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Art, Ecology, and AI: Envisioning More-Than-Human Landscapes

At a time of accelerating climatic and ecological breakdown, socio-political instability, vanishing support for the arts and humanities, and fluctuating, extractive technology cycles, there are manifold threats facing the integrity of Britain's environments and the artistic and scholarly exposition of their surrounding visual cultures. The task of charting these intersecting challenges is driving a growing need to account for the media-ecological entanglements behind any given intervention within contemporary visual culture – of what these represent at material scales and registers beyond their immediate apparent concerns and subject matters. It is on such terms that I want to emphasize the value of investigations that mobilize these material processes as an intrinsic aspect of their production and ongoing functioning, for it is these modes (whether labelled as 'creative-critical', 'practice-led', or 'artistic-research') that vibrantly enact the often-professed desire for new languages, artefacts, and activities that can help generate critical and creative agency in the face of existential pressures.

To contextualize further – at the present time of writing (spring 2024) we are possibly reaching the unsteady pinnacle of an excruciating publicity cycle in which AI technologies (primarily of the image and text generating variety) are being touted as inaugurating the wholesale transformation of every conceivable human endeavour, such that the coming future will be unrecognizable. Generative AI systems have already been critiqued extensively as driving a vastly more polluted[1] and polluting[2] digital information environment, but I am especially interested in how such developments may, in the longer term, impact the modes through which we represent and understand our surrounding, more-than-human environments – both in Britain and beyond. Such impacts range from the images and narratives produced and reinforced by generative systems,[3] to the rhetorics and imaginaries concerning what these technologies can supposedly achieve (or otherwise) in mitigating material harms that far exceed the registers of computational media alone.[4]

While the traditional path of scholarly analysis and critique will remain the predominant vehicle for many such investigations, the possibility remains of conducting speculative practices and experimental interventions that, if not necessarily charting the coming future, can outline the phase space of its potentials. While both modes will always inform one another, I want to spend this discussion contending that practice-led efforts have a particular value in this context, not simply for their exposure of technical operations and their underlying assumptions, but in consciously stepping

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beyond prevailing discourse and modelling the kinds of thoughtful, reflexive applications that are often urgently needed when dealing with new, invariably oversold, and ethically challenging technologies. In short, if AI systems, broadly construed, are deemed to be a threatening and unwelcome development in their present incarnations, particularly as they intersect with artistic representations and environmental concerns, then what alternative applications and imaginaries might be cultivated instead? The goal, it should be stated, is not to absolve any prevailing deployments of their considerable problematics, but to see these as a starting point for actions that move away from the assumption that such deployments are inherent and inevitable.

Over the past decade, there have been growing efforts to map and rework the relations between the digital and natural worlds by scholars and practitioners working across numerous fields, and their work has been marked by the centring of artistic practices as both methodology and medium. Inspired by new materialist accounts of the entangled interdependencies between animate and inanimate bodies, as well as the media-infrastructural enquiries of the digital humanities, Carruth has forwarded the label of 'ecological media studies' to capture the growing 'attentiveness to the material ecologies of new media and digital computing [alongside] the participatory, playful media practices at work in twenty-first century environmental art and activism'.[5] Critical enquiry in this context runs the gamut from excavating the deep material ecologies underpinning technical manufacture, operation, and disposal, all the way to speculatively reworking media systems in order to facilitate new imaginaries around their current status and possible futures. Concerning the latter, Lee-Morrison has characterized a growing body of artistic 'machinic landscapes', in which machine vision systems are used to generate landscape works that combine 'the logic and the representational mechanisms of its technology and that of the forms and processes found in nature and the environment'.[6] Such endeavours serve, fundamentally, to challenge essentialist binaries 'between nature and technology', while examining how 'forms found in the natural environment are integrated into the functioning of a technical, aesthetic gesture by machine'.[7] Richardson and Munster similarly read artworks that emphasize the 'radical incompleteness' of AI-facilitated modes of planetary-scale envisioning, drawing attention to how Earthly and medial materialities disrupt the models of a fully datafied, rationalized, and predictively foreclosed world implied by commercial projects such as Microsoft's Planetary Computer.[8] Likewise, Parikka, Patelli, and Wong read a variety of artworks that reinterpret the meaning of machine generated environmental data to undermine its claims to objectivity, accuracy, and universality – foregrounding instead its embeddedness within contextually specific material contingencies, working uncertainly across multiple registers of potential meaning.[9] In this regard, Luque-Ayala, Machen, and Nost observe that digital modes of sensing and modelling the natural environment are being recast by scholarship as in-fact refuting any stable sense of an existing, external 'Nature', and hinting instead at the radical political potentials of a world that is enacted anew

through every gesture of knowing and representation, whether scientific, scholarly, or artistic[10]–a perspective that ultimately resonates with long-standing work in the field of science and technology studies, which depict the observable world as being continually performed through the conjunction of human and more-than-human agencies.[11] It is here that we might cite finally the works of Litvintseva and Angus, whose respective creative and critical efforts pay attention to the role of Earthly processes in enabling photographic and cinematic representations – recognizing that the inscriptive operations of visual media, by necessity, are predicated on, and involve marking, the very planet they regard.[12]

All this work demonstrates that the present critical focus on human and more-than-human techno-natural entanglements is appreciative of artistic practices in charting their specificities and possibilities – not just in terms of topical emphasis, but by engaging the key material processes involved. Nevertheless, in the context of this discussion concerning digital technicities especially, observers have noted the intensive environmental costs associated with AI technologies, along with that of digital infrastructures more generally.[13] In this context, unreflexively championing the potential for digital art (whether AI-driven or otherwise) to 'raise awareness' of environmental degradation, or problematize established narratives, risks downplaying the issue of whether the deep material costs behind such gestures are meaningfully offset by their subsequent impact. Mansoux et al. emphasize consequently the importance of making conscious, measured choices in the kinds of work undertaken, as part of a nascent aesthetics of 'permacomputing', which recognizes the serious ecological precarity on which the very possibility of digital computing ultimately rests – but that the commercial rhetorics of novelty, growth, and revolution almost always ignore or dismiss.[14] The authors offer no prescriptive answers regarding what practices could or should prevail in the face of these challenges, except calling for scholars and practitioners to mark their endeavours with reflexivity and care at every stage, to acknowledge their material and political situatedness, and to calibrate their claims and aspirations accordingly.

The scholarship and practices outlined thus far all address issues of environmental representation across a variety of global and national contexts, but British environments specifically are less often featured. One exception is Parikka, Patelli, and Wong's discussion of the work of J.R. Carpenter, whose digital poetry has dealt explicitly with human and more-than-human entanglements in a British context, notably the weather.[15] The other instance the authors cite is that of my own work, specifically my project *Waveform* (2017), in which I documented a small portion of the Cornish coastline from the vertical perspective of an airborne drone, using a combination of machine vision and generative algorithms to parse snapshot outlines of churning Atlantic breakers into lines of poetry.[16] It is along a similar vector, but with a particular consideration of what it means to rework AI technologies (broadly defined) in the context of ecological representation, that I conducted my latest project, *Algorithmic Light* (2023).

Algorithmic Light deploys another form of machine vision, adapted from techniques used in satellite image analysis, to generate visual

poems cued by timelapse imagery gathered from various British regions designated as 'National Landscapes' (or, until very recently, as 'Areas of Outstanding Natural Beauty', AONB). As this labelling suggests, these are landscapes considered to be of preservation-worthy importance to a shared national heritage, and are characterized as such owing to their perceived natural beauty – although, it should be acknowledged, all the designated landscapes, like Britain as a whole, have intensive histories of human habitation and cultivation, with their perceived aesthetic qualities often being resonant along bucolic registers.

The processes behind *Algorithmic Light* involved capturing timelapse footage from a fixed viewpoint at a specific field site within a particular National Landscape, before conducting real-time analysis of its constituent frames in order to detect and map the apparent changes between them – outlining 'features' of perceived 'interest' across each frame with overlaid virtual borders. The changes detected typically ranged from flows of light and shadow, windblown foliage, passing animals, and weather events – marking the quotidian material processes through which the larger forces of climate change and ecological degradation gradually manifest.

The data generated by these digital (re)mappings was then employed to extract references from a textual source, Jacquetta Hawkes' pioneering work of geoarchaeological writing *A Land* (1951), 'labelling' each designated feature with a derived word. This gesture was achieved by spatially mapping the source text over the imaged scene, using the location of the designated features to cue the extraction of collocated text. The generative outcome of this entire process was a shifting visual poem running across each timelapse sequence, variously resonating with or rearticulating the changing scene, following in the spirit of Hawkes' own efforts at characterizing the richly dynamic history of Britain's landscapes (see Figure 1).

Constraints of space preclude further exposition of the formal and conceptual aspects of *Algorithmic Light*.[17] It is sufficient, however, to state that this project forms part of my ongoing efforts at using digital systems to intensify and rearticulate the contemporary entanglements of technology, ecology, and knowledge-generation within the context of Britain's more-than-human landscapes, which constitute my primary field sites. In *Algorithmic Light*, my aim was to enact a digital, creative-critical mode of AI envisioning that was governed reflexively by the human and more-than-human material processes it interrogated, modelling a form of landscape representation that recasts the terms in which the relations between generative and natural processes might be understood. Frequently dislodged and disrupted by wind, rain, and animal life, the digital functioning of *Algorithmic Light* was firmly embedded within, and affected by, the more-than-human forces it regarded, even as the latter are already deeply affected by human interventions. The visual and textual traces of these encounters are not immediately aligned to any clear, abstract schema of categorization or semantic aspiration, but invite uncertainty and associative play. The intention is an undercutting of the

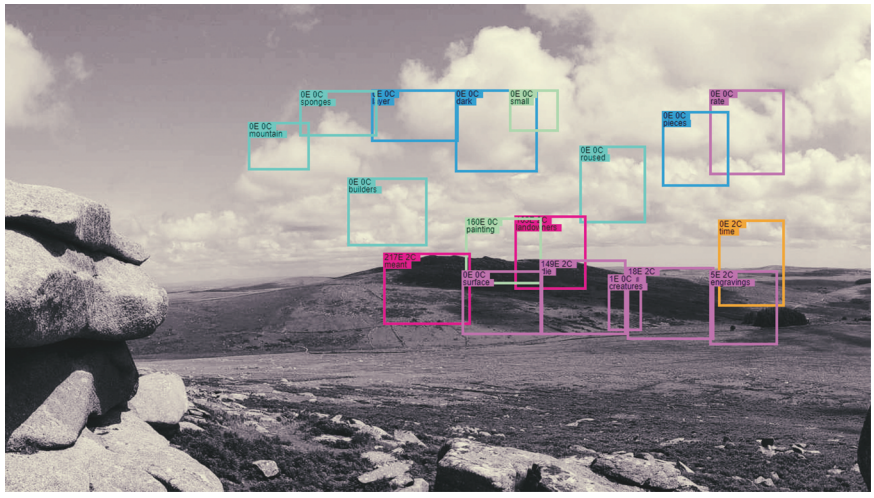

Figure 1. Still from *Algorithmic Light*, courtesy of the author.

imaginaries associated with either a technologically untouched natural space, or an abstracted AI firmly walled away inside the ecological niche of the data centre, perceiving and modelling the world only through quantified, averaged trends.

While a single, idiosyncratic project such as *Algorithmic Light* can never be transformative in its wider impacts, I would forward it as a minor instance of the kind of creative-critical investigation that will be of increasing value when studying and intervening within contemporary digital visual cultures. Such efforts present opportunities for modes of knowledge generation that interrogate the predominant contexts in which we ultimately pursue creative and critical labours. In so doing, they make space for a reframing of the analytical project that defines the world not as an object to be assessed in the abstract, but as integral to the very conditions in which such assessments take place, and to which analyses turn not on excavating existing narratives, but on realizing alternate possibilities for meaning and action. At a time when the imaginaries and activities surrounding digital technologies and cultures are so dominated and diminished by the imperatives of wholesale disruption and transformation – with little sense as to what these will actually amount to, beyond an implied threat, and no acknowledgement at all of the far greater Earthly challenges that will ultimately curtail them – it is critical that the arts and humanities model different possibilities that not only outline but actively demonstrate futures that resist claims of inevitability on the part of the latest developments.

Notes

1 Atkins et al. "Generative AI tools can enhance climate literacy but must be checked for biases and inaccuracies".

2 Brevini "Black boxes, not green".

3 Porcile et al. "Finding AI-Generated Faces in the Wild.," and Crawford 2024.
4 Crawford. "Generative AI's Environmental Costs Are Soaring".
5 Carruth, "Ecological Media Studies," 364–5.
6 Lee-Morrison, "Denaturalizing the Image," n.p.
7 Ibid.
8 Richardson and Munster, "Pluralising the Planetary," n.p.
9 Parikka, Patelli, and Wong, "Ecocritique between Landscape and Data".
10 Luque-Ayala, Machen, and Nost "Digital Natures".
11 See, e.g. Barad "Posthumanist Performativity".
12 Litvintseva *Geological Filmmaking*, and Angus *Camera Geologica*.
13 Wynsberghe "Sustainable AI".
14 Mansoux et al. "Permacomputing Aesthetics".
15 Carpenter *This is a Picture of the Wind*.
16 Carter *Waveform*.
17 Interested readers can explore more in a forthcoming issue of *The Digital Review*, in which *Algorithmic Light* will feature.

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