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CULTURES

DIGITAL VISION

AND THE ECOLOGICAL AESTHETIC
(1968–2018)

LISA FITZGERALD

BLOOMSBURY

Digital Vision and the Ecological Aesthetic (1968–2018)

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LONDON • NEW YORK • OXFORD • NEW DELHI • SYDNEY

BLOOMSBURY ACADEMIC
Bloomsbury Publishing Plc
50 Bedford Square, London, WC1B 3DP, UK
1385 Broadway, New York, NY 10018, USA

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First published in Great Britain 2021

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A catalogue record for this book is available from the British Library.

A catalog record for this book is available from the Library of Congress.

ISBN: HB: 978-1-3500-5183-6
ePDF: 978-1-3500-5184-3
eBook: 978-1-3500-5185-0

Series: Environmental Cultures

Typeset by Deanta Global Publishing Services, Chennai, India

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Acknowledgements

This book would not have been possible without the academic support of the Rachel Carson Center, LMU Munich, and the ongoing friendships that have emerged from my time there. I would also like to thank the directors of the European Summer School on Interspecies Relationality, Andre Krebber, Mieke Roscher, Margo De Mello and Kenneth Shapiro, for giving early career scholars such as myself, the opportunity to have guidance and feedback on our research. The mentorship of Professor Anne Goarzin (Université Rennes 2) has been invaluable to me during my postdoctoral time, and I want to thank her for her ongoing friendship in these critical years. A version of Chapter 5, 'Black Gold: Digital-Simulated Environments and the Material Aesthetics of Oil', was published in *Transformations: Journal of Media, Culture & Technology* in 2018. Likewise, a section of Chapter 2 was published in *Représentations dans le Monde Anglophone* with the title 'Google Street View: Digital Mapping, Glitching and Social Documentary' in 2019. I would like to thank the artists who have allowed me to use images of their work in the publication and finally, my family whose support is, thankfully, unconditional.

Introduction

Technology, relationality and the eco-digital aesthetic

An oscillon, as determined in Ben Laposky's series of images (Figure 1), is a phenomenon that is organic and generative. The wave-like vibrating material Laposky chose as a subject for his series fluctuates somewhere between a spontaneous and mechanical expression of vitality. The process of oscillation is the chaotic and exuberant burst of life and the force behind Laposky's sequence of photographs which has proved to be one of the founding images of computational art. The stark series comprise forms that were unrecognizable as organic, yet seem to evoke atomic particles or constructions that had been, in the pre-mechanical age, undetectable to the human eye. The form drifts against an opaque, black backdrop. An eternally floating globule detached from the cavernous space behind it. It is unrecognizable as an organic form even though there is a vigour and a vitality in the assemblage that suggests that it could be living. It is both primitive and futuristic beckoning us forward into a realm of microscopic discoveries of strange creatures, yet recognizing that those subatomic life forms have always existed below the surface of human awareness.

The tool Laposky used to create the series was a cathode ray oscilloscope, an electronic machine that translates signal voltages into wave patterns that were then captured using still, colour or black and white, photography. Laposky showed the photographs, entitled *Electronic Abstractions*, throughout the United States in the 1950s, and the exhibition marked out the use of computer mechanics in the arts as an imminent and innovative extension of human creativity, one that integrated the technology that was increasingly decentering human exceptionalism and foregrounding the mediated experience of artistic representation. Laposky noted of the reception that 'Objections are sometimes made that this and other kinds of computer art are "machine art" – cold, impersonal, even inhuman' (1976: 22). Yet Laposky saw computational art

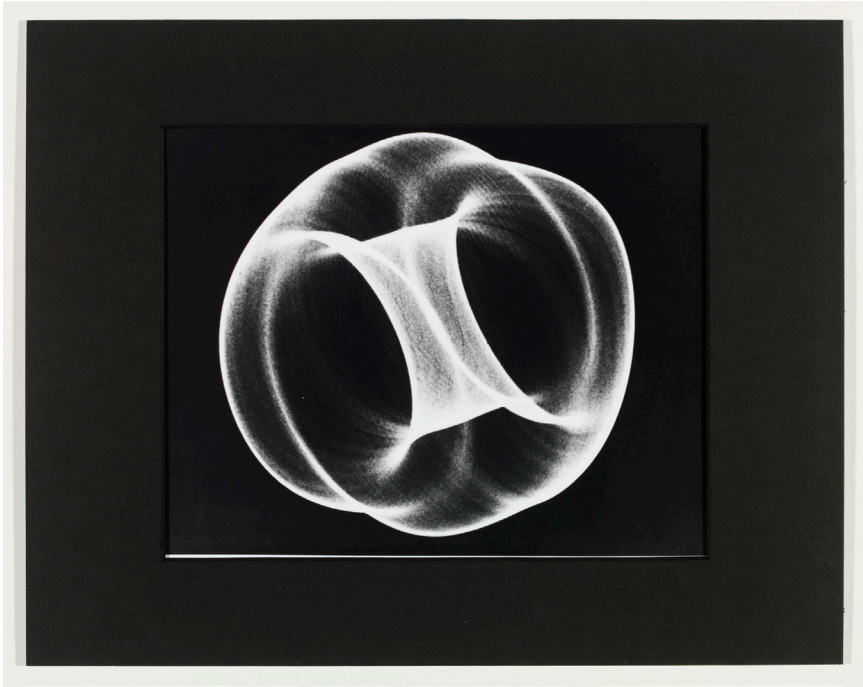


Figure 1 Ben Laposky, *Oscillon 40* (1952). © Victoria and Albert Museum, London. Permission to publish given by Sanford Museum and Planetarium, Cherokee, IA, USA.

as determined by human interposition in the same ways that conventional forms of art practice were, as he continued, ‘it is obvious that the machines or instruments that form them are the products of imagination and planning, and at some previous initial point, the work of human hands If the computer is to produce art, it seems to me that the ability for it to do so must be programmed into it’ (1976: 22). The subject of the series, oscillation, is a natural process that, in Laposky’s work, represents the mediated force that is the affective engagement between the subject and the object. Laposky achieved this while pursuing an aesthetic program of human-led, or framed, reasoning. The analogue circuits he conceived and photographed formed a relational pattern that captured the intersection between the natural, ecological world and computation. This is relationality as representation: where individual entities (human and other-than-human nature included) see themselves as emerging from, and engaging with, their environments.

This relational and environmental aesthetic is the subject matter of what is essentially a book about visibility, ecology and computation. These three

components are read through the lens of relational subjectivity: that is, that the subject is situated within its environment, and is aware, and appreciative of that co-concurrence. Visual images draw us into their environment in the same way and can have an affective engagement with the observer. Rosi Braidotti has pointed out that 'Subjectivity is not restricted to bound individuals, but is rather a co-operative trans-species effort' (2019: 33). What emerges is always in relation. Braidotti describes a process that 'takes place transversally, in between nature/technology; male/female; black/white; local/global; present/past – in assemblages that flow across and displace the binaries' (2019: 33). The answer, according to Braidotti, to the polarizing ideologies of humanist versus anti-humanist belief systems is the alternative to both humanism and anti-humanism: posthumanism. Specifically, post-anthropocentric posthumanism that avoids the sentimentality of humanistic values. Central to this post-anthropocentric posthuman discourse is the cyborg: 'the dominant social and cultural formations that are active throughout the social fabric' (2013: 90). In *The Posthuman* she argues for a vitalist view of the 'technologically bio-mediated other' (2013: 91). This is the argument for the automaton; what Deleuze and Guattari have termed 'becoming machine'. But can creative robotics depict the natural world any differently by removing certain human elements? The images that Laposky created, these hazy white cell-like structures, are a form generated from a relational movement (what this book terms an 'eco-digital aesthetic'). In the following chapters, I will consider instances where artists have represented the interchange between ecology and computation that triggers, in the observer, the perception of immersion: of the dissolution of the divisionary boundaries and an affirmation of the relationality that unites in a multi-sensory (and multi-entity) reality that is the experience of true ecological transversality.

Over fifty years have elapsed since two seminal exhibitions – *Cybernetic Serendipity: The Computer and the Arts* at the Institute of Contemporary Arts (ICA) London and *The Machine as Seen at the End of the Mechanical Age* at the Museum of Modern Art (MOMA) – established computational art as a significant (but certainly not ubiquitous) cultural practice. That year, 1968, heralded an approach that combined digital technology with a discipline that inherently favoured handmade craftsmanship and the artist's hand over randomly generated computational patterns. The notion of randomness is a key component of computational art and one that is also apparent

in the discontinuities and ruptures that serve as a part of the perception of relationality, a process-driven phenomenon that favours chaos over coherence. When there is no underlying narrative driving the creation of a piece of art, the effect can be disquieting for the observer. There has been the expression of chance in other artistic developments: Dada, for example, and the process-based and performative art movements that emerged in the mid to late 1960s. But to allow that element of haphazardness to be administered by a computer program, and in doing so, remove the generative (human) determinism was innovative. Challenging the contours of human, other-than-human and technological agency produced a digital aesthetic that resisted the conventional humanist depictions and framing of the visual arts. The nexus of individualism that had habitually shaped art historically was undermined by the progressive undertakings of early computational art.

In the interceding years since that auspicious start for the genre of computer-generated art, it seems the world has become entranced by the omniscience of digital technology, and yet a residual hostility remains for an art practice that appears to be the antithesis of the material world of painting and sculpture. Art forms that revel in the tactile relationship individuals have with their surroundings still hold true, albeit with more of a futuristic sheen. The argument seems to be a perpetual one concerning the character of legitimate art and what kind of environment it produces for the viewer. The liveliness of an artwork is a fundamental part of its character. And not just in the damaged fetishistic materiality of Niki de Saint Phalle's shooting painting or Anselm Kiefer's haunted landscapes. There are dynamic agents in the act of art-making and un-making: oils, watercolours and glues all congeal and acidify to modify the tones, shadows and lines on the surface of a canvas. Creating a work of art is an ongoing entanglement with matter (be it through materials employed or the randomness built into the system of creation) that evolves over time. Art-making that relies on the indiscriminate variety of process-based art challenges the intentionality of human agency. Art is as much about the process and those involved in that process as the individual creating the artwork. Materiality is a foundational part of the domain of the palpable world of physical experience. Some criticism of media art is that it cannot access that substantiality: the material reciprocity evident in the haptic relations between the self and the environment. Programmer artists build their work using code and by processes that are mechanistic.

Within this framework of materiality, computer-generated art is regularly disregarded as lacking the essential substance that conventional art practice provides.

The focus of this publication is on countering that premise with an exploration of, and argument for, an eco-digital aesthetic: an ethos supporting the notion that the substance of life in its murky exuberance affects all creative processes and art cannot be seen in isolation but as a concurrent becoming, unfolding with the rest of our cultural and material worlds. This is a study of the relations between actors, a process-relational model in concurrence with Adrian Ivakhiv's *Ecologies of the Moving Image: Cinema, Affect, Nature* (2013). Ivakhiv's framework follows on from the 'processual ontology suggested by Whitehead, Deleuze, Bergson, and others, and take[s] the universe to be fundamentally active and communicative – experience all the way down – then it is precisely this mental ecology that is central to things' (35). This is an analysis that endorses the universe as relational and argues that how we perceive objects is always ecological in essence. As Ivakhiv writes, 'Perceptual ecologies are the interrelations that arise in the zone between things, the space that Maurice Merleau-Ponty described as the fleshy, interpenetrating *chiasmus* of self and world' (35; emphasis in original). This is recognition that is fundamentally based on cooperation and the acknowledgement that process-rationality is the circulatory system by which we interpret cultural artefacts.

One issue that the eco art or ecological art movement grapples with is the high-minded ideology behind the materialist co-emergence of human and other-than-human animal (and material) artistic practices: a techno-utopian materialism. In facilitating an analysis of process-relationality (along with multispecies aesthetics and animal/machine hybridity) in computational and media art, I intend to establish the parameters of the affective qualities inherent in digital technology that maintain a dynamic interrelationship between art object and viewer. It is within the framework of media art that mediated relationship between entities can be examined in detail. Ivakhiv expands on this premise throughout *Ecologies of the Moving Image* where he argues that the 'digital is bringing an entirely new image sensibility upon us. The interconnectedness of the digital media world is creating a new geography; it is geomorphing a technologically mediated world' (28). He defines geomorphism as the ability to take on 'the form of a seemingly stable material-like world that is there, given for agents like us to act within' (ix). In his study, Ivakhiv delivers

a process-relational model for media analysis that in the case of his project applies to cinema but can also (as he outlines in the afterword of *Ecologies*) apply to other forms of moving image such as media art. His process-relational model provides a comprehensive framework for moving image analysis and is a helpful tool for understanding the wider implications of and for media art during the course of this book.

Ivakhiv's afterword summarizes his vision of digital technology as heralding a unique formation for image/world processing. The dynamic of the moving image to apprehend the world around it in the form of representation, but likewise to be, within itself, world-making and evocative of the webbed relations in which it is steeped. Mostly, in *Ecologies of the Moving Image*, Ivakhiv describes film that takes the viewer on a journey that is 'singular and bounded' (328). Those films constitute the cinematic encounter with an 'expanding circumference' where an ever-growing number of films shift the parameters of the experience (328). But for Ivakhiv, the advancements in digital technology permits a new type of world-making to emerge in the broader category of the moving image as the 'growth of interactive media, from multi-user video games to increasingly lifelike virtual worlds, has opened up the viewing experience to a radical reorganisation in the midst of its very flow' (329). Moving image has transcended the restrictions that analogue film imposed and has stepped into a digital future, one that considers the material embeddedness of moving image and endeavours to pursue a more comprehensive framing for film by incorporating its production and reception.

There is a correlation between moving image and media art that recognizes the flux inherent in relational processes. Building on the point that Lev Manovich makes in *The Language of New Media* that 'cinematic ways of seeing the world of structuring time, of narrating a story, of linking one experience to the next, have become the basic means by which computer users access and interact with all cultural data', the ensuing interpretation of media art is one that addresses the favouring of the narrative in cultural appreciation (2001: 78–9). The narrative-driven, linear, cinematic experience has become the ubiquitous model for reading cultural objects. Through digital technology, cinematic conventions have been reborn with increasing intricacy, one that mirrors the natural world. Although in many respects digital technology allows moving image to shift away from environmental and bodily reality, it too opens up the process to multiple and effortless viewpoints (with camera

phones, for example) which, in Ivakhiv's words, 'bring us, at the same time, much closer to reality and much further away from it than cinema ever could' (331). In this post-cinema and digital world, the computational tools that we have created offer us a new sense of our reality: an eco-digital rendering of the world we engage with and are very much a part of.

With terms emerging in recent environmental humanities discourse such as enmeshment, entanglement and the web, there is a tacit acknowledgement that the bodies we inhabit are inseparable from the environment. In the field of media art, this embeddedness is built on an already pervasive understanding of the mediated experience. Digital technology has enabled the recognition of the relational dynamics between bodies and their interaction with the enveloping space to have an impact on the welfare, both positive and negative, of ecological systems. Questions such as how bodily matter is represented and what we can extract from the entanglements of body and environment are pertinent given the untenable (and disproportionate) impact that human communities have on their environs. These informational systems in media theory have spurred Jussi Parikka to note that the emphasis on the materiality of networks we see emerging in materialist theory (which now comes under the rubric of new materialism) has already been embedded in the discipline of media studies: 'New materialism is already present in the way technical media transmits and processes "culture", and engages in its own version of the continuum of *natureculture* (to use Donna Haraway's term) or in this case, *medianatures*' (2012: 95–6; emphasis in original). This systemic materiality that transmits and processes human culture (*medianatures*, as Parikka puts it) is a means by which digital aesthetics can challenge the ideological underpinning of much of the assumed immateriality of media art. The mediatized character of computer-generated art might have bought it into initial conflict with the historical perceptions of nature aesthetics, but a reappraisal of the art form in the last fifty years will underscore the belief that a mediatized artistic process is both the only way we know art and the only way we know nature.

Perhaps digital or cyberculture instils in us a sense of community action: a pervasive and seeping amalgamation of advance technologies such as robotics and artificial intelligence (AI) into a unique group of biotechnological creatures with its own cultural, aesthetic and social histories. One of the central concerns of this study is how digital culture, which accounts in many

ways for new trans-disciplinary modes of arts production, contributes to a more ecological understanding of the virtual world. Culture is a contested term and ascribed with universalizing qualities that conflate the many complex factors inherent in different social and geographical groupings. The material turn (perhaps because of its ontological flatness) has underscored the risks of inferring a value-free and utopian digital future. How these different spaces are negotiated is essential to how we respond to the profoundly real dangers that some non-mediated, as in material, environments now discover themselves. By examining the intersection between media art and nature aesthetics this book goes to the heart of the emerging evaluation of digital cultural history. Both art and nature aesthetics are concerned with the value of experience for the beholder. This study addresses three areas of enquiry: the relationship between digital culture and nature, the representation of nature in media art and the traditional separation of virtuality and materiality. This is an interdisciplinary project in the environmental humanities, spanning environmental history, media art practice and art history, to understand how the aesthetics of other-than-human nature reflects a pattern already established in art-historical discourse and how this pattern can be found in media art. Aesthetics acting as cultural representations of the natural world inform current attitudes to environmental issues. Art functions in the same manner to open up new channels for imagining the world (or reaffirm older models). It provides an opportunity to imagine how a different world operates and often can provide a sounding board for considering original ways to solve ecological issues.

Nature as depicted using digital technology

It is worth reminding ourselves what a contentious term 'nature' is. If we are to stick with nature as the untouched or pristine wilderness, then its importance in digital culture is negligible. Ivakhiv outlined the various cultural translations of other-than-human nature, including interestingly 'a cybernetic system or data bank of circulating information' (2013: 77). They are, he argues, 'best considered *co-productions* of human imagination, material practice, and the world's interaction with us' (2013: 77; emphasis in original). Nature as an absolute was challenged when other-than-human nature began to suffer the

consequences of human actions as Bruno Latour argues in *We Have Never Been Modern*,

So long as Nature was remote and under control, it still vaguely resembled the constitutional pole of tradition, and science could be seen as a mere intermediary to uncover it. Nature seemed to be held in reserve, transcendent, inexhaustible, distant enough. (1993: 50)

It has a history with flux and change being an integral part of that process. Although Latour later argued that ‘the great Pan is dead,’ Nature has persevered, most predominantly in aesthetics (2004: 25).

The very act of existence means that our actions shape the environment, as author of *No Impact Man* Colin Beavan has pointed out after attempting to live a zero-waste lifestyle: ‘No one can live without making *some* environmental impact. Even breathing creates carbon dioxide. You can turn your own lights out but, residing in a culture that provides street lighting means you still have an impact’ (2009: 22; emphasis in original). The evidence seems to suggest the inevitability, given the human population and exorbitant consumption, of impact on the other-than-human world. But as it is in addressing nature as this binary other that this tension arises, there is an opportunity to see the other-than-human world as a part of an ongoing relationship that defies concrete categorization. Jeffrey Jerome Cohen has written that although nature is a ‘difficult word,’ we can understand it in the following manner:

If nature, refracted through the geological, is understood as interfactual (knowledge arises within mediated spaces), transcorporeal (a phenomenon of bodily crossings and ontological hybridities), transmaterial (forces and things that may at times be utterly indifferent to *Homo sapiens* but not to other nonhumans, with whom a multitude of relationships are composed), our ethical connectedness to the nonhuman world would become more tangible. (12)

Although it is the more difficult path to follow, the focus should be on refusing easy categories and maintaining an understanding of the entanglement of human and environmental history and aesthetics. Representations of nature in media art should be seen as an ongoing extension of the framing of nature as the other. There is also an opportunity to challenge conventional representations of the other-than-human world. Countering the easy discourse of nature as other is the evidence that art forms that intersect with