

Chapter 62

The Earth Sciences and Creative Practice: Exploring Boundaries between Digital and Material Culture

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ABSTRACT

Artists who engage with the earth sciences have been able to explore all kinds of information about the natural environment, including information about the atmosphere, extremes of physical formations across immense dimensions of time and space, and increasingly ‘invisible’ realms of materials at the nanoscale. This is a rich area for identifying the relationship between digital and material cultures as many artists working with this subject are crossing boundaries and testing out the liminal spaces between the virtual and the real. After an overview of theoretical links between visualisation and geology, mineralogy and crystallography, this chapter explores four themes: (1) environment and experience, (2) code and pattern, (3) co-creation and participation, and (4) mining heritage.

INTRODUCTION

Within current creative practice, artists engage with the earth sciences for inspiration and as a source of information about the natural environment. This rich and varied source of data, which is increasingly in digital format, includes information on many aspects of our material world: from the conditions of the atmosphere to physical forma-

tions; from small scale to gigantic formations; extremes of heat and cold; and the interaction of all these in time and space. Additionally, the models, visualisations, and explanations of these phenomena by scientists can include aesthetic characteristics that are appreciated by a wider audience than immediate scientific peers.

For digital environments, the discussion is most often centred on visualisation, which includes the relationship between an image and objects with a material or physical existence and also between

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images and mental constructs. These constructs and models can be directly observable or become visible through an instrument or device. Visual characteristics can also be translated from a non-visual state into constructed data, as a 'conceptual' translation.

With digital environments becoming more common in everyday life there is often slippage between the values attributed to the 'natural' or analogue and virtual spaces. This can happen where there is slippage between the virtual and the real, or symbol and matter; or even where there is a reversal of values. As Bruno Latour has noted: "How did we succeed in having the whole of philosophy reduced to a choice between two meaninglessnesses: the real but meaningless matter and the meaningful but unreal symbol?" (Latour, 2008, p. 36).

Instead of accepting, or even creating, binary oppositions this chapter will examine how virtual and material spaces are not oppositional but connected and communicated through creative practice for the earth sciences. Often artists deliberately play with the unfixed boundaries between the virtual and the real. The slippage or reversal, noted by Latour, is intentional and becomes, for the viewer as well as the artist, an intriguing and rewarding aesthetic and emotional experience. Using examples related to the earth sciences, this chapter will discuss the ways in which creative works demonstrate the movement of ideas and concepts to and from the physical to the digital. Many of the works that can be chosen to examine a relationship with, and a response to, the field of earth sciences also demonstrate a strong sense of awareness of the importance of a 'sense of place,' referring to the values associated with cultural memory and the construction of heritage. These values are aligned with place but facilitated by digital technologies. This makes the resulting slippage culturally rich. In addition, any interpretation of these creative works must also include a study of the construction of 'texts' and within this, whether this is intentionally 'authored' by the

artist, or is the result of audience participation. This chapter will therefore investigate distinctions between what is presented in an artifact, and what might be constructed by the audience.

In this chapter, examples of creative practice that takes us from the digital to the physical, or vice versa, will be considered where they make specific reference to mineralogy, crystallography, geology, studies of rock formations and technologies supporting mining activities and resource industries. This includes works that are engaged with related environmental, social, and cultural issues in addition to intrinsic interest in the expression of formal and aesthetic qualities.

In dealing with relationships between the virtual and the real world, it is becoming increasingly difficult to categorise artifacts and environments in one camp or the other. In many cases, digital technologies have replaced traditional analogue production and have provided us with new artifacts, products, and services. These have often included a new kind of feedback loop or allow interactivity between the artifact and the user. Alternatively, a service or product can have hidden differences, in its 'internal' workings, but many of its practical qualities can remain unchanged. It is possible to view television or photography in this way. There may be changes in resolution and delivery, including the ability to choose what to watch at a certain times with digital broadcasting, but programmes are still consumed as time-based linear events. Photographs may be digitally processed, and we may be taking more pictures, but they are still attributed with aesthetic and practical values for recording events and memories that are similar to those found in photographs produced with 'traditional' (wet process) film and a mechanical camera. We can choose to celebrate the new, or continue to amend old practices. This chapter explores the transition points between the digital and the real and particularly how we attribute value and significance to those transitional contexts. This account will mainly deal with examples that are hybrid digital/real but includes the entirely digital

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