(PhD Dissertation)

Aesthetic informational systems

Towards an ontology of computer-generated artefacts in art

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Abstract

Computer-generated aesthetic artefacts and the technology employed to create them have brought serious challenges for art scholarship. How should they be understood, described and categorised in relationship to non-computational artworks, and how current technological developments are affecting aesthetic practices and our understanding of art in general are two of the most pressing questions in this field. In order to address them, this dissertation proposes an ontological account that characterises computer-generated artefacts as aesthetic informational systems. The analysis here presented is based on insights provided by contemporary **philosophy of technology** and by **philosophy of information**. This gives access to a wider understanding of information technology that palliates the epistemic shortcomings of media studies. By analysing the tools and the 'stuff' that make computer-generated aesthetic artefacts, rather than interpreting their contents and discourse, this dissertation aims to further our understanding of their nature. Ultimately this might help to elucidate if the analogue vs. digital dichotomy remains pertinent.

Introduction

Over the last decades information technologies (ITs), and computational technology in particular, have deeply transformed everything we do and how we do it. As computers rapidly became the indispensable tools they are today, every discipline saw its epistemic frameworks and ontological commitments irreversibly changed . Art is no exception. ITs have significantly expanded the horizons of aesthetic practices beyond traditional audiovisual representation (e.g., through augmentation, data visualisation, haptics, procedurality, etc.), allowing practitioners to generate previously unthinkable 'hybrid' artefacts, and transcend the limits of physical mediums. These shifts have nonetheless brought difficult challenges for art scholarship. On the one hand, hybridisation has called into question the adequacy of the fine arts system as a means of classification, along with the very concept of the 'medium'. On the other hand, widespread embrace of computational technology has forced art scholars to engage knowledge, tools and practices that the humanities had traditionally considered exclusive of engineering and science.

Traditionally wary of these fields, art scholarship has for a long time outsourced its views on technology to media studies. Born out of the need to understand the social and cultural impact of twentieth century mass communication systems, media theory certainly contributed for our understanding of this type of (electric) information technologies. As computers began to incorporate all the functions of previously distinct 'media' (text, audio, images) most theorists attempted to critically engage the 'new technology' and its products in more or less the same terms as they always had. They focused on the contents of computer-generated artefacts, that is, on their formal aspects and discourse, and claimed the 'new media' (Manovich 2002) was but a 'remediation' (see Bolter and Grusin 2000) of the 'old' one. Nonetheless, other —more pragmatic— theorists began to recognise the need to take the technical aspects of the 'new media' seriously, in particular the history and idiosyncrasies of *software* (see Manovich 2013). For this, they claim, is undoubtedly the new medium of aesthetic practices, and it is by understanding its workings that we will comprehend the ultimate nature of computer-generated aesthetic artefacts.

Main Objectives

To further our understanding of the *nature* of computer-generated aesthetic artefacts, and of the impact and role of information technology (in particular computational technology) in contemporary aesthetic practices.

- Developing an ontological account of computer-generated aesthetic artefacts; that is, showing how they may be described and categorised, and —therefore— understand how they relate to non-computational artworks.
- Further our understanding of how information technology will continue to affect aesthetic practices and our conception of art in the near future.
- Elucidate whether the analogue vs. digital dichotomy remains pertinent and a useful notion for understanding the relationship between computer-generated and non-computer-generated aesthetic artefacts.
- Contribute to a deeper understanding of information technology in the context of aesthetic creation, than the one offered by most accounts belonging to the media studies tradition.

Methods: a pragmatic approach

The methodology followed by this dissertation may be considered unorthodox for a project within art scholarship. To begin with —and unlike most contemporary research dealing with information technologies and art, its conceptual framework is not (entirely) informed by media theory. Rather, it follows what may be deemed a *pragmatically-oriented philosophical approach*. This means that instead of focusing on various (examples of) computer-generated artefacts and analysing their formal features and discursive *content* in search for patterns hinting at a potential interpretative model, it analyses the *tools* used to produce them: computers. The main reasons for choosing this 'indirect' approach are the following:

- The hybrid and constantly evolving nature of the languages and styles present in computer-generated aesthetic artefacts makes it difficult to develop a consistent taxonomy to categorise them.
- A core belief informing this dissertation is the idea that practical (technical) knowledge is not secondary to theoretical knowledge —as the humanities, either tacitly or openly, traditionally assume it to be— but equal, if not greater, in importance. Therefore, it assumes that truly *knowing* something implies actual knowledge of how that something is made.
- Both media theorists and art scholars tend to take for granted that, despite its nebulous nature, 'media' is an adequate and sufficient concept to describe information technology. This dissertation calls into question this assumption and argues recent developments in philosophy provide alternative means to clarify, enrich, and update our understanding of technology.

The methodology draws most of its core insights from two recently developed fields of philosophy: contemporary philosophy of technology, in particular a 'style' (Ihde 2015) called *postphenomenology*; and philosophy of information.

Postphenomenology

Postphenomenology might be described as a 'hybrid phenomenology' (Ihde 2009); a pragmatically-oriented philosophical style that deals with how current developments in technology and science may be experienced. It provides a historical and practice-oriented contextualisation and interpretation of technology that contrasts the often teleological and monolithic accounts provided by early media theory.

Philosophy of information

Along with providing a thorough account of the history, importance and meanings of *information*, as well as a means to characterise information technology, philosopher Luciano Floridi's philosophy of information (1999; 2007; 2009; 2010; 2011; 2013) offers (a) an ontological framework: *Informational Structural Realism*; and (b) an interpretative model: the *Method of Layers of Abstraction*. The first one provides the basis to show why artworks may be deemed informational systems and why the purported ontological distinction between analogue and digital artworks may be overcome. The second one offers a framework for developing the three 'portraits' (the analyses at three levels of abstraction) of computational technology that represent the core of this research project.

Summary of discussion

The dissertation is divided into 7 chapters:

- **Chapter 1** outlines the major changes brought by information technology and computational technology, with particular emphasis on their epistemological consequences as well as their impact on art scholarship. After reading this chapter the reader should be acquainted with the reasons why art scholarship is being forced to reformulate its attitude towards technology.
- **Chapter 2** traces the origins of our understanding of technology and provides an overview of the various ways in which it has been described. This chapter offers the reader a summary of the main epistemological discussions informing how technology is thought about in current philosophy.
- **Chapter 3** is the 'methodological' section, it contrasts the aforementioned methodology with media studies; it provides the reader with the vocabulary and framework that will be used throughout the analysis.
- **Chapter 4** offers the first of three 'portraits': the *computer as an informational machine*. To do so it provides the reader with a thorough discussion on the notion of information as seen through the eyes of contemporary philosophy and science.
- **Chapter 5** presents the second portrait: the *computer as a 'media' machine*. It discusses the evolution of computational technology and software from specialised appliances to general purpose tools and its adoption as the quintessential tool for generating audiovisual artefacts.
- **Chapter 6** is the final portrait: the *computer as a modelling machine*. This chapter presents an analytical synthesis of the two previous portraits. It develops a characterisation of computational technology as the ultimate pragmatic tool and what are the practical and epistemological consequences of this fact.
- **Chapter 7** synthesises all the ideas presented in the previous chapters in order to argue why computer-generated artefacts may be ultimately regarded as informational systems, and how this characterisation contributes to overcome some of the most problematic issues for current art scholarship, in particular the ontological dissonance between analogue and digital aesthetic artefacts.

Conclusions

- Rather than building makeshift taxonomies based on shifting formal or discursive features in order to classify computer-generated aesthetic artefacts, art scholars could focus on comprehending the nature of their true common denominator: the tools used to produce them.
- Given that at the most fundamental level computers are information modelling machines, computer generated aesthetic artefacts may be adequately described as *informational systems*.
- Granting the validity of an informational ontology opens the door to the possibility of describing non computer-generated (or 'analogue') artefacts *also* as informational systems. This represents a powerful argument against sustaining the analogue vs. digital dichotomy as an ontological necessity, and instead seeing it as the consequence of the level of abstraction through which a given aesthetic artefact is analysed.
- Finally, this dissertation is but one example of the powerful conceptual tools contemporary philosophy offers to address ongoing technological changes.
- This shows why stepping a little outside the box of media theory might be more than beneficial for furthering art scholarship's understanding of information technology and how it is transforming aesthetic practices.

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Acknowledgements

This dissertation is being tutored by Professor **Vítor dos Reis** (Faculty of Fine Arts, University of Lisbon) and co-tutored by Professor **Miguel Carvalhais** (Faculty of Fine Arts, University of Porto).