

Music and Science::

Readings III: part two

ASSIGNMENT::

Read the passage from Brian Greene's book on Superstring theory. Then read the paraphrase on the next page and reread the passage. Then answer the questions which follow. Failure to complete the questions adequately will result in reassignment of questions.

from The Elegant Universe - by Brian Greene*

chapter 6: Nothing but Music: The Essentials of Superstring Theory.

Music has long since provided the metaphors of choice for those puzzling over questions of cosmic concern. From the ancient Pythagorean 'music of the spheres' to the 'harmonies of nature' that have guided inquiry through the ages, we have collectively sought the song of nature in the gentle wanderings of celestial bodies and the riotous fulminations of subatomic particles. With the discovery of superstring theory, musical metaphors take on a

startling reality, for the theory suggests that the microscopic landscape is suffused with tiny strings whose vibrational patterns orchestrate the evolution of the cosmos....

Answer on separate sheet....

- 1] What is a metaphor?
- 2] What is the main metaphor for this passage? -- that is, what musical image is being used to describe Greene's visualization -- and what does this mean?
- 3] What two fields of study are discussed as being inspired by the study of music? Explain how music was a part of the beginning of these two fields of study.
- 4] What is the 'macro - world' and what musical metaphor did Pythagoras create to help explain and visualize it?

Read the passage again.

- 5] Discuss the Mozart effect vs. the possible effect of 'negative' music. Use your imagination and explain how Greene's explanation of 'superstring theory' might support your discussion. This should be at least ten sentences.
- 6] Create your own theory of the Universe using a musical metaphor. Make it as complete and imaginative as possible. Think about how a sound occurs, how a string vibrates -- or how air causes vibration across a tube to create sound, like a flute -- or how you strike a drum head to make percussion sounds, or use your voice to sing. How might this explain how the world is? Use one of the 'world music' instruments if you want.
-- At least seven sentences. Support it as well as you can -- make it sound 'scientific'...

Here is a short paper I wrote which discusses the subject of art and it's place in society. I hope it is readable for you. I usually send this off with grant applications. Take note especially of the quotes by Einstein, Eliot and Blake.

An Argument for the Arts::

In recent conversations, panel discussions and writings, I have observed a great deal of distress concerning the future of music and the arts in America. Support for the arts has eroded to a dangerous extent and false images have replaced knowledge as to the true place and importance of the arts in the scheme of society. Most young people do not even know what constitutes the arts.

“Imagination is more important than intelligence.” Albert Einstein

When Einstein said this he was referring to the nature of human evolution and his experience of complete intelligence. By ‘complete intelligence’, we refer to the cooperation of the sensory, emotive, imaginative, intellectual and intuitive functions of the human mind. This harmony of human functioning has led to humanity’s greatest achievements, in which the arts have always led and will always lead, because it is in the arts that the development of ‘complete intelligence’ occurs most directly.

“Great Art can communicate before it is understood.” T.S. Eliot

Many major scientific discoveries were preceded by movements in the arts, through which artists demonstrate 'complete human intelligence' and create symbolic languages which convey new ideas, concepts and experiences of reality before words for them have been developed. For example, ***Giotto di Bondone*** (1276-1337) was the first artist of record to understand the benefits of painting a scene as if it were viewed from a stationary point of view, organized about a horizontal and vertical axis. As a result, the ‘flat picture writing’ that had been the style for over a thousand years acquired depth. Within a generation this advance in perspective had spread to almost all artists. In this way, Giotto extended Euclid’s conception of space into art and altered Plato’s perfect forms in the service of art, making a great contribution to the science of visual perception and making possible such scientific applications as the discovery that the earth was round and the development of the ‘imaginative observer’ vital to the theories of relativity.

A hundred years before Newton and Galileo, ***Piero della Francesca*** introduced shadow into his art and experimented with the nature of light. ***Francesco Grimaldi*** proposed that light moved like waves, instead of being streams of particles as was earlier believed, thirteen years before Huygens. ***Arnold Schoenberg*** and ***Igor Stravinsky*** demonstrated the relativity of pitch and time in their work before Einstein’s theory hit home, and the first to suggest in philosophical circles that space and time were one was ***Edgar Allan Poe*** in 1846.

The examples are endless and real. In addition to these and many other scientific discoveries, the arts benefit society in the field of education in terms of the development of the

mental processes of children (it is proven, for example, that playing a musical instrument stimulates many cognitive functions of the brain), the team spirit of performing in a musical ensemble, goal setting techniques, the ability to visualize a positive future and the discipline to bring your intentions to fruition over a long period of time. The arts bring communities together and inspire personal achievement because it is primarily through the *imagination* that individual and societal evolution occurs.

“Art degraded, imagination denied.”

William Blake

The stagnant, regressive cultural state of our country is directly related to the estrangement most people feel with the arts and artists. The environment for a positive future must be created for our youth by supporting the art and artists of this country as much as possible. Symphonic institutions experiencing difficulty, for example, should not resort to becoming museums of past art, but must create the audiences of the future by performing the music of our time.

It is time for our country’s institutions to recognize the vitally important place that the arts have in the forward ‘progress’ of civilization. Otherwise, the continued reliance on intellect divorced from the imaginative, intuitive, emotive, sensory and spiritual functions, which are all vital parts of our heritage as human beings and all of which were needed for us to survive the ages, will continue to ‘degrade’ our visions for the future, our environment, our everyday lives and our spiritual, inner selves.

The Arts should be supported first, not last, by America’s institutions.