The Way I See the Stars: Fibre Art Inspired by Astrobiology

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Abstract
Throughout my life I have studied edges, borderlines, signs determining inside and outside, insider and outsider, seeking to understand the differences – or similarities – between scientific and artistic ways of appreciating life. In 2005 I had a special opportunity to follow the lectures of the Vatican summer school of astrobiology, and expand my understanding of the origin and limiting factors of life. Inspired by this, I made the strongly hairy, three-dimensional, black felt *Dark Matter* and *Extraterrestrial* art works, expressing something between known and foreign, visible and hidden, combining male and female and general mammalian features. These works were exhibited in Gerald R. Ford Museum, Grand Rapids, Michigan, USA, 2006. I continued reading my notes about the inspiring lectures by Lunine *et al*., resulting in making a series of fibre artworks called *Lecture Notes* and, finally, a series of twenty works about the origin and limitations of life. This exhibition, *The way I see the Stars*, felt inspired by astrobiology and has been shown in Castel Gandolfo, Rome, Italy and in Kaarina, Finland. All the works have been made using fibre techniques.

Introduction

The blue of the sky has never been a neutral background for life. It has initiated biological evolution and carried human interpretations about the limits of the possible. It possesses, even today, cultural and religious reflections, not only on the dimensions, but also on time, beyond human-programmed, computerized measurements and simulations. Although always above us, the sky occupies a wider than everyday niche in our mental menus, and the stars may lead the eye to see beyond man-made lights.

A functional system may only exist if the living and dynamic borders have been defined. This is valid in all forms and aspects of life, from the tiniest microbe to communities and cosmos. As an outer border, we need the dynamically fixed map of the stars to define, not only our physical existence, but also our worldview: where to accommodate our nearest, dynamic niche. We all share the ideas of relative individual

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freedom, ideas of relative equality, and equally fear to be totally alone. In the expanding cosmos we disguise our fears in scientific expedition, artistic study and religious behavior. We may consider ourselves developed humans, in a technical sense, but at the level of physiology and brain function we are as we were, when daily escaping better predators.

The bio-chemical phenomenon called life here on planet Earth is based on water and reactions between oxygen, carbon, hydrogen, nitrogen, sulphur and phosphorus. This definition carries a scientific burden to find some corresponding phenomenon upon other planets, as well. Five years ago, astrobiology was even more bounded by those elements than today, when arsenic is known to be able to substitute for phosphorus in the metabolism of GFAJ-1-bacterium 1.[1]

As a base for the artistic work on the limiting factors of life, I attended the lectures of astrobiology organized by The Vatican Observatory during the summer of 2005. The interpretation of scientific lectures has been consciously modulated by the artistic process and by understanding the phenomenon of life via my earlier scientific work in reproduction physiology, gene and embryo technology.

Materials and methods

In an artwork, the individual artistic process, medium, technique and context may carry part of the expression in the same way as, in science, the personal orientation, theoretical background, materials and methods used inherently carry expression in the results. Only subjective interpretation of a work of art gives the human experience of art, or turns the measurement into results, which then are combined and connected into scientific understanding and theory.

For these works, felt was selected as the basic carrier of expression for three reasons. Firstly, felting means that the individual fibres of wool, originating from living animals, bind together as a firm organic structure. In brains, the nerve cell network of axons and dendrites forms the biological basis of subjective interpretation and all our intellectual properties. Secondly, wool carries a strong 'healthy country-life' and craft context: emotion-bound interpretations, pointing to individual subjectivity. The use of material that has not been used only in

[1] Felisa Wolfe-Simon, Jodi Switzer Blum, Thomas R. Kulp, Gwyneth W. Gordon, Shelley E. Hoeft, Jennifer Pett-Ridge, John F. Stolz, Samuel M. Webb, Peter K. Weber, Paul C. W. Davies, Ariel D. Anbar and Ronald S. Oremland, 'A Bacterium That Can Grow by Using Arsenic Instead of Phosphorus', *Science*, Vol. 1132, No. 6034 (2 Dec 2010): pp. 1163-66, doi:10.1126/science.1197258.

an artistic context was selected to enhance the substance-bound liberty to commute between biology, astronomy and visual art. Thirdly, wool combined with felting by hand may not be ruled in finest detail. The sheep-ecosystem enhances a totally different expression if our closest star has been directly affecting it twenty-four hours per day than if it has been restricted to a man-made niche. Life and art make slippery escapes, leaving us alone with more and more detailed definitions.

Lecture notes

Heavy, factory-made grey felt (a massive amount of information has been produced and squeezed into theories around the definitions of the origin of life) was partly cut, leaving one or more edges ‘hanging’ to indicate the conclusion. In light of our present understanding, little information may be regarded as ‘known’ (Figure 1).

Figure 1. Lecture notes 1-4

Burdened by views that were almost overwhelming in the lack of my theoretical understanding of astronomy, I read through my original, written lecture notes, gradually transcribed them into visual signs by cutting, painting, stitching, drawing and scratching to form the basic understanding for the further works.

Today's astronomy uses computer science and produces eye-catching images. It was tempting but meaningless to use this approach, to remain at this level in bioart. *On the Origin of Life* (Figure 2, detail) represents a type of decorative approach.

Figure 2. *On the Origin of Life*, detail

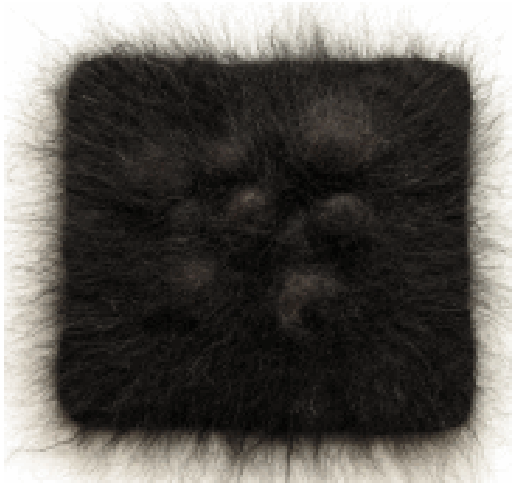

Figure 3. *Dark Matter*

Dark Matter (Figure 3) is an expression of astronomical dark matter in fibre art, in relation to the foraging behaviour of the horses of the universe (Figure 4).

Figure 4. About Foraging Behaviour of the Horses of the Universe

Hypothesis – observations

When going through my written lecture notes, reading basic astronomy in the dim light of bioart, I headed to the Tate Modern, London, UK, to experience Mark Rothko's Seagram Murals. Only in front of these paintings did I understand my earlier inconceivable notes about astrobiology/developmental biology/art in a more convergent way. Impressed by the breathtaking power of Rothko's work, and considering the way that theories are formed in the experimental sciences, I made a series of 'Development of Hypothesis', shown here in Figures 5 to 8.

Figure 5. Hypothesis

Figure 6. Obvious Calculation

Figure 7. Abnormal Reaction of the Blue under the Red

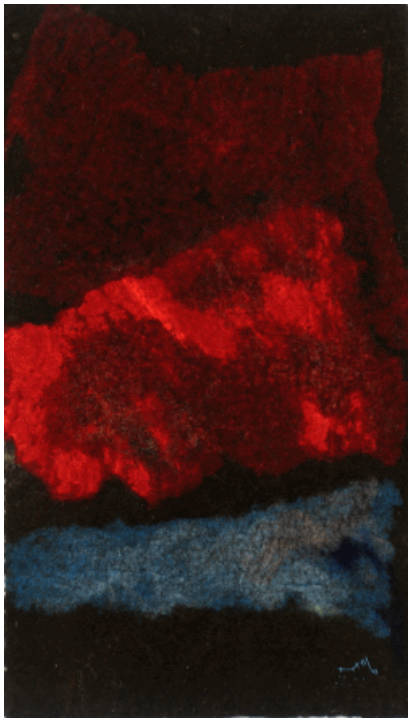

Figure 8. Observed Data and Red and Blue Spectrum

Conclusion

The theories around the prerequisites for life on other planets and the way I see the stars, also, as possible niches of living matter, are summarized in hairy and grey *Extraterrestrial* (Figure 9).

Figure 9. *Extraterrestrial*

It is the only three-dimensional approach in this context. The container-like features refer to the possibility to communicate with the environment, to be open to exchange, to take and hold something. The edges are slightly turned inside to define the common but individual. Reproduction, or some feature of self-replication, is included in the definitions of life. Instead of mythological horses as in Figure 4, it is expressed by tail or penis and animal–like features. The colour expression selected for the other works to indicate oxygen-carbon-hydrogen-based forms of life is not valid for the concluding work, thus leaving the likely possibility of other types of biocodes open. Life may not be just theoretical, and only the colour gray has enough space for it.