part from their net worth. The values of the arts and sciences help dictate their place in a particular society.

In modern times, perhaps one of the more striking examples of science or technology and art functioning together would be in photography. Since the time of Aristotle, the basic principals of photo-optics have been known. During the Crusades, European warriors brought back studies of Arabian scientist's work on light and optics. Leonardo da Vinci also would expound on these principals. Eventually Europeans would devise ways of recording images transmitted by light. Artist like Johannes Vermeer employed the then photographic technological device of its day, the *camera obscura*, to aid in the creation of realistic paintings. His work in light and color would inspire a whole future movement called the Impressionists. This scientific technological breakthrough employs artistic elements to create art. The advancement of art is contingent upon technological scientific discoveries.

A current exhibit entitled "Bodies"²¹ which is a collection of cadavers that have undergone a chemical preserving process, is promoting itself as an art exhibit. This is just one more example of the merger of science and art as ongoing and concurrent. There are countless other examples of how art and science are helping to reshape and redefine their respective fields and the world.

Conclusion

The preferential states of the dichotomy of our human artistic and scientific or technological sides seemingly have physiological and emotional foundations including a certain amount of social conditioning and economic influences. Both nature and nurture seem to aid in the eventual preference of one over the other. They may differ in their intent and process but the two are investigations and expressions about humanity and its dynamic relationships. If there are any conclusions to be made it is that the arts and sciences are interrelated sharing common

²⁰ Dennis J. Spore, *Reality Through the Arts* (Prentice Hall,2004)

²¹ "Bodies " The Exhibition co-curators- John Zeller & Judy Geller

overlapping issues. The world is advancing in technology and science will continue to grow. The arts with its direct relationship to the sciences must adapt and must not be kept from the opportunities and exposure of the sciences. The solution to minimizing the divide invariably points to the integration and balancing of the two.

Perhaps the more telling tale is that western society continues to unwittingly make individuals categorize themselves or choose an identity to align oneself with especially in the current system of education. Whether or not these forces are a true split in our human nature, it is apparent that their combined capabilities make us a unique mammal and are essential to our survival. Optimistically, a balance between the two may help the individual to test the potential limits of both art and science like the genius artist and scientist Leonardo da Vinci. The current diminishing role of the arts from our schools will further fragment an already unbalanced system.

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