

2. Conceptualization of Scientart: *The Interaction between the Worlds of Science and Art*

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Abstract:

Scientart might be defined as an interaction between the worlds of art and science. Three types of these interactions might be considered: artistically-inclined scientific activities, science-minded artistic activities, and intertwined artistic and scientific activities.

In this conceptualization, different disciplines such as physics, metaphysics, economics, and medicine could be counted as science. Furthermore, we consider literature as art.

The artistically-inclined science can be seen in scientists leading an art program, such as what happened in the artists' program to document NASA missions. Science-minded art could be regarded in the artworks include scientific themes. These artworks might be inspired by science or inspire scientists.

An instant of intertwined artistic and scientific activities could be seen in the occult treatises describe philosophical subjects and rational issues in fictions.

Keywords:

Scientart; art; science; metaphysics; Suhrawardi

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Conceptualization of Scientart by Nadia Maftouni. Page no. 12-18

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1. Introduction: bilateral relations between art and science

Scientart refers to bilateral relations between art and science. This article essays into conceptualizing concept of scientart in three types of scientartists: artistically-inclined scientists, science-minded artists, and those equally involved in both artistic and scientific activities.

For conceptualization of “scientart”, there are two concepts we should be clear about from start: science and art. Science covers different disciplines such as physics, metaphysics, economics, and medicine. And art, in this analysis, includes literature and so many different types of art: painting, sculpture, architecture, music, poetry, theatre, film, photography, conceptual art, and printmaking.

McCleese says: “Most people think of art as paintings hanging on museum walls. However, art includes literature, sculptures, paintings, murals, and probably whatever else artists want to present as art”.¹ As Copley holds, both art and science, in spite of their divergences, are brought about by the creative process.² In this process, they have bilateral services to each other. Science may assist art with enriching artworks, as I explain later in philosophical fictions. Moreover, in some media, such as computer graphics, holography, and space art science have been applied to the creation of art.³ Art, on the other hand, can assist science with presenting scientific issues to the public as well as motivating their creativity. Many scientific improvements inspired by sci-fi.

In following sections, I try to distinguish three approaches among scientartists: artistically-inclined scientists, science-minded artists, and equally involved in both artistic and scientific activities, albeit I do not claim distinct borders between them.⁴

2. Artistically-inclined Scientists

Artistically-inclined scientists are the scientists who inclined to artists. For example, they protect artists or perform art programs.

James Webb, who directed the start-up of the NASA Art Program, says:

¹ LITR 5439 Literary & Historical Utopias UHCL 2013 final exam submission **Utopian Literature: Alluringly Gnarled Reality**, Retrieved from: <http://coursesite.uhcl.edu/HSH/Whitec/LITR/5439utopia/models/finals/f2013/f13E2McCleese.htm>

² Copely (1987, p. 213)

³ Garfield (1989b, pp. 62-64)

⁴ It is mentioned in *SciArt Center Community*: “Whether you're a science-minded artist or an artistically-inclined scientist (or both!), for our SciArt membership you will be added to our exclusive mailing list...” (<http://www.sciartcenter.org> 5/12/2015)

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*"Important events can be interpreted by artists to provide unique insight into significant aspects of our history-making advances into space. An artistic record of this nation's program of space exploration will have great value for future generations and may make a significant contribution to the history of American art."*⁵

3. Science-minded Artists

A science-minded artist can be used to refer to artists inspired by scientific issues or those inspire scientists.

For instance, there are scientific issues in theater⁶, fiction⁷, or poetry⁸.

As I mentioned earlier, science includes, in this concept, all academic disciplines from humanities and social sciences to natural sciences. And art includes literature, music, painting etc.

3.1. Artists inspired by science

In some cases, science is front and centre and artists are following it. In other words, scientists are inspiring artists to produce quasi-scientific artworks.

Joyce Yamade describes inspiring by science:

*"Science is the lens through which I understand the world, particularly paleontology and evolutionary biology. The writer who most significantly shaped my view of life was Stephen Jay Gould, whose essays I greatly miss. Often without conscious intent, my paintings reflect natural history and frequently contain oblique references to whatever I am reading"*⁹

The NASA Art Program produced a collection of more than 2,000 artworks in an effort to present NASA's cutting-edge research to the public in a way more accessible than complex scientific reports.

Artists from many different disciplines and backgrounds chronicled NASA's missions.

Quasi-scientific arts could be seen in every movie on Netflix, in the 1950s, their rockets had fins.¹⁰ And in that era, the V2 rocket shaped was the rocket in every sci-fi story told.

⁵ Webb, International Space Hall of Fame: New Mexico Museum of Space History: Inductee Profile of James Webb, 4/12/ 2015

⁶ Grünzweig (2012, pp. 61-132)

⁷ Grünzweig (2012, pp. 133-154)

⁸ Grünzweig (2012, pp. 155-182)

⁹ SciArt Center . "Un-Natural Nature" Retrieved from: <https://www.sciartcenter.org/un-natural-nature-virtual-exhibit.html>

¹⁰ Maftouni, N. (2017). Ibn Tufail as a SciArtist in the Treatise ofHayy Ibn Yaqzan. Philosophical InvestigationsVol. 11/ No. 21/ Fall & Winter 2017 Retrieved from http://philosophy.tabrizu.ac.ir/article_7081_6fa251af7a46569130e3c7983ca7fe7a.pdf

As Tyson put it, *"Our presence in space is affecting not only the engineers and the mathematicians and the scientists, it's affecting the creative dimension of that we call culture."*¹¹

Steve Miller's mixed media can be regarded as a quasi-scientific artwork.

He says: *"This work is a product of research at the Large Hadron Collider at CERN, Switzerland. The text is from the chalkboards of the Theory Group at CERN with the background images taken inside the tunnels and detectors of the Large Hadron Collider."*¹²

Another example can be seen in *Art Meets Science* exhibits.¹³

In Washington University's Hope Center for Neurological Disorders, Michael Eastman, a contemporary photographic artist, transformed scientific images into abstract works of art.¹⁴ Furthermore, the MDI Biological Laboratory's fifth annual *Art Meets Science* exhibit featured science-inspired work by artists.

Some of artists inspired by science focus attention on nature and the natural world¹⁵, the nature of gravity, environmental science, climate change, and geomorphology¹⁶, biology, evolution, neurobiology and applied mathematics, quantum physics, and energy¹⁷.

As an example for metaphysics, one on SciArt Center says about their collage:

*"My artwork is map collage that offers the viewer a combination of imaginary landscapes with mystical, biblical, scientific and ecological themes. The visual description of a three-dimensional world on a flat plane is conjoined with the depiction of the metaphysical."*¹⁸

Buntaine, regarding herself as a science-based artist, limited sciart to this sort of sciart.¹⁹ "It has only been for the past few decades, however, that artists have turned their creative gaze towards the sciences as their sole source of artistic information, inspiration, and conceptualization."²⁰

¹¹ "The headlines that were writ large over that era had built into them the fact that innovation created those headlines. Innovation brought to you by an ambitious community of scientists, technologists, engineers and mathematicians." Neil DeGrasse Tyson, Space as Culture, 28th National Space Symposium, 18/4/2012

¹² SciArt Center . "Un-Natural Nature" Retrieved from: <https://www.sciartcenter.org/un-natural-nature-virtual-exhibit.html>

¹³ New Scientist. Richard Tyrone Jones. Retrieved from: <https://www.newscientist.com/blogs/culturelab/2010/05/art-meets-science-aesthetics-politics-and-metaphysics.html>

¹⁴ The Hope Center <https://hopecenter.wustl.edu/?p=7912>

¹⁵ SciArt Center . "Un-Natural Nature" Retrieved from: <https://www.sciartcenter.org/un-natural-nature-virtual-exhibit.html>

¹⁶ Julia Buntaine, Founder of SciArt Center in America & Editor-in-Chief, <http://www.sciartinamerica.com>

¹⁷ SciArt Center . "Un-Natural Nature" Retrieved from: <https://www.sciartcenter.org/un-natural-nature-virtual-exhibit.html>

¹⁸ Anna Fine Foer, "The New Unconscious" <http://www.sciartcenter.org/the-new-unconscious.html>

¹⁹ She says science-based art has a strong presence in the UK and Berlin contemporary art scenes, but the SciArt community in the United States is barely established and SciArt remains scattered in America.

²⁰ Julia Buntaine, About <http://www.sciartinamerica.com/about.html>

3.2. Artists inspire scientists

Sometimes, artists captivate and inspire scientists. Jules Verne's *Twenty Thousand Leagues Under the Sea* could be counted as a quasi-scientific artwork which fascinated American inventor Simon Lake, Known as the father of the modern submarine.

Igor Sikorsky, the inventor of the modern helicopter, was inspired by a Verne book, *Clipper of the Clouds*. "Anything that one man can imagine, another man can make real." Sikorsky often quoted from Verne.

Robert H. Goddard, who built the first liquid-fueled rocket²¹, became captivated with spaceflight after reading an 1898 newspaper serialization of H.G. Wells' classic novel about a Martian invasion, *War of the Worlds*, and the concept of interplanetary flight gripped his imagination.

In 1914, H.G. Wells published a novel, *The World Set Free*, imagining the emergence of artificial atomic energy by 1933, followed by a devastating world war and the eventual emergence of a peaceful global government.²² Physicist Leo Szilard was inspired to solve the problem of creating a nuclear chain reaction when reading the novel.

In the 1930s and '40s, Edward Elmer Smith with his "*Lensmen*" novels chronicled the adventures of a futuristic Galactic Patrol. Sci-fi editor James W. Campbell wrote to Smith that the Directrix, a command ship featured in his series, had inspired a US naval officer to introduce the concept of combat information centres aboard warships.²³

There are many inventions like the internet, organ transplants, the tablet computer, smart watches, voice-controlled robots, Credit cards, Chess-playing computers, and Mobile phones were inspired by stories by the likes Jules Verne, Mary Shelley, Mark Twain and Arthur C Clarke.

4. Scientartists Involving both Artistic and Scientific Approaches

Some artworks are equally involving both artistic and scientific aspects. As an example, *The Hellstrom Chronicle*, an American film released in 1971, commingling elements of documentary and science fiction to present a gripping satirical depiction of the Darwinian struggle for survival between humans and insects.²⁴

In the field of metaphysics, some authors describe philosophical issues with stories like *Alive Son of*

²¹ Dr. Robert H. Goddard, American Rocketry Pioneer, It is difficult to say what is impossible, for the dream of yesterday is the hope of today and the reality of tomorrow.—Dr. Robert Hutchings Goddard from : https://www.nasa.gov/centers/goddard/about/history/dr_goddard.html

²² Just make stuff. Ten Inventions Inspired by Science Fiction. from <https://www.justmakestuff.org/uncategorized/ten-inventions-inspired-by-science-fiction/>

²³ Mark Strauss (2012). *Ten Inventions Inspired by Science Fiction*. Retrieved from: <https://www.smithsonianmag.com/science-nature/ten-inventions-inspired-by-science-fiction-128080674/?no-ist%20%2024/12/2015>

²⁴ The Hellstrom Chronicle (1971) The Hellstrom Chronicle is an American film released in 1971 which combines elements of documentary and science fiction to present a gripping depiction of the Darwinian struggle for survival between humans and insects. From: <https://www.youtube.com/playlist?list=PL1B32852440A9A973>

*Awake*²⁵ and dramas like *"Rattlesnake"*²⁶, and *"Intuition"*²⁷. They are philosopher as well as artist.

Suhrawardi (1154-1191), known as the founder of the illumination school, do this way in his ten symbolic treatises: "A Tale of Occidental Exile", "On the Reality of Love", "The Red Intellect", "The Simurgh's Shrill Cry", "The Sound of Gabriel's Wing", "A Day with a Group of Sufis", "On the State of Childhood", "The Language of the Ants", "The Towers", "The Treatise of the Birds".²⁸

For instance, the Avicennian philosophical psychology, including the five internal and the five external senses,²⁹ is allegorized in "The Towers", "A Tale of Occidental Exile", "The Simurgh's Shrill Cry", "The Red Intellect", and "On the Reality of Love". Ten towers, ten graves, ten flyers, ten wardens, five chambers and five gates are symbols for ten senses, respectively.

The allegory of ten towers is seen in a treatise on "The Towers".³⁰

The first five towers refer to the five external senses or five traditionally recognized methods of perception: sight, sound, touch, smell, and taste.

The five internal senses are explained by analogy with the second five towers, which for Reichert undertake these activities: the first of them corresponds to the sensorium,³¹ the second to the representative imagination, the third to the estimative capacity of the brain, the ninth (the fourth interior sense) to the active imagination (in the Ishraqi and Avicennian sense) and the tenth (the fifth interior sense) to the function of memory.³²

Suhrawardi uses many other allegories in his writings such as the allegory of the Ptolemaic system of heavenly spheres versus ten intellects in "The Sound of Gabriel's Wing".³³

5. Conclusion

We face three different kinds of connection between science and art, called sciart: artistically-inclined science, science-minded art and sciart with intertwined artistic and scientific approaches.

Artistically-inclined scientists are scientist inclined to artists, like James Webb who directed the NASA

²⁵ Ibn Tophail (1996)

²⁶ See Maftouni (2015, pp. 174-204)

²⁷ See Nouri (2000, pp. 169-201)

²⁸ Suhrawardi (1999)

²⁹ Copeland and Struck (2010, pp.91-92)

³⁰ This treatise, otherwise known as "al-Kalimāt al-Dhawqīya" and "The Risālat al-Abrāj", is controversial. Walbridge says of it: "Its authenticity has been questioned by some modern scholars (See: Pourjavady N. Mas'ala-yi Intisāb-i Risālat al-Abrāj ba Shaykh-i Ishrāq // idem. Ishrāq wa 'Irfān: Maqāla-hā wa Naqd-hā. Tehran: Markaz-i Nashr-i Dānishgāhī, 1380/2001. P. 95–113). However, the manuscripts seem to consistently attribute it to Suhrawardi, so I see no justification for questioning its authenticity. At any rate, Mušannifak thought it was Suhrawardi's." (2011, p.)

³¹ A sensorium (plural: sensoria) is the sum of an organism's perception, the "seat of sensation" where it experiences and interprets the environments within which it lives. (See: "Sensorium." *Oxford English Dictionary*.)

³² Reichert (2014, p. 108)

³³ Suhrawardi (1999, p. 11); See: Copeland and Struck (2010, pp.91-92).

Art Program. The science-minded artwork could be inspired by science, such as the collection of more than 2,000 artworks in NASA Art Program, or could inspire scientists like Jules Verne's books and Edward Elmer Smith's novels. An instant of intertwined artistic and scientific activities could be seen in the occult treatises describe philosophical subjects and rational issues in fictions.

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