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## Merging Science and Art: The Bigger Picture

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# Merging Science and Art: The Bigger Picture

## Abstract

**It has been stated that artists comprehend and chronicle the completeness of the visible world (Wallach & Bret, 1987), defining Art as the creative expression of knowledge about the visual world. But to what extent does that awareness extend into a scientific appreciation of the world? The acronym STEAM is an abbreviation of Science, Technology, Electronics, Arts and Mathematics. Weaving interactions between Science and Art, have been shown by Clarke and Button (Clarke & Button, 2011), to intensify interconnections between nature, with Landscape, and ultimately with sustainability.**

## Author/Artist Bio

Natasha E. A. Hall is an Artist & PhD research student at Universidad de Les Illes Balears, España. I would like to thank the following: Sara Kapadia for the encouragement; The Royal Academy Library for access to their resources, and specifically the guided tour by the very knowledgeable Richard Goodenough, and the related talk and creative workshop with the artist Paul Brandford; The British Library, and the expertise of the research assistant Jeremy Joseph Nagel; Science Reading Room, 2nd Floor. I would also like to thank my supervisor Catalina Canterellas, and the research facilities of the University of the Balearic Islands (UIB). Finally, I would like to thank my family and friends for supporting and inspiring my research. Please see [www.natasha-hall.com](http://www.natasha-hall.com) and my email is [art@natasha-hall.com](mailto:art@natasha-hall.com)

## Keywords

STEAM, Landscape, Dimensions, Place-scapes, Geographical Position, Paintings

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## **Merging Science and Art: The Bigger Picture**

Natasha Hall

### **Introduction**

It has been stated that artists comprehend and chronicle the completeness of the visible world (Wallach & Bret, 1987), defining Art as the creative expression of knowledge about the visual world. But to what extent does that awareness extend into a scientific appreciation of the world? The acronym STEAM is an abbreviation of Science, Technology, Electronics, Arts and Mathematics. Weaving interactions between Science and Art, have been shown by Clarke and Button (Clarke & Button, 2011), to intensify interconnections between nature, with Landscape, and ultimately with sustainability. Science has given a contemporary dimension to Landscape by inviting artists to focus on the macro, the micro and the virtually imperceptible (Wilson, 2010). Trans-disciplinary collaborations are a natural consequence, with creative thinking beneficial to the development of Science, and artists more than capable of expanding their knowledge and creative expression into the realm of the scientific (Foster & Lorimer, 2007).

Hawkins, describes how the study of Art can contribute to the development of Geographical themes, and positions Landscape as having a foundational role in the domain between Art and Geography, (Hawkins, 2011). Landscape can be defined as the expression of unity with geographical space as perceived by every one of the senses (Bunkse, 2007). Casey (2002) explains how whilst the Landscape painter may record a landscape in the manner of a geographer <sup>1</sup>, the process of Landscape painting transcends scientific, geological and geographical reality of the earth's surface<sup>2</sup>. An excellent paper by Crouch and Toogood (1999), explores the expression of geographical knowledge in the abstract paintings of Peter

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<sup>1</sup> Casey (2002) p 286, rephrasing a quote by Von Humbolt, .A. (1845) 'Landscape painting in its influence on the study of Nature', *Cosmos*, Vol 1. p94.)

<sup>2</sup> *Ibid*, p 267.

Lanyon, and can be seen as a great introduction to the realm of Geography and Art. The study very much focused on how Lanyon glided above, walked and even crawled through the land, to experience and then express a multidimensional depiction of Landscape. Lanyon said *“I paint the weather and high places where solids and fluids meet. The junction of sea a cliff, wind and cliff, the human body and places all contribute to this concern”* (Lanyon, 1993, p.293). The layering of information resulted in a painting appearing abstract whilst being geographically linked to place.

### **Place-scapes**

The Science and Art themes of STEAM can be explored in the recent work of David Hockney<sup>3</sup>, which conveys the experience of the light, wide-open space (Barringer et al, 2011) that inspired him when he moved to California (Hockney, 2006). Infinite spaces can be split into further places<sup>4</sup>, and Casey describes how landscape is constituted by locations (Casey, 2002) and those locations continue with nothing containing or constraining them (Casey, 2009). Essentially the boundaries between one place and another can be described as porous,<sup>5</sup> but geographically defined:

*“The Grand Canyon is qualified by properties that are regional in a geological sense (the presence of arroyos, colored sandstone rock layering, certain effects of seasonal weather), so the place of the Grand Canyon in my memory of it occupies a region of my psyche...that place is not one kind of thing: it can be psychical as well as physical, and doubtless also cultural and historical and social”* (Casey, 2009, p.333).

Over one hundred years ago, artists such as Thomas Moran, depicted the Grand Canyon<sup>6</sup> by utilizing a 360-degree panorama to envelope the viewer in the vast Landscape. The mathematical rules of perspective were skillfully employed within the artwork to alter

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<sup>3</sup> David Hockney RA: A Bigger Picture, 21st January - 9th April 2012, Royal Academy of Arts, London.

<sup>4</sup> Casey (2009), p 350, quotes from Heidegger, M. (1962) Being and Time, Harper, NY, p138.

<sup>5</sup> *Ibid*, p345.

<sup>6</sup> Barringer *et al* (2011), Fig 25, p46, Reproduction of Thomas Moran (1893-1901), ‘The Grand Canyon of the Yellowstone’, Oil on Canvas, 245 x 428 cm, Smithsonian American Art Museum, Washington DC.

the viewpoint as experienced by the viewer. This makes a connection with the Science, Arts and Mathematics aspects of STEAM within an appreciation of traditional landscape painting.

The recent paintings of the Grand Canyon by David Hockney can be shown to further cultivate the connection to STEAM topics, ultimately expressing an even bigger experience of landscape. A Closer Grand Canyon<sup>7</sup> is a fantastic painting, a huge and extensive panorama consisting of sixty identically sized canvases, overflowing with visual details, geographical information and vibrant color. In the foreground are detailed studies of the endemic vegetation and cacti, which on the left are simply denoted by dashes of differing shades of green to represent their growth on each level in the stratified Yellowstone. Down in the valley a striking red predominates and is accentuated with the specific use of green and purple, enhancing the energy and vibrancy of the vista. One really feels as if one is looking down vertiginously, an effect which is enhanced by the hanging of the painting with eye height just above the center. The artwork was based on Hockney's panoramic photomontages of the 1980s consisting of multiple photographs, individual place-scapes, (Casey, 2009), constructed into an artwork depicting the immense Landscape. Some photomontages were loyal to the interlinking of geographical features and the continuity of the horizon, at the expense of the photographs overlapping and forming an arc of around 150 degrees<sup>8</sup>. Other photomontages maintained the rigid grid format of the photograph, with a random and disconnected horizon as the result<sup>9</sup>.

Instead of focusing on the distant horizon, as in a single photograph, they explore the concept of reversing perspective, so the multiple images reposition the viewer as integral to a pulsating pictorial space. Characteristic of the ancient Chinese scrolls, and experience itself

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<sup>7</sup> *Ibid*, Fig 13, p 88-89. Reproduction of David Hockney (1998) 'A closer Grand Canyon', Oil on sixty canvases 207 x 744.2 cm. Louisiana Museum of Modern art, Humlebaek, Denmark. Acquired with funding from the A.P. Moeller and Chastine Mc-Kinney Moeller Foundation

<sup>8</sup> Barringer *et al* (2011), Fig. 9, p80-81. Hockney (1982) 'Grand Canyon Looking North', Sept. 1982, photocollage, 114.3 x 252.7 cm.

<sup>9</sup> *I* Barringer *et al* (2011), Fig 10, p82-83. Hockney (1982) 'Grand Canyon with ledge', Arizona, Oct. 1982, collage #2, made May 1968. Photocollage, 113 x 322.6cm, Courtesy of the artist

(Tuchman and Baron, 1998), a moving focus is achieved (Hockney, 2006). The artwork is essentially multidisciplinary in nature and firmly rooted within the realm of STEAM: from the Technology of its capture; electronics enabling the Art of expression; the Mathematics of perspective merging with the Science of perception.

The painting 'A closer Grand Canyon', explores this trans-disciplinary approach further, by managing to skillfully mix the two approaches. The artwork remains loyal to the interlinking of geographical features and the horizon, whilst being restrained within the self-defined grid format of the canvas. By patching together fragmented perspectives denoting individual places, the Landscape is allowed to expand beyond the boundaries of each individual canvas, merging the infinite space surrounding each place-scape, encouraging a more complete experience of Landscape.

Hockney is an artist inspired by the possibilities of Technology, who has been shown to merge the topics of STEAM within his creative process. His recent Yosemite series of iPad paintings were completed with such momentum, that they were a last minute and somewhat surprise addition to the exhibition<sup>10</sup>. Hockney himself is quoted as saying; *The iPad is becoming a fantastic tool for me...I have done about 65 already. What is really good about it is its speed. No other medium using colour is as fast. You can get things down very fast, meaning you can capture quick lightening effects like nothing else.*<sup>11</sup> As a result of the contemporary, real-time, immediacy of the process, I propose that Hockney is very much an artist of the moment, reflecting the reality of immediate international communication (Foresta, 1991).

## Conclusion

It can be concluded that Art and Science interact with reference to Landscape, on the historic and the contemporary timescale. The appreciation, analysis and expression of

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<sup>10</sup> Barringer *et al* (2011), fig 123, p255. Hockney (2011) 'Yosemite II', October 16th 2011, iPad drawing mounted on six sheets of paper, mounted on six sheets of Diabond, 365.8 x 274.3cm, within

<sup>11</sup> *Ibid*, p37

Landscape are of immediate relevance to the distinct disciplines of Art, Science and Geography, and to the wider multidisciplinary context of STEAM. By appreciating the Contemporary Landscapes of Hockney, and contemplating the trans-disciplinary connections of their creation, we can be reminded that Landscape is temporal (Bender 2002). As Hockney's recent landscapes are devoid of humans, could they be described as referencing a time after the departure of the human species? One thing is for certain, his Landscapes enable a viewer to travel through the vastness of geologic time, and potentially forward into a glimpse of tomorrow. Hockney, amongst other contemporary artists, has been described as being on the threshold of the future, "*connected to something greater than themselves and art: the world, peace, the human spirit, democracy or the universe*" (Karlholm, 2009, p728). Therefore I envisage that the interactions facilitated by STEAM will encourage greater innovation to realize a sustainable society in the future.

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