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Eroding the Human/Non-Human Binary in *Between Two Tides*: Site-Specific Eco-Arts Performance as an Exploration of Changing Climate in a Latourian 'Critical Zone'

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ABSTRACT

In May 2024, researchers from the University of Hull staged a site-specific performance dealing with the natural histories and human cultures of the South Holderness coast. The performance, entitled *Between Two Tides*, stressed the entanglement of human history/current human actions with other forms of nature in an area currently coping with the challenging effects of climate change. These shifts include: rapid cliff erosion, ongoing dune destruction threatening the collapse of many rare habitats, frequent tidal surges, and changes to sedimental transportation and deposition systems—all causing a radical reformation of the South Holderness landscape.

These climate-induced effects led, in 2023, to the retreat of humans from the Spurn peninsula for only the second time in recorded history (the first being when the city of Ravenser Odd was abandoned after catastrophic storm surges during the winter of 1356–7).

Our Eco-Arts performance was created for residents from the villages of Easington and Kilnsea, who are threatened by four-to-ten metre per year erosion of a coastline that is not protected by the UK Environment Agency. Our performance site, immediately adjacent to Beacon Lagoons (home to one of the UK's few populations of rare migratory birds: little terns, a UK Site of Special Scientific Interest, and an Area of Special Protection under the Countryside Act of 1981) was chosen to demonstrate the vulnerability of such landscapes, described by Bruno Latour as 'Critical Zones'.

This essay contextualises and examines our practice research project through the lens of environmental ethics, particularly the recent works of Michel Serres and Bruno Latour.

> Instead of always pointing out the danger of 'anthropomorphising' natural entities, we should be just as wary of avoiding the oddity of 'phusimorphising' them, that is, of giving them the shape of objects defined only by their causal antecedents.[1] (Latour 2014, 10).

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Introduction & Theoretical Framing

This article deals with the underlying research, and scenographic decision-making processes that led to the production of a movement and spoken word practice research performance entitled *Between Two Tides*, which was filmed as a short 9-minute 4K dance film on May 8th 2024, and subsequently performed in a longer 45-minute version, with additional spoken-word text, to the general public over the following two days in a site-specific location on Easington Beach, in the United Kingdom county of East Yorkshire. The performance was created by practice researchers Christian Billing and Ellen Jeffrey, with student co-investigators from the BA Drama and Theatre Practice degree at Hull University.[2]

In this article, as in the developmental processes and performed outcomes of our practice research, I frame climate/climate change and its effects largely as the result of human actions on/in the natural world, and I posit the urgent necessity of more people seeing humans not as the entitled users, owners, or even guardians of nature and the environment, but rather as coequal parts of it, existing in what should be seen as broadly equivalent terms (i.e. in terms of equal value, force, and significance). To do this, I will consider both the creative processes of the research team and our performance practice through the lens of environmental ethics. Within that discipline, I will establish a more detailed focus on the works of the French Poststructuralist philosophers Michel Serres (1930-2019) and Bruno Latour (1947-2022).

Michel Serres observed in *The Natural Contract* (1995) that while the notion of a 'social contract' has enabled humanity to mitigate the more extreme forces of subjective violence against individual subjects, or classes of people, contract theory has also historically incorporated some highly problematic views related to the global ecological crisis. Most fundamentally, contract theory (and therefore many examples of national and international law) has wrongly represented society in isolation from the natural world, viewing nature as something that humanity must necessarily turn its back on in order to organise itself. Additionally, most modern law, positioning the contract as the standardised form governing individual relations *par excellence*, has equated the formulation and deployment of contracts only within the realm of human existence, thereby creating a universal reasoning upon which all progressive and emancipatory legislative and juridical processes have hitherto been founded. Serres points out that one significant consequence of this is the fact that only rational human beings have been defined (both historically and in our own cultural moment) as legal subjects. For Serres, this sentiment reached its apogee in the Enlightenment/Revolutionary *Déclaration des droits de l'homme et du citoyen* (France 1789), which proclaimed universal and inalienable rights for humans but ignored nature, precisely because it is not human.

In a more hopeful vein, however, Serres notes that the development of universal human rights (in a teleological sense, since at least the Enlightenment) has been quite radical because it has historically more often than not extended legal subject definitions to previously unthought of and excluded groups (such as the poor, subordinated genders, the uneducated, the propertyless and, more recently, animals). From this strategic articulation of a potential advancement through both differing *genera* and classes, Serres argues in *The Natural Contract* for nature's future inclusion in a radical new definition of contract. In doing so, he asks the fundamental question as to whether the Earth itself functions as a subject rather than merely as an object, thereby highlighting the

equi-valent and reciprocal quality of all human/nonhuman relationships. For Serres, nature both acts independently and *reacts* to human intervention, providing both life and death conditions. He accordingly argues that the Earth *is* a subject, and one that is deserving of legal status—that its rights are equal to those of humanity. Seen from Serres' perspective, our human conception of rights has accordingly to date been merely 'parasitical' in both theory and practice, because humans have exploited an active and equal host that we have largely abused. For Serres, the law should therefore now act to limit such predatory behaviour, and begin to recognise reciprocal relations among human and non-human subjects (Serres 1995).

Equally insightful, and relevant to both environmental ecology and our specific piece of eco-arts practice has been the work of a second French philosopher, sociologist, and anthropologist: Bruno Latour, whose work has contributed to human understanding of the environment over several decades. Latour addressed various aspects of environmental activism, politics, and the intricate relationship between humans and non-humans across his entire career. His early work, including, with Stephen Woolgar, *Laboratory Life* (1979) and *The Pasteurization of France* (1988), established the foundation for actor-network theory (ANT), which posits that non-human entities, such as microbes, objects, and the environment, actively shape social and political realities, thus challenging traditional anthropocentric views. Latour subsequently developed novel ideas on political ecology, criticising mainstream environmental movements for treating nature as a separate domain and proposing the concept of 'multinaturalism' in his book *Politics of Nature: How to Bring the Sciences into Democracy* (2004). In that volume, Latour acknowledges the plurality of ways in which nature is understood and experienced by different collectives and argues that humans must actively dissolve the false dichotomy between nature and society in order to constitute an alternative collective that incorporates both humans and non-humans as equal actants influencing life and experience.

Throughout his career, Latour proposed a number of theoretical framings and provocations that powerfully erode the human/non-human binary that has frequently pertained in traditional environmental and ecological thought (not to mention within many current conservation movements, and environmental organisations). A core concept he developed was symmetrical relational networks, a development of ANT in which he proposed that both human and non-human actors/actants work symmetrically, equalising their relationship (Mahaswa 2023, 3). This approach is of significance because it once again de-centres humans as the primary focus of any ontological understanding of the world (Mahaswa 2023, 2). Also important is Latour's notion of the interconnectedness and co-constitution of human and non-human entities to enable viewing nature and society as mutually constitutive and inseparable (Latour 1993 and 2017).

Like Serres, Latour also argued for an expanded notion of the *demos* (the Classical Greek term for a legal and political body) so that it could be used to encompass complex networks of relations sustaining life on Earth, including non-human actors (Latour et al. 2018, 354 & passim); he also recognised and argued for 'the Gaia hypothesis'—a concept first suggested by Lovelock (1979 and 2000). This proposition asserts that the ultimate assemblage of life on Earth exists as a sovereign entity 'Gaia', and is an actant in its own right (Latour et al. 2018). Latour also stressed the importance of shifting from an environmental consideration of individual weather events to viewing the *climate* as a complex but influenceable global reality, as an entanglement of human

and non-human factors with pervasive, plural effects (Latour et al. 2018) and suggested that non-humans should be allowed to 'vote' or have a say in political decisions that affect them, such as his famous proposition that salmon both should and do in reality have a voice in the construction of dams (Mueke n.d.). In his later works Latour called for a new geosocial politics that is more attuned to Gaia, thereby moving beyond the anthropological turn and traditional notions of what constitutes society to a version of politics on Earth as a field that must include both human and non-human participants (Latour et al. 2018). Perhaps most importantly for my present argument, in his final years, Latour worked with climate scientists (including geochemists, hydrologists, and ecologists), social scientists, and creative artists to explore ways to focus attention on the relatively narrow layer of the planet extending from the top of the tree canopy down through the soil and groundwater to the bedrock that Latour saw as the most critical part of the world in the battle for environmental change. He argued that these 'critical zones' (Latour and Weibel 2020) are the places in which all of the key interactions between air, water, soil, rock, and living organisms (including humans) occur. This concept brought together multiple disciplines, including the arts—as is evidenced by the exhibition co-curated with Weibel: *Critical Zones: Observatories for Global Politics* (in collaboration also with Martin Guinard-Terrin and Bettina Korintenberg) held at the ZKM Center for Art and Media in Karlsruhe, Germany. Described as a 'thought exhibition' (Solnick 2023), this exhibit featured sculptors and installation artists alongside the work of scientists, activists, and designers.

Towards his death, Latour focused insistently on the current climate crisis, advocating a radical shift in ecological thinking. In his book *Down to Earth: Politics in the New Climatic Regime* (2018), he underscored the importance of recognising the ineluctable entanglement of human and non-human factors in addressing climate change. These most recent Latourian ideas intersect with the emergence in environmental ethics of the concept of 'Object-Oriented Ontology' (OOO)[3]—a philosophical movement that raises concern for the agency and autonomy of non-human entities, whilst also outlining the pressing need for humans to rethink the relationship between the anthropological and the material world.

In essence, Latour's thinking on ecology and the environment created an epistemic shift in ecological thinking that led many environmental ethicists to recognise and foreground non-human actors, advocating for a radical shift in our definition of what constitutes political ecology, and proposing a more developed understanding of the complex entanglements of human and non-human factors in the necessity of tackling environmental challenges.

These ideas (of both Serres and Latour) deeply influenced a cycle of eight poems I wrote for the *Between Two Tides* project.[4] In these poetic works I deliberately and purposefully anthropomorphised the South Holderness landscape (or 'de-phusimorphised' it, to use Latour's terminology), and ensured that individual poems deliberately shifted from non-human to human aspects of/actants on the South Holderness coastline and back again, creating a *poeisis* in which intention, action and consequence were repeatedly shifted between and across human and non-human subjects. This was most frequently achieved through my use of a structural crux (or figurative 'turn') in each poem—a moment in which what had appeared to the reader/auditor be a description of a natural action or process became revealed as a human tendency, habit, action, or intention (or vice versa). My cycle of poems (written as equally about the South Holderness

coast, flora and fauna as it was the people who live or have lived there) became the dramaturgical substrate of the new site-specific performance, with individual *poeisis* becoming shared *praxis* through ensemble development of a new spoken-word performance text (written by Billing, Jeffrey, Spencer and Waddington in response to the original poem cycle), an accompanying physical movement piece, created choreographically by Jeffrey and Hubbard, and site-specific scenography, for both scene and costume created by Billing and Carpenter (scene), and Drury and Johnson (costume). In Jeffrey's choreography, and in the scenographic and site-specific processes undertaken by Billing, Carpenter, Drury, and Johnson, the process of repeatedly shifting/blurring/melding the human and the non-human, and of anthropomorphising (or 'de-phusimorphising') the natural world were repeatedly used to question common assumptions about the relationship(s) of people to/with/in our specifically chosen site. What are often supposed (and would have previously been supposed by our target audiences) to be inanimate aspects of nature were thus mobilised as the core theoretical, structural and artistic sets of theatrical devices/visual tropes that enabled a wilful erosion of the false human/non-human binary—and the destabilisation of normative hierarchies that place humans structurally above and/or in control of nature. Such a destabilisation is, I believe, an essential precursor to any radical ecological action.

Site, Specificity, and Performance

Site

The performance site we chose for *Between Two Tides* was a stretch of flat sand immediately to the seaward side of the northern stretch of Beacon Lagoons, a United Kingdom Site of Special Scientific Interest (SSSI). The Lagoons support significant populations of nationally scarce flora, such as spiral tasselweed (*Ruppia cirrhosa*) and a variety of rare fauna, including invertebrates typical of such rare coastal saline/freshwater hybrid habitats: notably the crustaceans *Palaemonetes varians* and *Idotea chelipes*, the mollusc *Hydrobia ventrosa*, and the bryozoan *Conopeum seurati*. The adjacent southern lagoon hosts a population of silkweed (*Chaetomorpha linum*), which is the northernmost growth of the plant on Britain's east coast. Surrounding the Lagoons is a mosaic of saltmarsh, sparsely vegetated sand, and saltpans (the extent of which is influenced by occasional, but now increasingly frequent, tidal inundation that threatens the existence of the site). Dominant saltmarsh vegetation in the area includes the very rare flowering plant sea aster (*Aster tripolium*) and the flowering grass mud rush (*Juncus gerardii*), with other more common species such as red fescue (*Festuca rubra*), sea arrowgrass (*Triglochin maritima*), and marsh samphire (*Salicornia europaea*). The landscape around the Lagoons is composed of boulder rocks, sand and shingle (all of which were used in the script and scenographically), with small stands of common reed (*Phragmites australis*) and larger sand dunes dominated by lyme-grass (*Leymus arenarius*) and marram (*Ammophila arenaria*). The latter became the subject of one of my poems and a long section of Jeffrey's choreography that brought audience members in tactile contact with the grass itself and anthropomorphised marram by having performers rise from curled, supine positions on the sand, raising one hand like a grass shoot rising from a subterranean rhizome, and then slowly raising their whole bodies like a strand of growing grass before swaying in unison by

rotating their straightened bodies from the ankles, with feet together, evoking a waving stand of marram in the wind. The poem, and this section of performance, moved from the natural grass to the human people of the South Holderness, who are also 'rooted' in this landscape despite their perilous relationship with an encroaching sea, that has at times seen them lose whole graveyards of their ancestral dead to cliff erosion:

M A R R A M

- Ammophila Arenaria

[From the Greek ἄμμος, meaning 'sand',
and φίλος, meaning 'friendship, or love'
and the Latin arenarius: 'of sand']

Ammophila Arenaria:
'Sand-lover of sand'
They found your chosen home
So strange
They had to tell us twice
And felt the need to use
Both Latin words, and Greek
To make some sense of you

In doing so
They doubled down on love
And chosen habitat
Just as yourself
You sink twice deep
Your root-and-rhizome hold
And scatter seed
To stake your claim
And make the shifting sand
Your home

Might humans also
Spread their loving hold
On land like this?

Webster, Clubley, Tennison …
Long-rooted clans
With generations set down deep as precious ore
Like heavy ploughshares
Set down in farmland, mud, and dirt
They keep a watchful hold on Holderness
As digging in
They stay

Even the day
When wind and tide
From rain-worn soil revealed
In Kilnsea's crumbling cliff
St. Helen's hoard
Of dear departed dead
Still then, with care,
Their fathers stooped
To pick, to clean, and bring once more

A long-remembered clan
Back home
To fresh dug loam and clay

The site is also ornithologically crucial in particular for its migrating colonies of ringed plovers and rare little terns, which breed at the site each year after travelling from West Africa (again, used in my poetry/dramaturgy and in Jeffrey's choreography, as explained below). The little tern colony at Beacon Lagoons comprises over 1% of the British breeding population, and the Lagoons are also a stopover for waders during migration, and a wintering ground for coastal passerines like shorelarks and snow buntings, as well as the sea ducks goldeneye, scaup, and smew (Natural England n.d.).

Due to the vulnerable and protected nature of the Lagoons, as well as the potential arrival at the time of our performance in early May of a breeding colony of little terns, our final chosen site was the nearest location of flat sand that it was possible for performers and audiences to access whilst keeping any nesting avian population safe—with the chosen site's flatness a particularly useful criterion for sustaining a 45-minute dance and spoken word performance.

Between the Lagoons and our performance site lay a number of anti-tank blocks (see figs. 2 and 3) that were originally placed substantially into the solid land of the South Holderness during the Second World War, as planned deterrence for invading Nazi tanks; but which, as a result of ongoing coastal processes (including erosion through hydraulic action, granular abrasion, attrition, clay slumping and landsliding, as well as the effects of longshore drift), are now located on the beach, where they act as an unintended but very useful sea-defence for the Lagoons, absorbing some of the shock from the approaching tidal wave motions, and increasingly frequent storm surges.

Specificity

After a day of filming, *Between Two Tides* was performed publicly for mixed audiences of adults and children from the surrounding communities on May 9th and 10th, 2024 (at 12:30 and 13:30 respectively, to coincide with changing tides). Audience members included individuals and representatives of stakeholder groups with whom we had worked in creating the piece (i.e. a number of local historians, members of SKEALS

Figure 1. Beacon Lagoons, seen through Marram Grass. Photo by Christian Billing.

Figure 2. The performance site, just seaward and east of Beacon Lagoons. Photo by Christian Billing.

Figure 3. WWII Anti-Tank blocks, once on land, now on the sand in front of Beacon Lagoons. Photo by Christian Billing.

(the Spurn, Kilnsea and Easington Area Local Studies Group), Spurn Bird Observatory, and Yorkshire Wildlife Trust). This audience was representative of the local community and ranged from retired residents in their 80s, through working families, to the whole of Key Stage 2 from the local Easington Church of England Primary Academy. Both the filming and the public performances took place during separate three-hour stretches of time that spanned deliberately chosen low tides over three days. This timing both ensured the largest section of exposed flat sand for movement work, and the usable presence of a normally invisible sub-aqueous site for the longest possible duration. To achieve this, performance dates had been selected to coincide with three very low, semi-diurnal tides that were caused by two factors: a shift from the most recent lunar apogee (i.e. the furthest cyclical approach of the moon to earth, which had occurred on May 5th at 23:04) towards perigee (i.e. the closest orbital point of distance between the moon and the earth, which would next occur on June 14th at 14:35), and the advent of a full moon, beginning a new lunar cycle (on 8th May at 04:21). This timing provided us with a very low Spring Tide—the term used to describe tides effected when gravitational pulls of the sun and moon combine to create exceptionally high and low water marks (Haigh, Eliot and Pattiaratchi 2011). As a result, our performance took place in a space that is not frequently occupied by humans, on terrain that is directly adjacent to a major UK SSSI, and in a locale that most of the time lies submerged under the saline flow of the North Sea. Additionally, it was performed on sand that had itself been created as a result of both natural and climate-driven coastal processes (see the section on Coastal Process below), and was therefore a microcosmic version of all of the surrounding landscape. This presence of the whole site in microcosm in our performance space was highly important to us (as is expounded in the section on Costume below).

Coastal Process

The coastline of the South Holderness is both complex and ever-changing; it has been for the last several thousand years, in a continuous process through which land and tides combine to move, break down, accrete and shift the landscape. The indigenous soft rock that forms the region's deep base layer, or substrate, is composed of Cretaceous chalk. This lithostratigraphic form is made up of soft, porous, white limestone that was formed in a marine environment between 145 million and 66 million years ago. This chalk substrate is composed of fossil debris from *coccolithophores*, as well as smaller percentages of *foraminifera*, *ostracods*, and mollusc fragments. On top of this chalky base (which is well buried and invisible to the human eye) lies a thick layer of boulder clay, which most people consider to be the 'land' of the South Holderness. Boulder clay (also known as glacial till, or glacial diamict) is a type of sedimentary deposit formed by the erosive action of glaciers and ice sheets, and was formed during the last Ice Age, during the Devensian Glacial Period that occurred some 115,000 to 11,700 years ago (Catt 1991). This top layer of boulder clay consists of an unsorted mixture of clay, silt, sand, pebbles, and boulders that were eroded, transported, and deposited on the eastern English coast by glacial ice. The glacial till that formed the South Holderness coast thus brought rocks, mud and silt from Scandinavia, Scotland, Northeast England and the Lake District. As rain soaks into the top layer of boulder clay, it softens; then, when a high-enough tide buffets the coastline, it collapses. Mud and silt dissolve, and

the time-trapped rocks and boulders (geologically known as 'erratics') are released onto the shore. This is why the boulders and pebbles on the South Holderness beaches of Easington, Kilnsea and Spurn beaches are all so different. They contain scores of different rocks originating from hundreds of miles away from the site (Catt 2007). Current climate change, which is creating increasing amounts of unseasonal rain, higher winds, and many more extreme storm surges is significantly changing (i.e. accelerating) these process of coastal transformation, and this fact is leading to up to ten meters of coastal erosion per year in certain parts of the South Holderness.

Geomorphologists examining links between the ways in which surface processes affect the landforms and landscapes of the South Holderness, and investigating the impacts of past, current and future environmental change have noted this marked acceleration in natural processes:

> As shown by the spatial and temporal analysis of Haigh et al. (2016), the UK over the period 1915–2014 has experienced many extreme sea-level and storm-surge events. As sea levels in the north-east of England are rising and this rise is accelerating (average of 1.9 ± 0.2 mm a^{-1} for 1800–2011 to 3.6 ± 0.2 mm a^{-1} for 1993–2011; Wahl et al., 2013), so the vulnerability of many parts of the UK to coastal flooding is increasing. One location in the UK where the risk of coastal flooding and erosion is particularly high is on the East Yorkshire coast, ~250 km north of London (Jorissen et al., 2000; McRobie et al., 2005; Skinner et al., 2015). The orientation of the coast, particularly just north of where the River Humber enters the North Sea, leaves it particularly vulnerable to north-easterly North Sea storms and storm surges associated with them (e.g. Steers et al., 1979; Lee, 2018). The effects of these are profound as the coast is low lying and comprises unconsolidated clay and sand-rich glacial diamict. As a consequence, the East Yorkshire coastal region experiences the highest coastal erosion rate in Europe, with cliff recession rates >4 m per year in places and an average over 1 m per year for the period 1852–2013 (Pye and Blott, 2015). (Bateman et al. 2020, 3670-3671).

Rocks released from boulder clay cliffs by excessive rain and tidal surges, together with other sediments are buffeted by the sea to form sand—with the swells, tides, and breaking waves of the North Sea causing further erosion and movement of the sediments, helping the finer sand accumulate near the shoreline. The most common mineral found in all beach sand is quartz, which originates from the erosion of granite rocks that contain high levels of the mineral. On the beaches of Easington, Kilnsea and Spurn, the sand grains are of several different colours and are mixtures of sediment from the different rock sources, sizes, and shapes present that have been worn down over time by the constant action of waves and currents. The process is ongoing, and the sanded surface of a beach that is made up in this way from all of its surrounding environment became our dancefloor.

Performance

Our performance title, *Between Two Tides* was both provocative and polyvalent, signifying in its simplest terms that the performance took place quite literally between two semi-diurnal tides; but, on more resonant levels, we wanted also to communicate that the area of the performance—the South Holderness coastline and the three villages of Easington, Kilnsea and Spurn—is/are located in a precarious triangle that lies between the estuarine tides and chenier plain of the intertidal Humber mudflats to the west (Metcalfe et al.

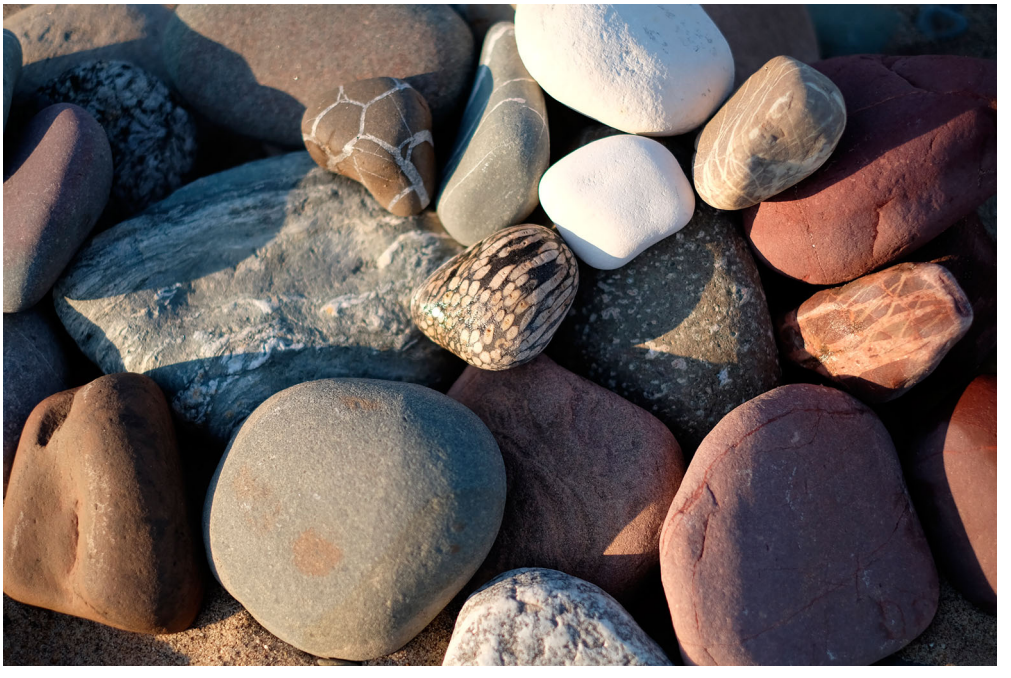

Figure 4. A selection of 'erratics' lying on Easington beach at the performance site of *Between Two Tides*. Photo by Christian Billing.

2000), and the often-violent North sea tides to the east (Bateman et al. 2020). We were also aware that in the late Anthropocene,[5] we are all currently living 'between two tides', i.e. in a moment of environmental and ecological change, and at a potential tipping point, or epistemic fulcrum, between what have been known, regular and wished-for climate events, and what is becoming the increasingly severe and hostile climactic reality caused by human action and interaction with other non-human parts of nature, feeding an inexorable acceleration of weather systems and natural processes. To return to Latour:

> Through a complete reversal of Western philosophy's most cherished trope, human societies have resigned themselves to playing what has unexpectedly taken on the role of dumb object, while nature has unexpectedly taken on that of active subject! Such is the frightening meaning of 'global warming': through a surprising inversion of background and foreground, it is human history that has become frozen and natural history that is taking on a frenetic pace. (Latour 2014, 11-12)

Between Two Tides was accordingly made specifically about and for the South Holderness coastline, as well as about and for the human communities of Easington, Kilnsea (as well as the former residents of Spurn); but on a secondary level, it was also made to consider the futures of all humans living in critical zones of human/natural interaction. Very much living under the current climate threat, the communities in Easington and Kilnsea hold two roles: they are representatives of all of humanity, whilst equally being one specific group of people who currently respond to (and who have historically lived with) a single, particularly shifting and amorphous location. Thus in creating a dance and spoken word performance that was specific to this particular site, we sought purposefully and with a

certain level of dramatic irony to create an artistic intervention about coastal processes (including erosion) that would itself attempt to 'erode' the unhelpful human/non-human binary of place versus inhabitants, in order to stress the ineluctable interrelatedness of humans with the non-human landscape, as well as the connectedness of all humans to the flora and fauna of place in a time of changing climate; because, as Serres observes:

> […] as of today, the Earth is quaking anew: not because it shifts and moves in its restless, wise orbit, not because it is changing, from its deep plates to its envelope of air, but because it is being *transformed by our doing*. Nature acted as a reference point for ancient law and for modern science *because it had no subject*: objectivity in the legal sense, as in the scientific sense, emanated from *a space without man*, which did not depend on us and on which we depend de jure and de facto. Yet henceforth it *depends so much on us* that it is shaking and that we too are worried by this deviation from expected equilibria. We are disturbing the Earth and making it quake! Now it *has a subject once again*. (Serres 1995, 86)

In this regard, the timing of our piece was especially poignant, because in 2023 the last human community at Spurn Point (the remote hamlet that lies at the end of a 4-mile-long peninsular spit extending into the boundary line between the tidal flows of the North Sea and the Humber) finally retreated, abandoning the promontory to only non-human forms of nature. This process of withdrawal (from what was once a thriving hamlet) had been protracted. By 2023, the human population of Spurn had become slowly but significantly depleted from its historically higher numbers—mainly as a result of the devastating winter storm and tidal surge of 5th December 2013. That catastrophic climate-driven event destroyed the single-track road from Kilnsea to Spurn, and created what is now called 'the washover' (an increasingly fragile neck to the peninsula that is regularly submerged by cyclically high tides, creating what is in effect a tidal island of what was once a stable spit). At the point of final human departure from Spurn in the summer of 2023, the last residents to leave the increasingly fragile landscape were the members of UKs only fully professional RNLI lifeboat crew, who were at that time relocated to Grimsby, thereby increasing by nearly forty minutes the time it takes a life-saving vessel to get into the open North Sea—a palpable example of the potentially devastating effect of human-caused accelerations of natural processes on everyday human activity, and life.

Energy, Environment, and Infrastructure

As theatre makers, we were well aware of the precarity of this landscape, as well as its many ecological contradictions. The village of Easington is itself dwarfed to the immediate north by the Easington Gas Terminal, one of the UK's main gas importation and storage facilities and home to three major operators: Centrica Storage, Perenco-UK, and Gassco. This Gas Terminal plays a significant role in the UK's fossil fuel energy supply, processing around one-third of the country's total natural gas intake. Since 2006, the terminal has received gas directly from Norway's Sleipner gas field (via the Langeled pipeline, which was the world's longest subsea gas supply until the completion of Nord Stream from Russia to Germany). Within sight of our performance, then, and the fragile ecosystems of SSSI Beacon Lagoons, a Gas Terminal stood resolute and visible as the human-made, incessant producer of the very fossil fuel extraction and combustion that is driving the carbon-based pollution that accelerates destructive climate change globally in general, and at this site in particular.

In dialogue with the Gas Terminal, to the seaward side of the performance site, both performers and audience members could see the newer Humber Gateway wind farm. This significant inshore development is an active statement of the ways in which a purposeful change in human attitudes and behaviours towards the environment can operate in ways that acknowledge our interdependence with other parts of the natural world. Located approximately 5 miles east of Kilnsea and Spurn Point, the Humber Gateway operates in inshore water depths around 15 metres and covers an area of approximately 9.7 square miles. Fully operational since June 2015, the wind farm consists of 73 Vestas V112-3.0MW wind turbines, creating at peak capacity a total of 219 megawatts, an amount sufficient to generate electricity for around 170,000 homes. This is more than one-and-a-half times the number of homes in the city of Kingston-Upon-Hull (the location of my own home and University). Initially developed by Humber Wind Limited, a wholly owned subsidiary of E.ON UK plc, at an estimated cost of £700M, electricity generated by the wind farm is transmitted onshore via two 9-kilometre subsea export cables, connecting to the National Grid at Hedon. This development stands as a major contributor to the UK's renewable energy generation and sustainability efforts, playing a crucial role in the country's transition towards clean, green-blue energy sources. However, offshore energy of this sort, whilst infinitely preferable to high-carbon sources, still demonstrates an increasing need for energy that is directly linked to unregulated human behaviours and unmoderated human consumption. My poem 'Semaphore' and the related section of performance considered this shift to electricity generated by wind turbines—but set the advantages of low-carbon power against the loss of both beauty and agency that existed in human communication prior to the age of electronic media: i.e. the bodies,

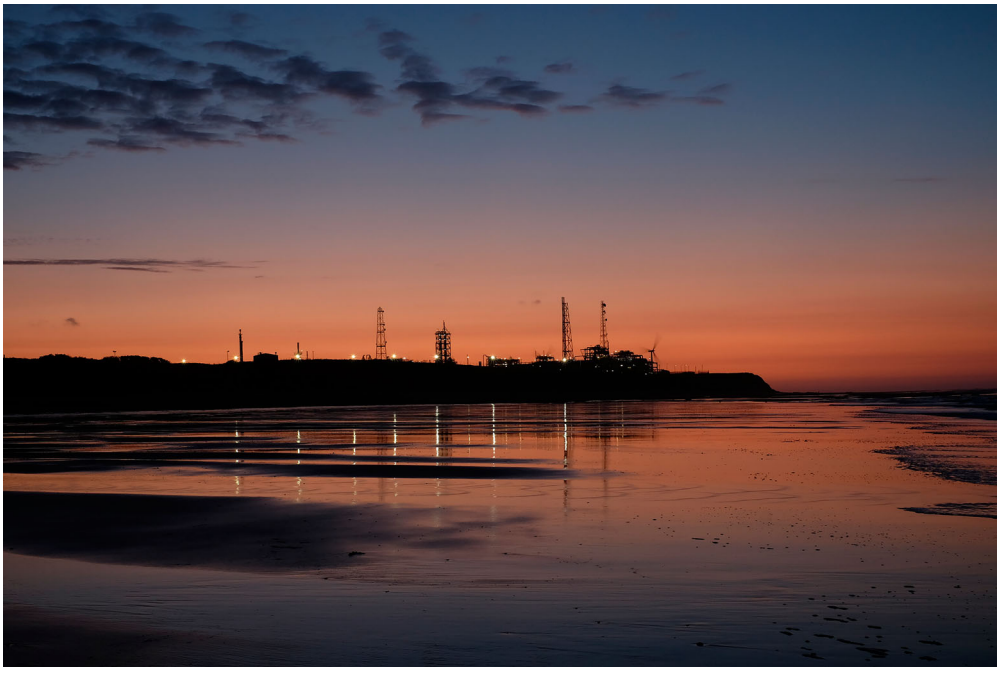

Figure 5. Easington Gas Terminal, dominating the Skyline at Dusk. Photo by Christian Billing.

arms and flags once used to send semaphore messages have now been reduced to mere thumbs tapping and swiping on smartphone screens. The performance questioned through text and movement the insatiable appetite that current technologically driven economic markets create for constant (but perhaps unnecessary) electronic activity and communication, frequently involving divisive or superfluous social media, with concomitant demands on energy supply and the creation of a new power-hungry digital infrastructure that is frequently located in the Global South.

S E M A P H O R E (A Turbine Prophecy)

We started off with agency
When human hands held fast
To flag-fist, flowing runes
That spoke and swooped
To spell their way across the sky
In fabric-flapping consonants
And wind-enabled vowels.

In letters shifting fast
Then holding still
We shaped a coded wavering -
So knowing eyes could spy, and fathom out
Our words, our thoughts,
When ears, blown deaf with wind,
Sat cold … dead … spent.

What messages were brought like this
From ships' cold sterns to Spurn?
To chart the beating, shifting heart of it
In silent symphonies of swirls
Conveying, and convening place:

High Binks
Long Bank
How Hill
Wyke Bight

Those flags have faltered now
That dance we made
Through fresh-wrought human industry
Is Dead.

Transmogrified, the folded fabrics speak no more
Our human-minted
Ballet-score of words is gone
A remnant corpse, meant just for those
Who knew and kept its ciphered score.

' 'cos these days: OMG!!!!'

The pulse of human contact turns
To tap, to screen-swipe, failing battery …

And driving us
Insatiable

Figure 6. The Humber Gateway Wind Farm, visible from the site at Beacon Lagoons. Photo by Christian Billing.

There swells beneath
A lust for endless energy -
To satiate a ceaseless need.

And in response, by science forged,
A Kevlar-limbed crescendo builds
With swooping arms, and turbine blades
Whose phrasing voice is forced and forged
By humming dynamo.

Until, perhaps quite soon, a point arrives
In which the all-consuming motor's thrum
Provides us with a drone so strong
That all we humans do
(No-choice, no other way)
Is coyly dance, entranced.

While turning slow,
The windmill avatars
Emblazoned with epoxy-proxy hands,
Mark out our time
In fibreglass
And sweep our dead heart's ghostly beat
Whilst faltering we try, but fail, to feel
Our surrogate:
Electron pulse.

Jeffrey's corresponding choreography worked with the visual realities of the wind turbines dominating the seascape at Easington, to interrogate the same issues through choreographic practice.

Site Specific Scenography (Framing Site, and Object Manipulation)

Site-specific scenography was conceived and realised by Billing and Carpenter following multiple research and development visits to site. Prior to working with costume design, or creating any human-made aspects of scenography, we first experimented with the tactile

and visual effects of/audience affect attainable from: water (the moving sea, static pools of saline water, the shifting rivulets that ran within ords)[6]: different grades and grains of sand; indigenous chalk and erratic rocks; different natural grasses; and different ways of framing landward and seaward vistas by means of shifting audience location and orienting attention to different parts of the visual vista through performer gesture and movement. Various uses of natural light were also explored. This involved thinking about how to use direct (incident) sunlight during performances commencing at 12:30 and 13:30 (when the sun would be quite high, and close to solar noon for our latitude, longitude and time of year, but appearing to the landward side of our site, over Beacon Lagoons), as well as how to use shadows and reflected sunlight as it was cast off both moving and static bodies of water. The different reflective qualities of wet and dry sand were also explored in pairings with performers' bodies, often creating visual echoes through full or partial reflection, as well as the effects of refracted sunlight (i.e. light that had been diffused through the water haze and vapour that is frequently present on site at this time of year).

This core aspect of our R&D work with light, space, and natural materials allowed us to develop a scenographic *praxis* that made audience members see in novel, ecological, and climate-engaged ways a site that was already deeply familiar to them all as local residents. To augment this 're-seeing', we deployed a number of audience management techniques that co-located audience members and performers in moments of both stasis and movement, as well as using passages of spoken word in a framing juxtaposition of differently selected parts the natural site. Our physical manipulation of the audience to create specific ways of seeing the site included moving the entire audience at two specific points of the performance in order to change their visual perspectives from seaward to landward vistas (and vice versa) in moments that acknowledged differing aspects of

Figure 7. Performers located on a section of wet sand, with dry sand between them and the sea, demonstrating strategic use of reflection and shadow. Photo by Stewart Baxter, Hinterland Creative.

historical human engagements with the site. We also engaged audience members with tactile interventions with items from the landscape (e.g. walking them over sand, water pools, ords, and rocks, or inviting them to touch and handle rocks and strands of marram grass). Lastly, we used a purposeful layering of objects, performers and landscape across the four dimensions of space and time to create shifting depths of field that enabled theatrical focus pulling, and a rapid shifting of our framing of land/seascapes in relevant moments of performance.

The remaining site-based design work related to the building of two cairns on the performance site and the making of objects for performer manipulation. For the cairns, we set representative indigenous and erratic boulders in concentric, curling, graded lines that were created from five different erratic rock types: Green Jasper, Red Jasper, Rhomb Porphyry, Grey Granite; and the indigenous Cretaceous Chalk. These boulders were handled and moved across the site by both performers and audience members at various moments of the performance, thereby linking humans with the landscape and hinting at the interrelatedness of human activity and changes to the landscape. The most extended moment of human interaction with the cairns and stones was a section of the performance entitled 'Gravel' for which Jeffrey, Hubbard and Poole produced choreography in response to my poem of the same name. This section of the performance spoke of the processes of glacial till and coastal process, before turning to the impact of human activity on the site in the nineteenth century, when hundreds of 'cadgers' (the name given to boat-based gravel haulers) took away significant amounts of the coastline's natural defences by removing shipful after shipful of cobble and gravel for use in human construction activity and industry, thereby creating the conditions for several breaches of Spurn point, and the decision by humans to infill certain areas of the peninsula with mined chalk and later to 'protect' it through construction of wooden, iron and concrete sea defences:

G R A V E L

Brought here by ice-age glaciers
And held in Boulder Clay
Across an ache of time

Twelve thousand years
First passed
Before you dropped
Like fruit to shore
When rain and winter tide released
Its crop of marbled stone

More precious than indigenous
Cretaceous chalk
They call you all 'erratic'
A Glacial Till
Of errant wandering
That brought you here from
Scotland, Scandinavia
And English mountain peaks

Your names: Red Granite
Sandstone, Garnet Schist
White-Vein of Quartz

Rhomb Porphyry, Jasper
Lakeside Brockram
Each word sings out
Its history and heft

And, once you fell to land,
Across so many ages
You lay yourselves steadfast
Shoring-up Spurn's shapely curve
Strong sitting, firm, against the wash
Absorbing shock and shift from
High tide's tonnage
When water's force rammed hard
In beating and berating blows
Against the lonely spindle coast

But then a change was beached
As people looked to harvest what they thought
Was simply theirs to crop

And ships, like Billy Foster's sloop the *Paradise*,
High-hauled wet gravel from the shore
Across the Warren's swoop from Greedy Gut
Ship down, tide low: each vessel's hefty hold
Gorged deep on ossified and stony feed
Gut bursting. Gannet full.

Again and again
These Cadgers came
And for a penny hauled their fill
Of rock laid down
By time, by ice, by snow

Until today, long gone,
With any profits made too quickly spent,
That prehistoric fossil ore
Can do no more to help the land

Because an absent rock
Can not in any measure stop
The ever-hungry sea.

The design team also produced eight rod-puppets of the little tern birds that come to nest and breed annually in and around Beacon Lagoons. Bird puppets were made by soaking and manipulating 'withies' (tough but pliable branches of an osier, or other willow, that are used in crafting), which when wet were pulled into shape, lashed, and whipped using cotton string. On top of this willow 'skeleton', a skin of fine, translucent muslin was sewn over the heads and wings, with further strands of muslin attached to the tails. This produced ethereal and apparently weightless avian objects for the actors to work with in sections of the performance that linked the avian population to examples of human flight, particularly the locally famous incident in which the pioneering female pilot Amy Johnson conducted and emergency landing in thick fog on the sandy beach of Spurn Point when she became trapped in impenetrable fog and was unable to make her way to her chosen inland airfield in Hedon on November 9th, 1930. This section of

Figure 8. A cairn on site, built of both cretaceous chalk and erratic boulders. The cairn was dismantled and moved by audience members as they moved across site, linking them to the cadgers of the nineteenth century. Photo by Christian Billing.

Figure 9. Performers manipulate withy little tern puppets in a sequence on Amy Johnson. Photo by Stewart Baxter, Hinterland Creative.

the performance was developed from my poem 'Flight', which placed birds and humans in the same flocking forms, made tangible through Jeffrey's choreography.

Lead designer, Carpenter, also made eight origami models of the De Havilland Puss Moth, Jason 2, which was Johnson's second aircraft, and the one she used when she was forced to make an emergency landing at Spurn. Each Origami model was made from three sheets of brown wrapping paper, using a design by the Japanese Origami master Yukihiko Matsuno. These origami models were manipulated by performers to mimic Johnson's flight path and landing, which was enacted behind a recycled plastic chiffon cloth held vertically in 15 mph wind by other performers. Due to the potential for even stronger winds on the beach (up to 30 mph winds are quite common on site in May), the origami planes had been reinforced by sewing an un-softened withy strut across the wingspan.

Shifting between bird puppets and manipulated objects evoking human flight, our performance was thus able not only to connect the avian population in the Beacon Lagoons SSSI with one heroic example of a historic human female (a woman who dared to defy expectations and challenge the patriarchal assumptions of her own society and time), but also once again to erode the boundaries between a binary between birds and humans:

F L I G H T (an Ode - to Little Terns, and Amy Johnson)

Lift up your wings to breathe!
Push down, fly forwards, and exhale!
Fleet floating flight of avian form
Your life untethered
Un-held by land, or lane,
But linked through cycled time
And gently overlaid
With bonds of nesting place

Figure 10. Performers hold origami planes behind a recycled plastic, chiffon sheet, held suspended in the wind. Photo by Stewart Baxter, Hinterland Creative.

Your home is ethereal abundance
Free folding, fading flow
Of life that sweeps and soars
To heights by most unknown
Attuned to flight and feathered altitude
A sisterhood of flocking form
Funnelling, flowing fast
As free as fresh air blown

For this escape
For freedom's shape
We turn to you
Hope's herald!
Time's storied heroine!
When trapped in dearth
We trudge our leaden woe
Infilled, oppressed
Hemmed in by city, brick and stone
Entombed in clay-baked canyons
Created by our own device

Skywards, with craning neck,
In long-lost lives we yearn
Across time's void for you

Until ...

With wing full-beat, swift turn
Your swooping form arrives
And courage gives us hope
As through your flight
You show us how to live!

Costume

> The positioning of costume 'as critical nexus in performance-making' allows [theatre makers] to embed ethics at the core of embodiment processes in which bodies materialize through costume in relation to other materialities, 'exposing the critical agency of performance itself'. (Pantouvaki, Barbieri, and Isaac 2020, n .pag.)

Given that we had decided that the natural landscape would provide most of the performance space and physical setting in our in site-specific and environmental scenography, the job of costume designers in *Between Two Tides* became to respond to site in ways that were both sympathetic to it and that linked the site to the intellectual aims of the piece being made. Costume therefore became a major part of the overarching scenographic process and, in particular in our intended erosion of the human/non-human binary.

To achieve this, Billing and Jeffrey visited the site numerous times in the developmental phase of the project and took digitised samples of various plants (particularly marram), erratic and indigenous cobbles, differently composed sands, and also of the natural spume that is created by the crash of waves hitting hard obstacles. Articulating our core concepts of the piece, we then gave these images to costume designers Drury and Johnson, who used Adobe Illustrator to sample various of the naturally occurring colours in a variety of swatches, gradients and reflections. In this way, costume was produced from a

microcosmographic overlay of differing shades of colour and textures present on various parts of the site. Drury created a number of colour gradients and patterned reflections using the digital 'eyedropper' (pipette) in Adobe Illustrator and geometrically balanced original patterns against a number of reflective axes (set varyingly at 90, 45 and 180 degrees).

From each underlying rock image, four versions were created using a combination of the actual tonal colours present, gradients created from multiple dropper-sampled colours, reflection, and textural overlay. This overlay was firstly of the image in its entirely (i.e. exactly as it had been sampled originally); secondly, as reflected horizontally; thirdly, as reflected vertically; and fourthly, as reflected both vertically and horizontally (see the section to the far right of the composite image below). These variants were then grouped together to create a single more complex image.

This process was driven by our desire to render tangible in costume *praxis* and through performer/costume interaction the Latourian concept of inextricable connection and co-relation between humans and the natural world. Simply, we wanted our design process to restate to audiences in the medium of scenographic materiality Latour's assertion:

> Everyone […] who knows anything about controversies regarding human and non-human entities entangled together are fully aware that there is not one single case where it is useful to make the distinction between what is 'natural' and what 'is not natural' […] 'Nature' isolated from its twin sister 'culture' is a phantom of Western anthropology. What we are dealing with instead are distributions of agencies with which we are all entangled in ways which are highly controversial and the reactions to which are almost always highly counterintuitive. (Latour 2016, 224)

With this in mind, costume designers created six different samples of a range of colour scales from deep reds to deep greens (all based on different rock morphologies), and laid them out in different directions on a selection of differently textured and weighted fabrics. Once happy with the visual outcome, researchers Billing and Jeffrey took fabric samples to site to be tested for their behavioural qualities when wet, in contact with sand, and for their transparency, loft and flutter at different wind speeds.

When the most effective cobble colours, gradient, and fabric type/weight had been chosen for the site, an image of spume/seafoam captured photographically by Billing

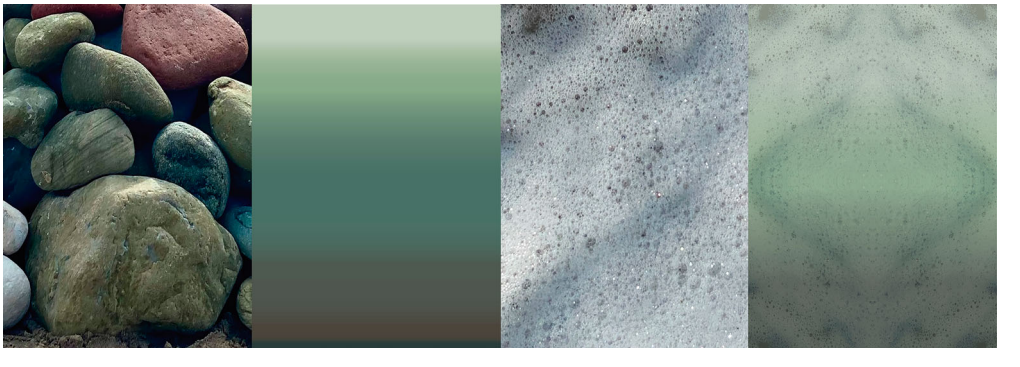

Figure 11. Composite image showing differing green jasper erratics from the beach, a gradient of these colours created in Adobe Illustrator, a photograph of sea spume from the site, and a reflected version of the colour gradient with overlaid sea spume. Photo by Christian Billing and Emma Drury.

Figure 12. Billing testing printed fabric (created from a digital sampling of Red Jasper) for loft, transparency, and colour saturation on site. Photo by Ellen Jeffrey.

was finally overlaid to the image, and adjusted for opacity. The design, colour gradient, and spume overlay was finally converted into PDF format in Adobe Illustrator and uploaded to Sublimation Fabric Printer software (for the Epson SureColor F6200). During this process, fabric was prepared by meticulously laying it out, sandwiching it between heat-protective paper, and ensuring that all layers were flat. Once passed through the heat press, the backing paper was removed, and the fabric was laid out to quality check. Printed fabric was finally sewn and overlocked using patterns adapted by Drury and Johnson from various historical shirts and dungarees. The trousers for the performance were made from a single piece of fabric, split in two and seamed to create a crotch, then passed through the legs to be tied at the waist. This simple and effective design was selected for its ability to support a range of movement work, its behavioural qualities in 10-30 mph winds, and was based on traditional Fishermen's trousers from South-East Asia.[7]

It was also important, given that we wanted to stress the importance of human actions in mitigating the increasingly negative human impact on the environment, that the fabric used in this project was purposefully sourced from recycled plastic bottles that would otherwise have ended up in landfill. In making this decision, we were influenced firstly by the negative environmental factors surrounding industrial production of supposedly natural fabrics such as cotton and linen,[8] but also by recent theoretical works on recycling and reuse in theatrical costuming contexts such as Eco-Scenographer Tanja Beer's 'This is not Rubbish (Strung)' project (Beer, n.d.), and in my own previous practice research into the circular plastics economy: *Links in a Chain*, a performance podcast funded as part of a

£2.2M Engineering and Physical Sciences Research Council Grant (Billing et al. 2021). The use of fabric made from recycled plastics, and the return of all items used in the project to costume stock for future use, helped us to work towards the Advanced Productions targets articulated in the *Theatre Green Book* with regards to theatre costume and scenography reuse and recycling:

> Baseline Productions: 50% of materials should have had a previous life, and 65% of materials should be reused or recycled afterwards […]
>
> Intermediate Productions: 75% of materials should have had a previous life, and 80% should be reused or recycled afterwards […]
>
> Advanced Productions: All materials should have had a previous life and should be reused or recycled afterwards. (Buro Happold and Renew Culture 2021, 26-28)

As Sofia Pantouvaki, Ingvill Fossheim and Susanna Suurla have shown in their development of a proposed framework for ethical costume usage, the 'R-framework' has been developed in costume practice [reduce, reuse, recycle, re-wear, repair, renew, repurpose, recover, regift, refuse, replenish, re-invent, rethink, respect]:

> […] as a tool for rethinking sustainability and circular practices across multiple fields, such as the global textile and fashion industry with which the field of costume has an interlinking and interdependent relationship. (Pantouvaki, Fossheim and Suurla 2022, 75)

Conclusion

The *Between Two Tides* site-specific performance was one of a number of outcomes in a wider Eco-Arts South Holderness project financed through UKRI Higher Education Innovation Funding, and an additional grant from the Ferens Education Trust. In addition to the site-specific performance and accompanying short 4K Dance film, the research team for the wider project conducted a series of interviews with local residents and representatives of stakeholder groups to create an Oral History of People and Landscape in the South Holderness;[9] curated an exhibition of poetry, film, performance artefacts, music and verbatim testimony about human relationships with landscape, and human thoughts about ecology and the coastline's future;[10] captured a series of field recordings from the Spurn peninsula;[11] created nine new musical compositions in response to the natural environment;[12] wrote a cycle of poems about place and people; and made a short documentary film about the performance research process. All of these outcomes are now available on a dedicated project website: https://ecoarts.hull.ac.uk.

The aims of the site-specific piece that I consider in this article, like many of those in the wider project, were to interrogate with nuance the many relationships that exist and have existed between humans and the changing non-human climate/landscape of the South Holderness, stressing wherever possible the intricate and ineluctable bond that exists between humans and place. Whereas previous social histories of place, by excellent local historians such as Crowther (2006) and Mathison (2008), have focused more on the anthropological significance of the area (or of specific negative human actions upon it, such as the gravel trade), and whilst geomorphological, hydrological and oceanographic studies, such as those of Bateman et al., Catt, and Lee *inter alia* have looked at the nature of this site through individual empirical studies conducted within particular

scientific disciplines, our aim was to use arts-based practice research as a means of setting human and non-human forms of nature in a dance of reciprocity, connectivity, and interrelationality. The time for seeing our relationship with the Earth in such ways is *now*, because, as Michael Hulme has observed:

> [T]his is what it means to talk again not about 'the weather', but about 'the climate' as a new form of discourse. (Hulme, cited in Latour 2014, 4).

Notes

1. Latour's evocative term 'phusimorphising' uses the Classical Greek word 'physis' (φύσις), a philosophical, theological, and scientific term that is usually translated into English as 'nature'. It refers in Greek thought to the intrinsic characteristics, origin, and growth of things. Latour realises that the term 'physis' has a rich history in Greek philosophy, where it was used to discuss the fundamental nature of reality, growth, and change. 'Phusimorphising' can accordingly be interpreted here as referring to the process of shaping or forming according to nature or natural principles (i.e. in isolation from human involvement). This concept aligns with how ancient Greek philosophers, particularly pre-Socratics, used 'physis' to describe non-human principles of nature and the cosmos.
2. Credits for the practice research output: Choreography: Ellen Jeffrey, Archie Hubbard; Dramaturgy and Concept: Christian Billing; Direction: Archie Hubbard, Josh Poole; Script: Christian Billing, Becky Spencer, Chloe Waddington; Scenography: Christian Billing, Maya Carpenter; Production Management: Natalie Driffill, Sophie Hipperson, Georgia Hopton; Costume Design: Emma Drury, Billy Johnson; Costume Construction: Maya Carpenter, Natalie Driffill, Billy Johnson, Sam Sylvester-Allan; Performers: Ella Batchelor, Oliver Blanchard, Kain Carey, Archie Hubbard, Kieran Pickering, Sam Poole, Becky Spencer, Zack Sultana-Bartlett, Adam Traynor, Chloe Waddington, Ryan Wilson.
3. First developed by Graham Harman, applied to environmental ethics by Timothy Morton, who developed the concept of 'hyperobjects' to describe complex and overdetermined entities such as climate change (Morton 2013).
4. My poems, as well as documentary evidence of the performance are available at the following South Holderness Project website: https://ecoarts.hull.ac.uk. The archive comprises photographs of rehearsal and production, a documentary film, and a short film of the dance performance (without spoken text), an oral history of local residents speaking about landscape, site-specific field recordings of the Spurn peninsula, and nine new musical compositions.
5. I use the term 'Anthropocene' here to align with Latour's argument in the following quotation and, in particular, because of Latour's useful framing of the current reversal of the binary of humans as animate subject and nature as stable object, in light of the effects of climate change. The quotation below is itself taken from a lecture given by Latour at the *Anthropocene* Campus of the *Haus der Kulturen der Welt*, Berlin (in November 2014). So I choose the word Anthropocene purposefully, despite the fact that in March 2024 the Sub-Commission on Quaternary Stratigraphy (SQS), a constituent body of the International Commission on Stratigraphy (ICS), voted against formally recognising the Anthropocene as a new geological epoch. Notwithstanding this geological decision regarding temporal stratification, the term 'Anthropocene' can still be useful in environmental ethics research for rethinking human-nature relationships, and for considering practical implications for conservation. As Latour sets it out, the Anthropocene concept not only acknowledges human influence, but it also provides a framework for discussing the limits and responsibilities of human intervention in natural systems, which can guide practical efforts in remediation by balancing human needs with the protection of wilderness and biodiversity. Overall then, the Anthropocene continues to serve as a powerful narrative and conceptual tool in ethics, ecology and conservation, fostering a deeper understanding of human impact and encouraging the

development of ethical frameworks that are responsive to the challenges of our time.

For the SQS decision, See Zhong, Raymond, 'Geologists Make It Official: We're Not in an 'Anthropocene' Epoch', *The New York Times*, 20 March, 2024, www.nytimes.com/2024/03/20/climate/anthropocene-vote-upheld.html.

6. Ords are unique features found on certain coastlines, such as the Holderness. They constitute low sections of beach, often containing rivulets that migrate along the shoreline, significantly influencing coastal erosion and sediment dynamics. They are typically formed by tidal movements, rainfall, or drainage from nearby bodies of land and water. The dynamic streams within ords play a crucial role in shaping coastal landscapes by carving channels and redistributing sand and sediment, as well as facilitating the natural drainage of water from land to sea. Ords also help to maintain the dynamic equilibrium of beach ecosystems by influencing sediment transport and deposition and through creating unique microhabitats that support diverse plant and animal life. Because our beach site was close to acres of draining farmland, and also to Beacon Lagoons, the performance space was within an ord that had many rivulets across it—which affected the nature of the sand, and the performance, on a daily basis. I am grateful to Jan Crowther, a local historian, for pointing out to me the significance of ords in the South Holderness environment.
7. I am grateful to Emma Drury for her clear articulation of this technical process, which I have included in this section of the article.
8. Again, I am grateful to Emma Drury for pointing these out to me. Cotton and linen production have considerable environmental impacts, with cotton having a more significant ecological footprint. Cotton is a highly water-intensive product, requiring about 2,700 litres of water to produce a single t-shirt, exacerbating water scarcity in cotton-growing regions. It also accounts for 6% of the world's pesticides and 16% of all insecticides, which harm soil quality, release greenhouse gases, and pollute drinking water. Established cotton farming practice contributes to soil erosion and degradation through heavy use of synthetic fertilizers and pesticides, generates substantial carbon emissions estimated at around 220 million metric tons yearly, and often leads to habitat destruction, with runoff from cotton fields contaminating rivers, lakes, wetlands, as well as underground aquifers.

   Linen is more environmentally friendly, but its production still presents challenges, such as the use of toxic chemicals in the retting process (the controlled rotting process that breaks down the pectin binding the fibres to the woody core of a flax plant). The product also requires environmentally harmful bleaching to achieve pure white linen, harmful dyes, and nitrates for fertilisation of flax fields that can damage water ecosystems. Non-organic linen still involves pesticide use.
9. Oral History of Landscape Research was conducted by Toby Horkan and Ellen Jeffrey, within a framework created by Christian Billing.
10. This exhibition, entitled 'Living Coast: People, Land, and Sea in Yorkshire's South Holderness' was curated by Christian Billing, Ellen Jeffrey, Anna Fitzer, Toby Horkan, Magnus Johnson and Mark Slater. It toured to three venues in the region during June and July 2024: The Humber Street Gallery (Hull), the Barn at Westmere Farm (Kilnsea), and the University of Hull Art Gallery (Hull).
11. Field Recordings were created as part of a transect walk of the Spurn peninsula, undertaken by Mark Slater in March 2024.
12. The new musical compositions (also by Mark Slater) were entitled *Coastal Process*. Responding to the environment at each of the nine locations for his transect walk, Slater composed nine corresponding pieces for improvising instrumentalist and generative strings, performed over the substrate of the field recordings. Each section of the piece was characterised by a tetrachord (and, later on, two tetrachords combined), which undergoes a slow process of evolution throughout the piece.

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