clocks replaced with [Deschooling Time in the Small Isles]

Kate Elspeth Simpson

Abstract

The Scottish Small Isles – comprising Muck, Rùm, Eigg, Canna, and by extension, Coll – are geologically complex, with intersecting rock samples from the Archean (Lewisian Gneiss basements formed approximately three billion years ago), Proterozoic (Torridonian sandstone formed approximately one billion years ago), Mesozoic (sedimentation deposited approximately 200 million years ago, and Palaeocene (basalt formed approximately 55.8 million years ago as part of the Paleocene-Eocene Thermal Maximum event). This practice research article – drawing on palaeontology, kinaesthetic learning, and creative writing – takes the Small Isles as a case study for what geologist Marcia Bjornerud defines as a discernible "timef*ul*ness" that humans should seek to attain: "an acute consciousness of how the world is made by–indeed, made of–time" (2020, 5). Through their lithic intrusions, and interruptive strata, the Small Isles offer an alternative form of pedagogy: where multiple epochs, tenses, and tempos visibly converse with one another; where "polytemporality" can be witnessed and physically experienced; where the notion of linear time is destabilised.

Impact Statement

Extinction Studies, as it is currently conceived, tends to be either biologically or socially/culturally oriented (University of Leeds n.d.). As the only practice-led researcher in the UK's first Extinction Studies Doctoral Training Programme, my work combines the fields of Earth sciences and creative writing, exploring the stakes of a species-specific time denial that governs our behaviour, and the ways interdisciplinary literary experimentation can respond to, if not highlight, the issue. In this practice research paper, I explore new literary methodologies that can challenge our reading and conceptualisation of linear time, complicating tenses and establishing polytemporality within the construction of texts themselves. By mimicking theories of ongoing organic interactions across deep geological timescales, I attempt to rewrite and rethink our sense of anthropogenic responsibility, with cause and effect that extends beyond species lastness; beyond extinction events.

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Introduction

> "Extinction Studies is not just a study of loss, or of the many different ways that we might seek in future to counteract it; it is a study of temporal processes, not least the grand narrative of evolution itself." (University of Leeds n.d.)

Much of the rhetoric that surrounds extinction studies, particularly that of a sixth mass extinction event, is centred on the ethics of species lastness, often viewed as an erasure or an interruption in an otherwise ongoing narrative (Heise 2016); (Rose *et al.* 2017). As an arts-based, practice-led researcher in the UK's first Extinction Studies Doctoral Training Programme, I consider the temporal processes surrounding extinction, particularly the biases that govern the human imagination. I explore what the study, and literary representation, of deep time can reveal or reconcile between the irreversible nature of extinction events, and the multi-species interactions that continue to reverberate in the death-life continuum.

Increasingly, Western civilisations view time – its sequential movements from one moment to the next – through shallow, unidirectional mindsets. Such perspectives are damaging. Extinctions caused by anthropogenic behaviour are quickly mourned: death offers a straight unidirectional disconnect, despite the legacies of broken ecological networks, extinction cascades that continue to affect global ecosystems. In other words, whilst the threat of extinction has prompted global conservation efforts, habitat destruction continues to occur, and with increasing rapidity, amidst a warming world. Our incentives, desires, and actions are framed by a present tense that ignores the realms of the past and the future, despite their visible traces and legacies.

My work – which combines and intersects the fields of poetry and palaeontology – follows the rationale that a species-specific form of "time denial" (Bjornerud 2020, 7) governs and shapes humanity's destructive behaviour. Alongside an excessive governance of our own time, we are programmed to neglect the unfamiliar timescales of the deep past and future: the lands and worlds untethered by human clocks. In addition to this, I argue that a widespread "schooling" into linear time – in which species, once extinct, are irretrievably lost – only perpetuates the "cognitive dissonance" (Klein 2015, 11) we experience amidst contemporary climate change. The injustices presented by anthropogenic actions, including irreversible biodiversity losses, continue, worsen, and are quickly forgotten in pursuit of short-term progress.

Through literary methodologies that seek to cultivate time literacy, I establish larger cyclical narratives where the productivity of the present tense gives way to complex temporal processes and dialogues that permeate deep geological time. I acknowledge various asymmetries on the page and in the imagination, between linearity and non-linearity, considering their relation to extinction events, both ancient and recent.

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In July 2023, I visited the Scottish Small Isles – Muck, Rùm, Eigg, Canna and Coll – which offer a visibly complex geology. Across the various islands, I saw rock samples from three eras: the Proterozoic (early life), Mesozoic (middle life), and Cenozoic (recent life). In many cases, these samples intrude upon each other – or, as I portray, *converse* with one another – through earth surface system processes. Examples of this include the Central Rùm Complex, which comprises three recognised temporal phases, from the creation of Lewisian Gneiss basements (Precambrian metamorphic rocks formed deep within the Earth), through to the intermittent burial of developing topographies by basaltic lavas of the Skye Lava Group in the Palaeogene (Emeleus and Bell 2005). Many of the locations I visited included lithic evidence of past worlds – time frames which were home to species which have long been extinct – but with which I could still interact. In doing so I connect early, middle, and recent life, and complicate the hyper-tripartition of time.

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Before

"I would really love for you to take a minute and write down your own painful experiences with time." This is the proposition that fills the air on the ferry from the Highlands to the Small Isles, from Mallaig to Muck. The words come from the speaker of a smartphone, from sound waves passing through a plastic diaphragm and into my ear drum, from a pre-recorded Vimeo workshop on "Deschooling Time", hosted by "off-grid" activist Lucy AitkenRead. Applying the theory of "deschooling" – coined by Ivan Illich in 1971, which sees, in the institution, a transformation of "nonmaterial needs" into "demands for commodities" (Illich 1971, 3) – AitkenRead considers how our beliefs about time are formed, and in turn how these beliefs programme our behaviour. The video becomes a synchronous prologue for a research trip to islands where (human) population numbers are below one hundred and where adverse weather conditions dictate the delivery of daily supplies, clocks replaced with tides: with swell; with currents.

Keep it

– tick-tocking –

Time has often been referred to as a harmful entity – an anthropomorphised presence who is not often "kind" to us. In the early stages of my research on short-term thinking, I discovered the writer Jenny Odell, an advocate of "resisting the attention economy" (2019). In a podcast with The Long Now Foundation, she talks of being "a person who feels crushed by the pressure between now and not-now…someone who lives squeezed between daily time scarcity, climate despair, and the knowledge of their own mortality" (*Jenny Odell, Saving Time: Discovering a Life Beyond the Clock* 2023). Her voice has continued to reverberate in my ears, her ideas bedding themselves into my hippocampus: into my temporal lobe; into my memories. How long have I been in the "now and not-now"? And is it time that applies the pressure between these two realms, or something – someone – else?

give

it

shape

.

The words "crushed" and "squeezed" are certainly evocative of pain: of being pressed, pulled, perhaps even asphyxiated. Such descriptions bring to mind torture implements – racks and thumbscrews – where limbs are pulled to breaking point, digits pressed until bones give way, cracking and splintering under the pressure. I use these analogies because they are anthropocentric: human behaviours that consciously and intentionally create traumas, both physical and psychological. And this is the pain that "deschooling" seeks us to address: a human time shaped around regimes and pre-made agendas, focused, solely, on productivity, being celebrated in its presence and penalised in its absence. But is time really capable of crushing us? Would it even want to? What falsities are cast through anthropomorphism?

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As to

words

When time is not the subject – the aggressor – it switches quickly to the passive. Readers, speakers, and conceptual mentees of English, describe time – the passive noun – largely through violent and consumptive fields. As the neuroscientist Dean Buonomano notes: "when we are not asking for the time, we are speaking of *saving time, killing time, serving time, keeping time, not having time, tracking time*" (2017, 3). Through our words, we seek to transform something ephemeral into a material entity we can predate – something with which we can establish a predator-prey relationship. We view time as finite, unidirectional, "scarce" whilst behaving as if other natural resources are infinite, endlessly available. But time is not scarce, or shallow. It is not *time* that pains us, but *us* that have pained each other, and various other species, in our *perception*, and *organisation*, of time. Indeed, as Michelle Bastian has stated, in her work on critical temporalities, the "flow" of time – its continuities and discontinuities – is punctuated by various asymmetries and relationalities. (Bastian *et al.* 2020) Who benefits? Who suffers?

squeezed

Opening the notes app on my phone, the cursor blinking – tick-tocking – in anticipation of the words yet to be typed, my mind wanders from the original task: *write down your own painful experiences with time*. I think, instead, of a different world of "squeezing" and "crushing", of a dynamic Earth, of a deep time that entombs and fossilises, if the conditions are right. I think of how bodies might become preserved, might, through the weight of sediment, become part of an interpretative narrative happening millions of years in the future, partitioned into timelines of "early", "middle" and "recent" life. I remember Don McKay's poem 'Some Last Requests' (2006) where he writes, intimately, to stone, to lithics, to the geological: "As to my pain, that fine / pre-echo of the infinite. / Keep it. // Keep it safe."

crushed

Here, pain is a "pre-echo". It survives, only, in the living. It comes *before* the end, before the *very* end, before a death that becomes subsumed by an inevitable stretch of infinite time. This could represent a single death, of the speaker, or the death of an entire species. McKay offers the precursor of an echo – a repeated sound, a reverberation, an incantation – the history and legacy of an animal, and its painful experiences, seeking to be kept "safe" in strata. But what would be the purpose of keeping something, and locking it away safely, if it is never to be felt again? If it is never to be seen again? And in what form could pain, an immaterial feeling linked to a body and a mind, even be kept in stone? Can emotions be stored, storied, in rock? And how would the rhythms of those feelings be accessed, be read?

unsettled

Palaeontology and poetry are comparable in many ways, each involving forms of reading, meaning-making, interpretation. In poems, there are successive lines of content, and in stratigraphy there are successive lines of life. Similarly, in both fields, positive and negative space are equally important. The

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poem, as Don Paterson notes, is "shaped by a pressured silence" (Paterson 2018, 15) which dictates the meaning of each word, each line, each stanza. Absence highlights presence. And, in the fossil record, preserved bodies are like words in a poem; they are given meaning, given a story, when we understand the silence that surrounds them, where species first appear and disappear. Just as, in poems, poets "build up and dig down" (Paterson 2018), breathing life into words through negative space (line breaks, stanza breaks), palaeontologists dig down into the sediment, making meaning in the throes of a material, stratified deep time.

in

the now

In these layers, we find evidence that 99.9% of all species that have ever existed have died out. The extinctions storied in rock are "commonplace" (Wignall 2019, 1), with a background rate of between 0.1 and one species extinction per 10,000 species every hundred years (0.1-1.0 E/MSY). (Wignall 2019, 19) But in the context of mass extinctions, geologically short-lived events, the language changes from the commonplace to the phenomenal. Ecosystem recovery occurs across unthinkable timescales, in some cases, hundreds of millions of years, and whilst networks may rebuild, the cast of characters are never the same.

and not-

now,

In the case of modern extinctions (post-1900), where mammal extinctions are, at their lowest, 28 times background rates, these disappearances are occurring in a geological blink of an eye, brought about through a perfect storm of direct exploitation and widespread habitat destruction at the hands of a single species. Here, the language changes from the commonplace to the horrific, from the organic to the barbaric. The anthropologist Deborah Bird Rose, for example, compares current extinction rates to stolen possibilities, in what she refers to as "the great unmaking of life" (2012).

what

anticipation

To "unmake" is to erase all record of a being: "un" a prefix that overrules the root word. To "unmake" is to, unapologetically, and visibly, strike out the presence of a being entirely. In linear time, life continues on, the past an inaccessible space, the future a blank space. But in multi-directional time, beings are still felt, their presence acknowledged in the strata of the imagination, both in the past, and in the potential future. To acknowledge the world's polytemporality is to see extinctions, the "unmaking" of life, all the more clearly; all the more visibly. It is to hold us all the more accountable.

made by , made of

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How, then, might our perception of tenses – configuring the past, present, and future – control our understanding of, and attentiveness, to extinction? To return to Rose – who writes "[t]he past makes urgent moral claims on us. So too does the present, and so, we increasingly understand, does the future" (2004, 25) – if the past, and its multitude of deaths, is still capable of producing present-tense verbs, of "making" claims on us, how easy is it to forget, or ignore, the changes we have made?

distances either side of stolen possibilities .

To unlearn time structures may, also, mean unlearning story structure. The ways we organise history, moving from Proterozoic (early life) to Palaeozoic (ancient life) to Mesozoic (middle life) and to Cenozoic (recent life) mirror, in ways, the ways narratives move from beginning to middle to end, with less emphasis on what comes next. Writer Anne de Marcken has publicly denounced endings, particularly "happy endings", and the sense of resolution they offer. She describes them as forms of "social atonia" which "inhibit us from acting on our impulses" (*Time for the happy ending: Anne de Marcken* 2012), comparing the classical dramatic structures of Gustav Freytag to that of rising carbon emissions.

So present,

the

tense

present

In Freytag's Pyramid (Freytag 2015), after the peak of climactic tension – the top of pyramid – comes a steady slope down to resolution, a fall in tension. But, in the Holocene, rising temperatures, emissions, and modes of consumption keep us on a tense ascent within a continually unresolved, and increasingly complicated, narrative. In other words, our stories don't match our reality, and our dissonance is sustained. Time, life, does not simply end, nor do our responsibilities. As de Marcken concludes: "life is *all* middle. Life is *all* progressive complication: ever unresolved, always uncertain."

claims us.

Leaving the ferry two hours later, fringed with vertigo, my body unsettled by the static concrete pavement, I press pause on an unfurling monologue. I think, instead, of the units that might govern the seven days and nights I will spend on the Isles of Muck, Eigg, Rùm, Canna and Coll. I think of solar days – intervals from one midnight to the next. I imagine being dictated by hunger, darkness and fatigue, being governed by swell, by old clocks: eons, eras, periods, epochs.

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During

The Bay of Laig is on the north-west side of Eigg. It's about five miles long and three miles wide. I've been walking across its beach for over an hour without running into another person. I'm listening to dull roars, splashes, trickles of streams running back to the sea. Stopping to stand – roughly centre – in the bay, it's easy to see the breadth of the horizon, but not so easy to contextualise distances. The cliffs either side of me don't seem to be getting any closer, or any further away. I have to adjust to this depth of field – try to differentiate the rippled indentations left in the sand as I work out how long it will take me to get back.

I make

I think of the geologist Marcia Bjornerud, who, for her PhD research, journeyed to Svalbard, part of a Norwegian archipelago that sees 24 hours of sunlight in summer, and that, was, for a long time labelled as having "No Official Time" due to zonal disputes between Russia and Norway. Standing on the glacial tundra, she considered what many would call "timelessness", landscapes that have been untouched by modern civilisation. Instead, she cultivated a term and a state of mind she would later coin as "time*ful*ness": "an acute consciousness of how the world is made by–indeed, made of–time"(2020, 5). This is how I try to look at the seemingly empty horizon line, discern the quiet signatures of an ongoing rock cycle. This is how I try to look at the waves, crashing waters without birthdays, without deaths, without bedtimes.

the

past

active

:

I walk back up the beach and approach the sandstone cliffs. This sedimentary rock is from the Middle Jurassic and is between 165 and 168 million years old. At this time, Eigg would have been submerged beneath shallow tropical seas. This was an age of plesiosaurs and ammonites – long-necked reptiles and coiled cephalopods that would continue to exist for at least another 100 million years. I place my hands on the hard folds of rock, gaze at its speckled texture, its yellowish black colour. I feel the quartz grains scratch my soft, mammalian skin. I sweep my fingertips along the rain-soaked edges and allow them to agitate my epidermis, the layer built to protect me from the environment. I consider the interaction: whether it is painful or not, whether it is painful to think of all that no longer exists.

a presence

of

uniformity and

occasion

;

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The beach is littered with spherical sandstone concretions, boulders of sorts that look like hard mushroom clouds, or bubbles. They are made of the same coarse-grained pale-yellow sediment as the cliffs. I walk to one a few metres way and sit. In front of me is "An Sgùrr" (jagged peak) on the south side of Eigg. The sgùrr is 393 metres high, made of a dark, volcanic glass, or pitchstone. It was formed by an eruption on the Isle of Skye in the early Eocene epoch, part of a series of increased igneous activity around 55.8 million years ago. At this time, the planet was characterised by a global mean surface temperature increase of between 4 and 5 °C. All that's left now is a negative impression, an ascending peak, left from lava flows that entered a valley and cooled quickly. It's a hardwearing rock, resistant to erosion, that towers over the island as a monument, a memory, of an extreme thermal event. I follow the shape of the peak with my eye, and stay for longer than is comfortable. I trace the shape of the Eocene and its now-remnants while the Jurassic presses into my sit bones. My eyes take in light. My flesh shapes itself around rock. The neurotransmitters in my brain lead to thought formation, lead to words.

the same
co-ordinates.

On the north of the Isle of Rùm, at Bàgh Rubha a' Mhoil Ruaidh (bay of the headland of the red boulders), I pick up a bloodstone near my feet and turn it over in my hand. It's a dark green quartz inflected with oxidised instances of maroon, iron. I dip it in the water nearby and watch the colours intensify. I consider taking it with me, as some tangible link to the when and where of my thinking. I wonder what absence I might leave in its place – if all spaces eventually get filled.

I am, too,
made

un

In front of me are exposed cliffs, layers of multi-coloured strata, complex geometric asymmetries. 3000 million years ago, during colossal mountain-building events, high-grade metamorphic rock was forming within the Earth, laying the foundations of a developing world. They set the tone for an ongoing conversation, set a tempo that would later be syncopated by the likes of a red Torridonian sandstone from the Proterozoic some 1000 million years later, deposited whilst huge rivers flowed across the landscape. The majority of the cliffs are made of this latter substance; light pinkish-hued crags give way to vivid coral. But lower down, closer to the water, a band of black cuts through the aspect, inserting itself into the script, an exclamatory statement formed around the same time as the sgùrr on the Isle of Eigg, some 950 million years later than the rock it interrupts.

exclusively – a sequence .

Isolated on the island for the next few hours I stay here, and wonder how I'll describe the experience of viewing these successions – these chronological layers – how I might place myself into the strata, textually. I consider the movements in front me, their fullness, the lithic discourse that stretches beyond my comprehension. I think of Greek language which differentiates "time" with the "right time" – with words that

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express the measure of time, its length and physical age (*chronos*), as well as its qualitative character (*kairos*), which holds a special temporal and fatalistic position. I think of the difference between uniformity and occasion, and whether they can really be separated. Sarah, walking alongside me, is researching Andean cosmology. She tells me about cyclical rationality, multi-directionality, where the future (a largely invisible entity) lies behind us, the past (a more visible entity) in front of us. I stare at the strata and tilt my head as far round as it will go – see the cliffs from another angle.

When

killing , *serving* , *keeping*

is

a form of grammar;

On Coll, we hike to the northern most point of the island, through ferns, bracken, buttercups, heather. From this vantage, I stare down at the archipelago, to where I will be in a few hours' time. I take a picture of the outcrop, small in the distance. Surrounded by the Atlantic, these islands are surrounded by a series of magmatic dykes. They are described as a "swarm", where parallel lines of molten magma have grouped together along a rift zone, injecting themselves into existing substances – in this case, Lewisian Gneiss. Sometimes, swarms are described as geological "traumas". On a map, the topography flat as the paper it's printed on, the dykes look like a series of simultaneous scrapes across the surface. I consider the axes of my interaction with these scrapes, the ways I'm always getting closer to one part of the islands, and further away from another.

what

rationality

always getting closer

.

After an uneven descent, we visit one of the archipelago's most remote beaches. I take time to sit on a particularly evident dyke – a blocky line around one metre in width, and four metres in length. It makes its way up from the entrance of the cove up onto the sand. The sun is behind me, and I cast shadows onto the now-hardened undulations. I walk up and down the rock, switch the position of light, the vantage point of my own shadows. I take deep breaths, lose count of how many I make, how many I spent on the island. I have no idea what time it is.

Before

I place my

self

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into strata .

The Isle of Canna is nearly exclusively made of basalt – a sequence of hardened lava flows. Tarbert Bay offers one of the most prominent examples of columnar jointing, a process through which igneous rock rapidly cools and forms polygonal prisms. I can't help but think of it as a form of grammar; a form of heated expression, a slice of a cyclical narrative.

I

take a minute

The thermal event that created these columns occurred in the aftermath of the end-Cretaceous extinction, an event which is estimated to have claimed over three quarters of the world's species, including non-avian dinosaurs, pterosaurs, ammonites, and belemnites. I am aware of how these disappearances could be framed as a full stop, an end stop punctuating a potential future, but how do disappearances, breaks, and empty spaces really function in texts – in strata? What happens in the negative space that follows the end of a sentence? What forms of care, and meaning, can we find intervals? Openings? Absences?

before the *very* end,

I propel myself over the columns. It is uncomfortable at times, maybe not *painful*, but the uneven edges of the basalt poke the soles of my feet, making temporary grooves as my movements blend the now and not-now, make contact points with another world. Walking has a cycle just like rocks – a *stance* phase where each foot makes ground contact, and a *swing* phase where the foot is lifted off the ground. I listen to the rhythm of my Holocene steps, my bi-pedal gait. *Stance, swing, stance, swing*. Am I metrical? Am I regular? If I were to be included in the Earth's symphony, would I be counted with stressed or unstressed beats?

blend the

I can't see exactly how these columns were formed, or actively see them moving. I can't see all the species that were affected by the rising temperatures. I am aware of all that I *can't* move alongside, all that I will *never get to* move alongside, to empathise with. I am, too, aware of how these notions aren't even coming to me on stationary co-ordinates. By the time I have written these experiences down, I will have moved – not just spatially but temporally – moved even further away.

uneven edges

,

Write down your own painful experiences with time. The words return to me as I feel the sharp sting of an unsettled ankle, unsteadied by the angles of the basalt, unsteadied by some other time. I make a note not to forget, not to forget how it feels. It is the start of my thinking, the middle of a story. It leads me to write. It leads me into complication.

clocks replaced with : with ; with .

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After

Keep it

– tick-tocking –

give

it

shape

.

As to

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squeezed

crushed

unsettled

in

the now

and not-

now,

what

anticipation

made by , made of

distances either side of

stolen

possibilities .

So present,

the

tense

present

claims us.

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I make

the

past

active

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a presence

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killing , *serving* , *keeping*

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371 I

372 take a minute

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376 ,

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Conclusion

The stakes of understanding the temporal biases that govern humanity's experience and behaviour have never been higher; cultivating literacy around deeper non-human timescales, and the context of living within these, is key to inhabiting a sustainable and cyclical existence. To engage in polytemporal thinking is to understand how extinctions continue to be seen and felt in reconstructed biomes, to acknowledge the asymmetrical timelines between damage and recovery, and to resist the conceptual complacency that runs alongside narrative endings.

In this piece, I utilised the parameters of practice-led research to demonstrate poetic investigation as a valuable means of accessing multi-directional, mutually affective, and polytemporal thinking. Here, both the final creative work, and the processes through which it has been made, are "revelatory" (Smith and Dean 2009, 5). In other words, the writing is both a form of research – a multi-directional methodology in action – and documentation of my research insights. This piece, created "after" the research trip, was affected by my kinaesthetic encounters "during" visits to the complexes of the Small Isles, but so too were my encounters with the Small Isles inflected by prior research, ideas and rationales created in the "before". By experimenting with chronological re-ordering, stratigraphic erasure and repetition, blending "before", "during", and "after", I demonstrate mutually affective relationships across time, and wrestle with both linearity and non-linearity, clocks and what they could be feasibly replaced with: the tensions we face in trying to counteract our destructive forms of time denial.

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