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Satellite poetics and provocations

cultural geographies

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journals.sagepub.com/home/cgj**Richard A Carter** 

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Abstract

This paper outlines a speculative artistic research project, *Orbital Reveries*, which develops an alternative representational practice for engaging with satellite sensing. The project appropriates terrestrial satellite imagery and parses it through various algorithmic processes to generate visual-poetic ‘textscapes’. The goal of this exercise is to resituate satellite sensing within other modes of representational knowledge-making, exploring the value of creative speculation and experimental emergence in mapping ecological crises.

Keywords

digital art, environment, practice led research, satellite, sensing

Orbital Reveries is an artistic project that speculatively reworks satellite imagery. It uses algorithmic processes to rearticulate and respatialise various source texts of environmental writing and criticism, generating a form of hybrid visual poetry. While Earth observing satellites are critical for revealing serious ecological degradation, they have been critiqued by some observers as stratifying, ocularcentric drivers of datafied, ‘view from nowhere’ representations of the planet.¹ Such disembodied views both result from and bolster the techno-scientific worldview in which the planet is parsed as a body of resources to be managed, rationalised and exploited – which cultural geographers have long critiqued.²

Orbital Reveries generates representations that resist these modes of satellite sensing by reworking their digital representations through creative practice. The project finds inspiration in the work of artists such as Heidi Nielson, whose gathering of live weather satellite data across various installations, such as *Here GOES Radiotelescope* (2020), aims to highlight the accessibility and multiple representational potentials of data.³ In line with other cultural geographer-practitioners,⁴ this project echoes critical geographic scholarship on satellite sensing, environmental data and the potential of digital technologies for engaging environmental crises⁵ through artistic practice.

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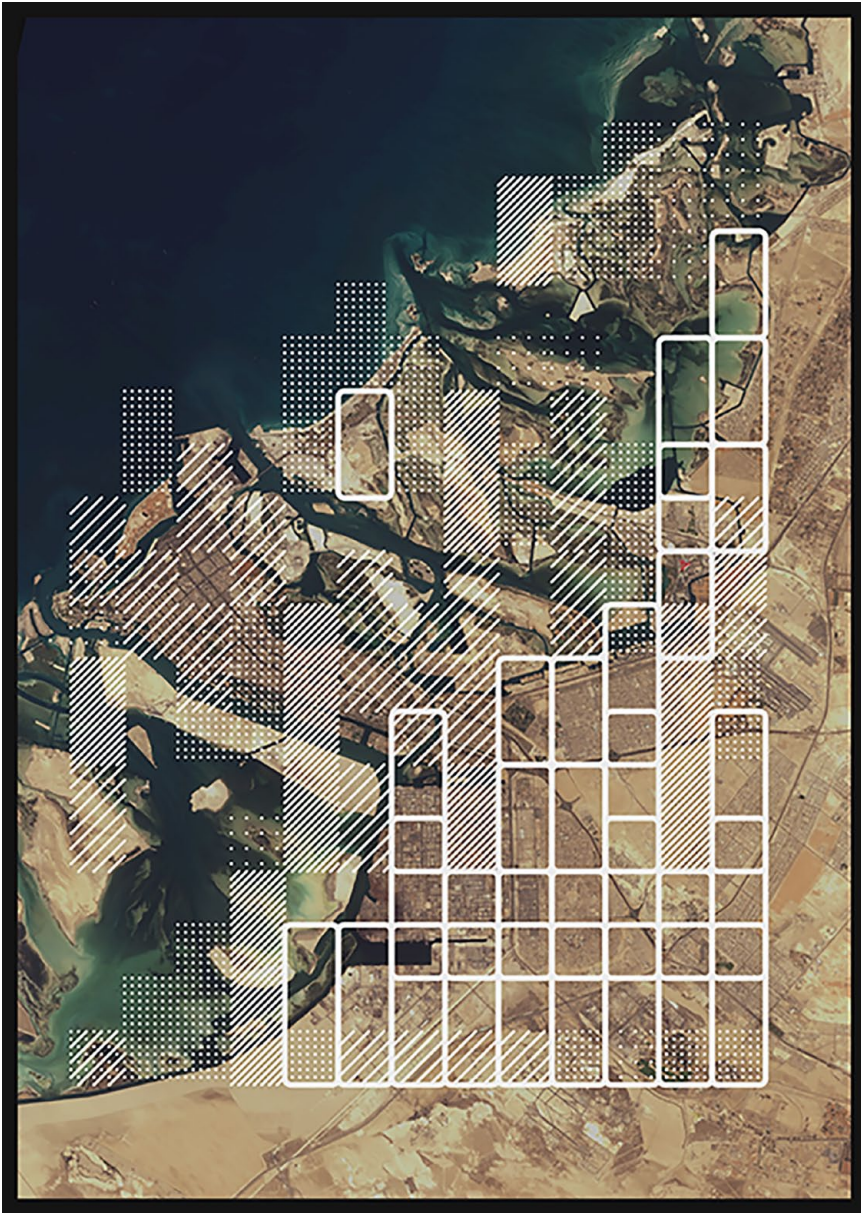


Figure 1. 'LC08_LITP_I60043_20210403_20210409_B432_EYEINTHESKY_LITFIN_97'. Image by author.

Orbital Reveries appropriates terrestrial satellite imagery for generating visual-poetic outputs. The images were derived from recent Landsat 8 data and were selected for their depictions of landscapes that are either overtly human influenced or are ecologically vulnerable to such activities. For instance, Figures 1 to 6 include a densely developed Arabian coastal region, wildfire smoke over a Californian city and ice floes around the Kamchatka peninsula. These images were processed using a simple machine vision algorithm, which maps a patchwork of varying brightness

regions across the source image. Each region, depicted in the final image as a white rectangular outline or crosshatch shaded, is used to select words from a lexical database derived from an inputted source text. This is achieved by mapping individual words from this text onto an invisible, two-dimensional grid proportionate to the source image. The spatial coordinates of each region demarcated by the machine vision algorithm is used to select the corresponding words that reside at these points on the grid. The selected words are then finally overlaid onto the source image, forming a lexical constellation.



Figure 2. 'Textscape' from Figure 1. Image by author.

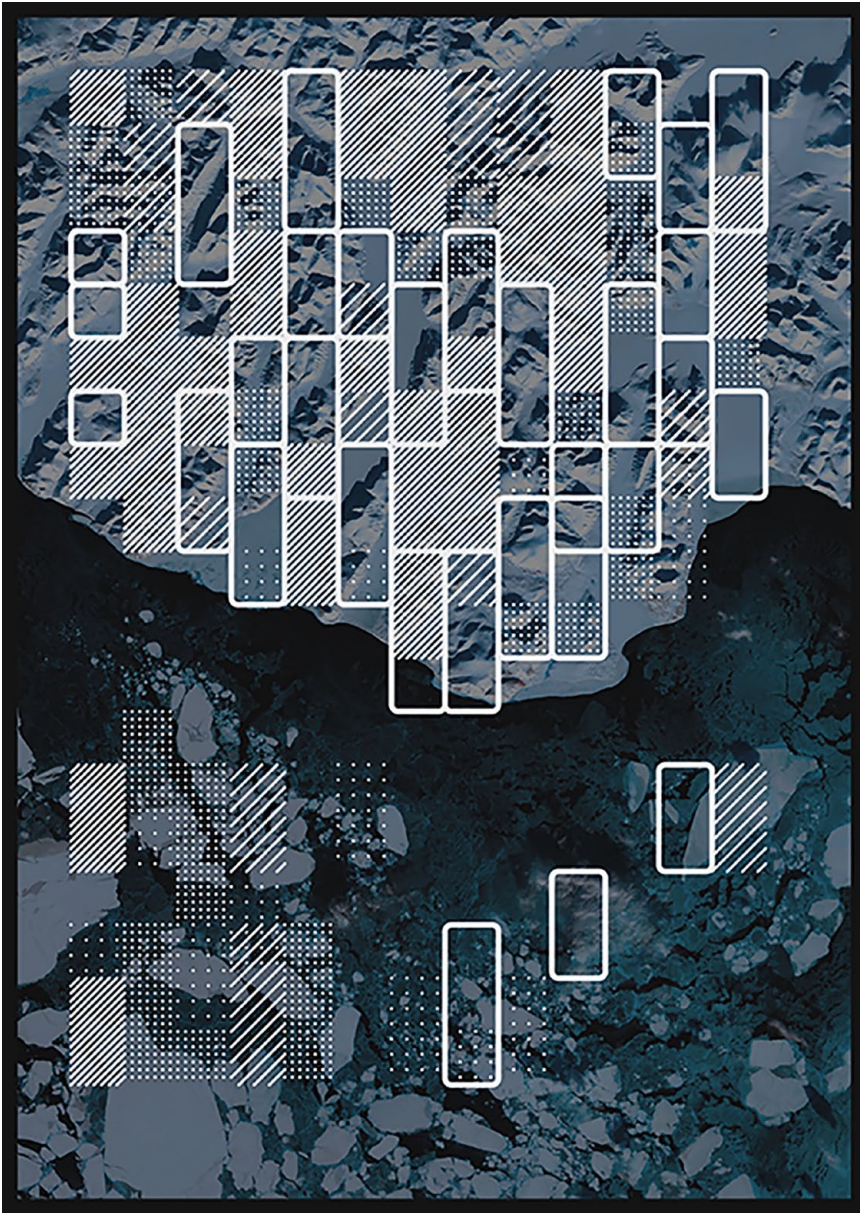


Figure 3. 'LC08_LITP_085015_20200301_B543_MACHINE_EDWARDS_I0_C'. Image by author.

The source texts used in the project include works of academic criticism, collections of poetry, technical papers and assorted historical materials. Texts were chosen for their shared thematic concern with environmental representation and its implications, whether through art, technology or scholarship. For instance, in Figures 1 to 6, the source texts stem and fuse scholarly work from Karen Litfin and Paul Edwards.⁶ Litfin's early work, writing in the 1990s, is highly critical of the role of observational satellites in producing datafied planetary representations that can erase the

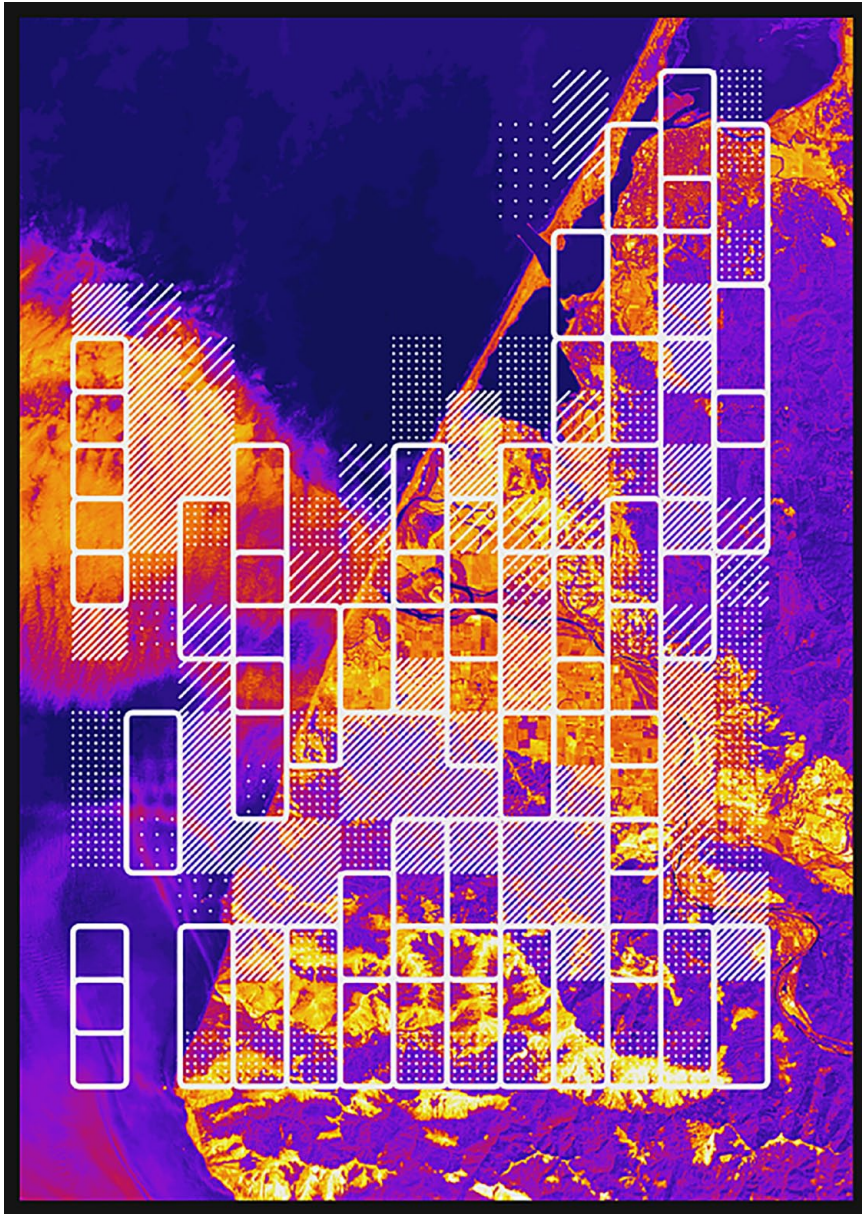


Figure 5. 'LC08_LITP_046032_20200908_B652_MACHINE_EDWARDS_I0'. Image by author.

which are critical to the efficacy and authority of planetary sensing data. For cultural geographers, both authors provide contrasting, but not necessarily oppositional accounts of the cultural contingencies behind ostensibly objective satellite data gathering, and how the representations generated are bound up in flows of power that shape the uses to which they are put, and the impacts they exert.

Demonstrating that satellite imagery is one representational technique among many disrupts its authoritative view from above. The textual contents of each piece draw attention to the lexicon that articulates satellite sensing as an activity – both in terms of its operation and its impacts on the world. In revealing this representational multiplicity, *Orbital Reveries* prompts the viewer to consider the specific technological materialities that bring these representations into being, a key focus in digital ecologies scholarship which aims to contest ideas of digital representations as immaterial.⁹ The aim is to prompt people to consider how satellite imagery can be remade differently, is always subject to cultural and technoscientific design and is generated within specific political-economic contexts. This work contributes to practices of cultural geographers (and others) working creatively with digital technologies to explore and enact alternative modes of environmental representation, and to consider how these technologies influence how ecological issues might be framed.

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Notes

1. See: B.Wharf, 'Dethroning the View from Above: Toward a Critical Social Analysis of Satellite Ocularcentrism', in L.Parks and J.Schwoch (eds), *Down to Earth: Satellite Technologies, Industries, and Cultures* (London: Rutgers University Press, 2012), pp. 42–60; M.M.Bennett, J.K.Chen, L.F.A.León and C.J.Gleason, 'The Politics of Pixels: A Review and Agenda for Critical Remote Sensing', *Progress in Human Geography*, 46(3), 2022, pp. 729–52.
2. D.Cosgrove, *Apollo's Eye: A Cartographic Genealogy of the Earth in the Western Imagination* (Baltimore: The Johns Hopkins University Press, 2001), pp. 205–67; J.Gabrys, *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet* (London: University of Minnesota Press, 2016), pp. 1–25.
3. H.Nielson, 'Here GOES Radiotelescope', 2020, <<https://heidineilson.com/here-goes-radiotelescope/>>.
4. S.Engelmann, S.Dyer, L.Malcom and D.Powers, 'Open-Weather: Speculative-Feminist Propositions for Planetary Images in an Era of Climate Crisis', *Geoforum*, 137, 2022, pp. 237–47.
5. See J.Turnbull, A.Searle, O.Hartman Davies, J.Dodsworth, P.Chasseray-Peraldi, E.Von Essen, et al., 'Digital Ecologies: Materialities, Encounters, Governance', *Progress in Environmental Geography*, 2(1-2), 2022, pp. 3–32.
6. K.Litfin, 'The Gendered Eye in the Sky: A Feminist Perspective on Earth Observation Satellites', *Frontiers: A Journal of Women Studies*, 18, 1997, pp. 26–47; P.Edwards, *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming* (Cambridge: The MIT Press, 2010), pp. 1–25.
7. R.Carter, 'Orbital Reveries', 2023, <<https://richardacarter.com/orbital-reveries/>>.
8. This gesture resonates with the *Open Weather* project of Sascha Engelmann et al., which instigates communal acts of planetary weather visualisation in order to articulate the material encounters, experiences, and emotions otherwise elided. See: Engelmann et al., 'Open-Weather'.
9. See Turnbull et al., 'Digital Ecologies'; S.Taffel, 'Escaping Attention: Digital Media Hardware, Materiality and Ecological Cost', *Culture Machine*, 13, 2012, pp. 1–28, <<https://culturemachine.net/wp-content/uploads/2019/01/468-985-1-PB.pdf>>.

Author biography

Richard A Carter is an artist and lecturer in Digital Culture at the University of York, UK. Carter's academic and creative practice investigates the more-than-human as it manifests within technical activities, objects, and environments.