RE-SCALED The Biological Imagination in 21st-Century Literature and Performance

Edited by Liliane Campos and Pierre-Louis Patoine

LIFE,



© 2022 Liliane Campos and Pierre-Louis Patoine. Copyright of individual chapters is maintained by the chapter's authors.

This book was published with the support of the Institut Universitaire de France, the Sorbonne Nouvelle University, and the PRISMES – EA 4398 research laboratory.



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0). This license allows you to share, copy, distribute and transmit the text; to adapt the text for non-commercial purposes of the text providing attribution is made to the authors (but not in any way that suggests that they endorse you or your use of the work). Attribution should include the following information:

Liliane Campos and Pierre-Louis Patoine (eds), *Life, Re-Scaled: The Biological Imagination in Twenty-First-Century Literature and Performance.* Cambridge, UK: Open Book Publishers, 2022, https://doi.org/10.11647/OBP.0303

Further details about Creative Commons licenses are available at https://creativecommons.org/licenses

All external links were active at the time of publication unless otherwise stated and have been archived via the Internet Archive Wayback Machine at https://archive.org/web

Updated digital material and resources associated with this volume are available at https://doi.org/10.11647/OBP.0303#resources

Every effort has been made to identify and contact copyright holders and any omission or error will be corrected if notification is made to the publisher.

ISBN Paperback: 9781800647497 ISBN Hardback: 9781800647503 ISBN Digital (PDF): 9781800647510 ISBN Digital ebook (EPUB): 9781800647527 ISBN Digital ebook (AZW3): 9781800647534 ISBN XML: 9781800647541 ISBN HTML: 9781800647558 DOI: 10.11647/OBP.0303

Cover: 'Life Along the Nile', image by Earth Resources Observation and Science (EROS) Center (2014), https://www.usgs.gov/media/images/life-along-nile. Public domain. Cover design by Katy Saunders.

3. Still Life and Vital Matter in Gillian Clarke's Poetry

Sophie Laniel-Musitelli

Gillian Clarke's most recent collections of poems—Making the Beds for the Dead (2004), A Recipe for Water (2009), Ice (2012), and Zoology (2017)explore the mutual convergences and cross-metamorphoses between living bodies and inorganic matter. In its endeavour to reveal the vitality of inorganic matter, Clarke's poetry draws on new developments in biological and physical sciences. To do so, it registers the moments when matter changes states, such as the formation and dissolution of rock and ice. Conversely, it tracks the presence of inorganic matter at the heart of living bodies. For example, when, in her poetic autobiography At the Source, Clarke muses on the 'shadow-taste of stone' in food and wine, she concludes that 'We are made of stone, metals, stardust'.¹ In Clarke's recent works, living and non-living entities evolve and morph into one another through moments of emergence and disappearance, such as embryogenesis and metamorphosis. Hence, for instance, a tropism towards fossilization and the 'grace of bones / Eloquent in stone',² when a living body reverts to the inorganic matter it arose from. The eloquence of stone can be heard when the poet lingers on the 'loosed flotilla of [the] vertebrae' of a fossilized Ichthyosaur and 'the dolphin-flip of her spine', conveying a sense of sleek movement, the image of an agile swimmer who did not lose her grace in death.3 The fossil also records a moment of emergence as the fossilized sea creature 'dies giving birth':4 Clarke's

¹ Gillian Clarke, At the Source: A Writer's Year (Manchester: Carcanet, 2008), p. 74.

² Gillian Clarke, Zoology (Manchester: Carcanet, 2017), 'Ichthyosaur', p. 27, 19–20.

³ Clarke, 'Ichthyosaur', 3–4, 8.

⁴ Ibid., 5.

poetry is drawn towards the reversibility of matter, from living to inert and from inert to living.

That new interest in the sciences corresponds to an environmental turn. In At the Source, Clarke explains that 'we were suddenly-it seemed overnight-made aware that the planet could become uninhabitable and that it could die. We all needed a new way to write about the natural world'.⁵ Attending to the energies of nonhuman bodies and nonliving matter is part of Clarke's commitment to environmental poetics, in an attempt to supplant 'the image of dead matter or thoroughly instrumentalized matter feed[ing] human hubris'.⁶ Born in Cardiff in 1937 and currently running a small organic farm in Ceredigion, Clarke has always played a central role in the life of contemporary Welsh poetry: she is the founder of the Writers' Centre in North Wales and was the National Poet of Wales from 2008 to 2016. Thus, she is often categorized as a local poet, especially since most of the poems from her earlier collections, such as The Sundial (1978) and The King of Britain's Daughter (1993), find their main setting and focus in the Welsh landscape and cultural heritage. Yet, her recent poetry, inspired by climate science, rearticulates the local and the global, inscribing Wales within the broader challenges the Anthropocene poses to poetry. It also connects human temporality and geological times: poetic writing draws on the scientific imagination to alter the scales of space and time prevalent in her earlier work.⁷ That is part of her poetry's attempt at inhabiting the Anthropocene, whose 'most difficult challenge [...] is represented by scale effects, that is, phenomena that are invisible at the normal levels of perception but only emerge as one changes the spatial or temporal scale at which the issues are framed'.8

This chapter aims at exploring the ways in which Clarke uses shifts in scales to envision the vitality of matter, a vitality simultaneously explored by thinkers such as Jane Bennett, whose *Vibrant Matter: A Political*

⁵ Clarke, Source, p. 13.

⁶ Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham and London: Duke University Press, 2010), p. ix.

⁷ Editors' note: A similar juxtaposition of geological and human temporalities can be found in *Beaming Sahara* (2019), a performative installation discussed by Eliane Beaufils in chapter 13.

⁸ Timothy Clark, *Ecocriticism on the Edge: The Anthropocene as a Threshold Concept* (London and New York: Bloomsbury Academic, 2015), p. 22.

Ecology of Things from 2010, provides a key theoretical framework for this analysis. To explore the constant metamorphoses and interactions of organic and inorganic matter, her poetry plays with scientific representations of time, through the heterogenous yet interacting scales of biological time and geological time. Clarke's poetry experiments with modes of sensation inspired by scientific imaging, staging the vitality of matter as it develops over timescales that are imperceptible to the human eye, from geological æons to the microscopic development of new organisms in biology.

The Poetry of Stone

In At the Source, Clarke muses on the language and temporality of geology: 'Igneous, metamorphic, sedimentary rock. How I loved my Guide to Minerals, Rocks and Fossils. I loved its language, the names of rock. Earth took its time with rock. It took ages. Then life began, fidgeting and wriggling for an unimaginably long, slow time, for ages, æons, chrons'.9 Clarke surreptitiously moves from the æon, the 'largest division of geological time' to the neologism 'chrons'.¹⁰ From the Greek χρόνος, it leaves the realm of the geological to get closer to lived time: to the temporality of consciousness and to the measured time of everyday life, chronometers, and chronologies. In the seamless passage from æons to chrons, the geological and the biological develop along intersecting timelines. This is also the case in Making the Beds for the Dead, in the section entitled 'The Stone Poems'. The title of each poem in the section associates the name of a living being or of a mineral with the name of a geological era: 'Woman washing her hair, Devonian', 'The Stone Hare, Lower Carboniferous', or 'Coal, Upper Carboniferous'.

'The Stone Hare' offers two timescales—stone formation and the emergence of a living body—in one artistic form, that of the stone hare sitting on the poet's desk as she writes:

> In its limbs lies the story of the earth, the living ocean, then the slow birth of limestone from the long trajectories

⁹ Clarke, Source, p. 49.

¹⁰ Oxford English Dictionary, 2nd ed., version 4.0.0.2 (Oxford: Oxford University Press, 2009) [on CD-ROM], entry 'æon' 3.

of starfish, feather-stars, crinoids and crushed shells that fill with calcite, harden, wait for the quarryman, the timed explosion and the sculptor's hand.¹¹

The sculpture emerges from stone that was once alive as primitive sea creatures. Those organisms seem to mediate between temporal planes and between scales, since their names—'starfish' and 'feather-stars'— are reminiscent of their origins in the inorganic matter of stars, but also hint at the mineral matter produced by living bodies—such as 'shells'. Carving, like poetry, is the art of reviving the memory of that former life into the figure of a new living body. Clarke's poetry tries to envision affects outside subjectivity: geological times are a way to go beyond subjective memory, towards a form of memory inherent in matter itself. In 'The Stone Hare', the sculpture is 'a premonition of stone'.¹² There are various temporalities at work within the stone, which bears the memory of its past but also the premonition of its future; art simply releases these temporalities. Each moment in the work of art, from stone formation to carving, survives and embraces the other.

'The Stone Hare' explores the formative agency at work within matter, and the common drive towards form in inert matter, living matter, and artistic objects. The stone waiting for the hand of the carver to reveal its form shows that form is latent within matter itself. Hence, Clarke's 'aesthetic is explicitly driven by a Romantic organicism which sees... sculpting as a process, not of construction, but of discovery'.¹³ Poetry, like stone carving, is about letting form emerge out of matter, because matter is vital and artistic, and because art is the natural continuation of the active and formative powers within matter. From primitive sea creatures to the stone and the carver, the agents forming the stone hare are animal, mineral, and human: agency is shared by 'an ontologically diverse assemblage of energies and bodies, of simple and complex bodies, of the physical and the physiological'.¹⁴ Clarke's poetry moves from the representation of cross-metamorphoses to the exploration of minerals, living bodies, and artworks as an assemblage sharing agency. The emergence of form is also a sonic process; the more recent poem 'Ice

¹¹ Gillian Clarke, Making the Beds for the Dead (Manchester: Carcanet, 2004), p. 27, 6–11.

¹² Clarke, Beds, p. 27, 3.

¹³ Ian Gregson, The New Poetry in Wales (Cardiff: University of Wales Press, 2007), p. 12.

¹⁴ Bennett, Matter, p. 117.

Music' is a beautiful example of the sonic creativity of matter when it changes states: 'we both hear the music, the high far hum of ice, / strung sound, feather-fall, a sigh of rime, / fog-blurred syllables of trees, sap stilled to stone'.¹⁵ The homophony between rime—which means 'hoar-frost' or 'frozen mist'—and rhyme shows that the vitality of matter is a model for poetic writing. The rhythmic and phonic creativity of matter allows poetry to register its moments of change.

'A Recipe for Water' continues the investigation of minerality in a representation of poetry as a craft, directly hewn out of the conformation of matter. The poem combines explorations of the chemical composition of water, of the origin of the word 'water', and of the organic experience of water on and in the poet's body:

Calcium, Magnesium, Potassium, Sodium, Chloride, Sulphate, Nitrate, Iron.

Sip this, the poetry of stone, a mineral Latin in our blood, our bone. [...]

That drop on the tongue was the first word in the world head back, eyes closed, mouth open to drink the rain *wysg, uisc, dŵr, hudra, aqua, eau, wasser*

You imagine me writing in the falling rain, rain on the roof, writing in whispers on the slates' lectern, rain spelling out each syllable like a child learning to read.¹⁶

The poem looks for the composition of water in the minerals that water picks up on its journeys through rock formations. The speaker then traces the imagined origin of language in water as the primordial

¹⁵ Gillian Clarke, Ice (Manchester: Carcanet, 2012), p. 14, 10–12.

¹⁶ Gillian Clarke, A Recipe for Water (Manchester: Carcanet, 2009), pp. 20–21, 11–14, 37–46.

condition of the apparition of life, circulating freely between the organic and the inorganic. It looks for the fabled time when the word for water was born out of a raindrop on a tongue. Language is staged as the result of the action of water on the body: it was born in the throat along with the sensation of thirst and the pleasure of drinking. The poem searches through the material memory of language, because language proceeds from material and organic processes. Poetry tries to access the geological past of language as the result of a sedimentary process, symbolically and quite literally, hence the fact that geology provides a heuristic model for poetic writing. The 'slates' lectern' is represented as a surface moulded by rain, bringing the same movement to geology and writing: both emerge through a long process based on physical contact: the exposure to water, and in particular to rain on the lectern, but also, earlier on, on the tongue and in the throat, connecting the geological and the poetic. Geology provides not only a heuristic model but also a metaphor for the temporality of writing, since Clarke sees her own writing as a process of sedimentation: her poetic material consists in 'layers of experience, story, snapshot, hearsay and imagination, images laid down one on the other like sedimentary rock'.¹⁷ The way geological temporality and the timescale of a human life collide in the poem is part of Clarke's poetic endeavour to inhabit the Anthropocene as a geological era in which human agency plays a central part. Earlier in the poem, Clarke imagines a 'second word for water / Dŵfr. Dŵr. Dyfroedd. Dover'.¹⁸ For her, language is engrained in the land, and human culture draws on the formative forces at work within the material formation of the landscape. This raises the issue of nativism in her poetry. For Ian Gregson, 'Clarke's poetic mission is to champion naturalness, which becomes especially challenging where identity issues are involved [...]. Her equation of language and land implies a very unsettling racial essentialism: in the context of nationality the emphasis on naturalness leads to the ideology of blood and soil'.¹⁹ Gregson's critical analysis participates in an earlier debate surrounding the question of identity as blood and soil in Clarke's poetry, before it was complicated by its environmental turn. Sam Solnick's wider reflection on ecocriticism is helpful to characterize

¹⁷ Clarke, Source, p. 51.

¹⁸ Clarke, Recipe, p. 21, 25-26.

¹⁹ Gregson, New Poetry, p. 12.

that turn: Clarke's 'early focus on phenomenological engagement and specific places has been modified by more refined considerations of the complex relationships between local and non-local'.²⁰ For Meurig Wynn Thomas, gender has always been a crux and a transformative drive in Clarke's identity: 'the traditional Welsh obsession with male ancestorworship had metamorphosed into Clarke's very differently motivated and very differently orientated search for her distinctive antecedents as a woman'.²¹ In 'A Recipe of Water', the origin of Dover in $D\hat{w}r$ is thus displaced by the substitution of a male bardic figure by a woman:

Imagine the moment a man, a woman singing in a dark age,

gazed from those chalk heights at the vast and broken seas

and sang this word, song and word on the tongue, in the throat,

finding a name for the element.²²

In a reversal of the previous image, the woman no longer stands below the rain, receiving the drop that creates the word 'water', but above the sea, and gives water its name. The substitution does not neutralize the rootedness of the word in the place, but initiates a shift from the imagery of the fixed source back to the element of water and its constant movement, materialized here in the 'vast and broken seas'. In the poem, water is indeed defined by its ability to circulate, picking up its constitutive elements as it goes, 'seeping page by page / through the strata, / run[ning] black in the aquifers'.²³ As a female poet, Clarke had to reinvent her origins within a bardic culture traditionally inherited from man to man, complicating her sense of belonging to an essentialized and localized heritage. Hence her recent poetry's tropism for the circulation of water as a deterritorializing force, to seashores and river banks as

²⁰ Sam Solnick, Poetry and the Anthropocene: Ecology, Biology and Technology in Contemporary British and Irish Poetry (London and New York: Routledge, 2017), p. 19.

²¹ Meurig Wynn Thomas, *Corresponding Cultures: The Two Literatures of Wales* (Cardiff: University of Wales Press, 1999), p. 190.

²² Clarke, Recipe, p. 21, 27–33.

²³ Ibid., p. 20, 4–6.

'ambivalent non-territorial borderland', but also as the sites of a fluid reterritorializing movement of Welsh identity less in blood and soil than in ever-changing waves and poetic language.²⁴

Playing with Scale

We can better understand how Clarke's recent environmental poetry recalibrates the scale of local identity by re-examining the mineral figures that traverse it. In *At the Source*, Clarke reminisces about the way she used to imagine stones germinating like seeds, when she was a child: 'Could I suck a pebble until it dissolved like a sweet? Would there be, at the very last moment, a seed, as in an aniseed ball? What would you grow from the seed in a stone? I knew, as a child, that crystals grew, that they accrued, multiplied and made themselves in the dark'.²⁵ A vital process thus seems at work in the formation of crystals. Crystallization testifies to the ability of inorganic matter to organize into regular structures. The choice of the verb 'to grow' turns the formation of crystals into a process akin to organic development. That vitality is the main drive behind the poem 'Pebble', published four years later, in *Ice*:

Weigh two hundred million years in your hand, the mystery of eras, a single syllable pulsing in a pebble. [...] Take in your right hand from the evening sky that other sad old stone, the moon. You, Earth, pebble, moon-stone, held together in the noose of gravity.²⁶

A pebble bears within itself the memory of geological æons, 'the mystery of eras'. It is animated by the whole movement of the earth as tides are governed by gravity through the influence of the Moon. Inorganic matter is pulsating with the rhythms of the tide and of geological times, creating the seed of poetic language. From this seed

²⁴ Alice Entwistle, *Poetry, Geography, Gender: Women Rewriting Contemporary Wales* (Cardiff: University of Wales Press, 2013), p. 120.

²⁵ Clarke, Source, p. 50.

²⁶ Clarke, Ice, p. 59, 1–4, 9–12.

emerge the alliterations we can hear in 'single syllable' and 'pulsing in a pebble', reinforcing that assemblage of language, body, and stone. *At the Source* stages the simplicity of the writing process when Clarke asserts that 'language hands [her] a stone'.²⁷ The verb 'to hand' confers the simulacre of a bodily form to language. In the image of the pebble melting in the mouth like a sweet, the energies of matter congeal into form, for a time, before dissolving. Language, through the pleasure of rhythm and orality, participates in that fluid process. Those energies congeal into syllables when the poet's tongue enters the shared creative process.

Clarke's poetry plays with scales in its endeavour to apprehend the Anthropocene, which 'challenges us to think counter-intuitive relations of scale, effect, perception, knowledge, representation and calculability'.²⁸ In *At the Source*, Clarke also recalls a game of scales played with pebbles:

As a child I used to play a game which I called 'big and little', which now seems to me a primitive version of a poet's game, physical and imaginative in nature, yet a child's way into a questioning habit of thought. Halfclose your eyes and stare, or blur your ears. A stone becomes a planet. Your breath is the wind, a quarrel is a storm, a storm becomes a war. It works the other way too. Your cupped hand can balance the pebble of the setting sun before it is dropped into the sea. With a finger you can blot out a Neolithic stone, or a planet. Take a magnifying glass to your thumb-print. Place a hair under a microscope. These are geographies. It is a game played with scale and perspective that has always fascinated me.²⁹

Clarke's conception of 'geographies' broadens the vision of the narrowly local generally associated with her earlier poetry from a static cartography of Wales to a game of shifting scales moving freely from a pebble on a beach to the night sky, or to a hair under a microscope. Through the analogical interconnection between microcosm and macrocosm in 'your breath is the wind', the poet's body participates in the creative process at work in the elements. It generates a reciprocal relation of creative gift between what is called the subject and what is called the object in classical philosophy. Modes of perception introduced

²⁷ Clarke, Source, p. 46.

²⁸ Clark, Ecocriticism, p. 13.

²⁹ Clarke, Source, p. 31.

by scientific representations are essential to the process: to envision the common vitality of the organic and the inorganic, the poet needs to envision incommensurable yet intersecting scales, be they temporal—geological and biological timescales—or spatial, hence the planet in the hand and the hair under the microscope.

Clarke's poetry also makes use of scientific representations when it turns toward carbon, a mineral that mediates between the vegetable realm, animal bodies, and inorganic matter through decomposition. From that perspective, it can be seen as the material manifestation of what Jane Bennett terms 'an ontological field without any unequivocal demarcations between human, animal, vegetable or mineral'.³⁰ The poem 'Coal—Upper Carboniferous' unfolds along two timescales, from the prehistorical 'tropical swamp that laid down the coal' to the individual story of a miner and his son, exploring the heritage of the coal mining industry in Wales from generation to generation:

> From Abercarn, Gwent, from the tropical swamp that laid down the coal he cut when he was a boy, fourteen years old and a real man now, working the stint at his father's side,³¹

The slow process of coal formation from organic remains belongs to geological timescales and participates in historical times through the industrialization of Wales. Local history is reintegrated into planetary time through coal, an entity active both in ecological and economic terms. As one of the main agents of climate change, coal also rearticulates the local and the global as it de-localizes Wales within the wider scale of carbon emissions and their consequences all over the globe. Coal embodies the passage from the living to the dead, and then back not only to carbon-based life forms, but also to a whole civilization based on fossil fuels. The poem looks into the entanglement of human societies and material formations, ever since coal entered an assemblage with human agents during the industrial revolution, in a 'logic [that] encompasses politics as much as physics, economics as much as biology, psychology as much as meteorology [and] recurs at all scales and locations'.³²

³⁰ Bennett, Matter, pp. 116–17.

³¹ Clarke, Beds, p. 27, 1-4.

³² Bennett, Matter, p. 118.

Clarke also invites us to attend to the interactions and resonances between the mineral and the organic in her poem 'Horsetail', which focuses on a plant that feeds directly on stone. In its essential in-betweenness, horsetail mediates between two vegetable realms—the grass and the tree—and presides over metamorphoses in matter, from stone to metal, and from rock to living body:

Not a grass. Not a tree. Primitive, leafless leftover

from forest giants that fossilised to coal, its jointed stems rising in whorls

from coastal salts, stones, ashes, sand, colonising ground where the trains once ran.

It feeds on rock, sucks metals out of stone,

prospecting for wealth in the ground.33

The poem looks into the mineral at the core of living structures. Like rock formations, living bodies bear the memory of the earth, as horsetail appears as a persistence 'from forest giants that fossilized to coal'. The word 'prospecting' connects the agentivity of horsetail with that of miners, recasting human activity as similar to that of plants, thus joining the historical and the ecological. That vision of the plant as living stone offers another model for the relation to minerals in the Anthropocene. By giving the plant the role of the prospector, it places extraction in a cycle of life rather than of exhaustion. Clarke's botanically inspired verse also reflects the assimilation of light in vegetable forms of life, when, for instance, 'Ferns sip sunlight at a rock fissure'.³⁴ Her poems explore modes of existence akin to plant life, trapping the light, as in 'Ice Harvest', with its 'blocks of luminous blue, sky turned to glass, / each one clear to the needle of light at its core', and in 'Ode to winter', in which humans 'hoard light'.³⁵ There exist plant-like modes of being within humans and minerals. Her poetry looks into entities that are able to trap light. Like coal, its dark counterpart, light mediates between the

³³ Clarke, *Recipe*, p. 56, 1–9.

³⁴ Clarke, 'Mine', Zoology, p. 36, 4.

³⁵ Clarke, Beds, p. 29, 5–6; and Ice, p. 75, 1.

organic and the inorganic through the reference to photosynthesis. Like stone, water, and coal, it presides over transformations from one state of matter to another.

Images of Metamorphosis and Development

Clarke's poetry is drawn towards moments when matter changes states, from living to inert, and from inert to living, hence a tropism towards biological metamorphosis, which is understood by contemporary science as a moment of massive birth and massive death at the cells' level. Metamorphosis is a central motif in 'Death's Head Hawkmoth Caterpillar':

> It will spin itself a chrysalis of spittle and clay, dissolve, metamorphose, pupate and wait for a rearrangement of its molecular being, a stirring of self in the sun, a freeing. [...] the mask of death on its head from the moment of birth.³⁶

The 'rearrangement of its molecular being' can be read as a reference to developmental biology, and to the massive death of cells involved when the organism is reborn through metamorphosis. Hence 'the mask of death on its head from the moment of birth'. Following this figurative vein, in 'Marsh Fritillaries', language itself becomes a metaphor for biological metamorphosis: 'I love their language, pupae, chrysalides'.³⁷ Poetic language strives to emulate metamorphosis in its plasticity and active participation in radical changes of states. Clarke's postromantic vision of the Welsh nation's origins in landscape and language has often been read as a form of nationalistic nostalgia. But in her most recent collections, the quest for the origin morphs into a dialectics between origins and endings where heterogenous temporalities coexist. This is visible in the image of 'the mask of death on its head from the moment of birth', in which birth and death become two faces of the same form of life.

³⁶ Clarke, Recipe, p. 58, 7–10, 14.

³⁷ Clarke, Zoology, p. 30, 7.

One of those heterogenous yet colliding timelines on the scale of the organism is cell birth and death in metamorphosis. This is the case in 'Burnet Moths', a poem about the death of a dog:

By the path, bound to grass stems, spindles of spit, chrysalids, papery, golden, torn, unfurling sails of damp creased silk, spinnakers filling with breath, burnet moth wings of scarlet and black like opera stars who live and love and die in an hour on the flight of an aria.

Now it's her turn to die [...] [...] and she crumples to sleep at my feet, folded back to before she was born.³⁸

Two temporalities close in on each other and become involved in one another: the linear life of humans and dogs alike, and metamorphosis within the life cycle of the burnet moth. Two opposite yet parallel processes meet through the motifs of folding and unfolding. The poem offers a vision of the folding in together of life and death as the two sides of a paper-thin membrane, as the dog is 'folded back', and 'crumples' like the papery chrysalis of burnet moths. In that converging movement, death itself appears as a seamless process of metamorphosis back into inorganic matter, as if that reversion, 'dust to dust, ashes to ashes', was only an inversion of the process presiding over the moths' rebirth. The papery and torn quality of the chrysalis offers a vision of the complex temporality of poetry. It stages poetry's own dependence on its ephemeral material support while at the same time celebrating its own ability to pupate and metamorphose into various layers of meaning on various timescales.

After geology, developmental biology is probably the most important scientific paradigm in Clarke's works, providing a possible homology of methods for her poetry. My reading suggests that this interest is anchored in the shared question of coexisting timescales. Developmental biologists have lately tried to address the various levels of processes unfolding on different timescales within living organisms. Their branch of biology has been defined as 'the science that seeks

³⁸ Clarke, Ice, p. 38, 7–13, 15–16.

to explain how the structure of organisms changes with time'.³⁹ It studies various processes shaping the individual through time, such as differentiation, pattern formation, morphogenesis, and growth. These processes used to be studied along a standard timeline, with stages such as fertilization, gastrulation, and, in certain species, metamorphosis. These standardized stages have been increasingly questioned within the field of developmental biology over the past decade, as they make it more difficult to account for distinct but intersecting forms of causation, such as the roles of genetics and of interactions with the environment in development: 'These normal stages are a form of idealization because they intentionally ignore kinds of variation in development, including variation associated with environmental variables'.40 The tropism in Clarke's poetry towards developmental biology seems less a form of influence and more the recognition of a common problem: how do you attend to the heterogenous yet interacting timescales within bodies and with their environments?

'Oestrus', a poem on embryogenesis, is located at the meeting point of various temporalities: the time of day, the season, the hormonal cycle of the ewe, the encounter with the ram, and the gestational period.

> In shortening days, reducing light, her chemistry stirs, sleeping hormones wake in her brain's dark chamber, and she's ready, restless again for the scent of the ram.

On heat she greets him, sniffs him to be chosen. The ewe takes the ram, and something quickens in the secret dark, a sensed flowering, a difference in the pulse of things,

multiplying and dividing cells, ova, zygote, embryo, foetus, lamb, an unstoppable force strong as the river in the mountain's heart.⁴¹

³⁹ Jonathan Slack, Essential Developmental Biology, 2nd ed. (Malden, MA: Blackwell Publishing, 2006), p. 6.

⁴⁰ Alan Love, 'Developmental Biology', *The Stanford Encyclopedia of Philosophy*, Spring (2020), https://plato.stanford.edu/archives/spr2020/entries/biology-develop mental/.

⁴¹ Clarke, Zoology, p. 46, 5–16.

The poetic voice does not simply enumerate the various stages in the development of an embryo, but also develops a reflection on temporality in poetry and biology. The poem accompanies the emergence of a living form at the conjunction of widely differing yet deeply interacting timescales. For instance, the astronomically determined time of the seasons and of the hour of the day meets the biological clock of an ewe, who also interacts with the rest of the herd to choose a ram. The last lines quoted above, 'an unstoppable force strong / as the river in the mountain's heart', are reminiscent of Conrad Waddington's epigenetic landscapes. To figure the role played by modifications in gene expression during embryonic development, British biologist Conrad Waddington commissioned the drawing of a mountainous landscape for his book Organisers and Genes (1940). He then invited his readers to envision the complex interaction of genetics and environment by 'Looking down the main valley towards the sea. As the river flows away into the mountains it passes a hanging valley, and then two branch valleys, on its left bank. In the distance the sides of the valleys are steeper and more canyon-like'.42 This way, the reader would be able to envision the trajectory of the developing embryo along branching paths, offering a sensorial experience of the three main principles of Waddington's epigenetic theory: 'canalization, homeorhesis, and scaling'.⁴³ In *Epigenetic Landscapes: Drawing as Metaphor*, Susan M. Squier argues that such creative models 'function kinetically, affectively, and methodologically, as well as epistemologically'.44 Squier is interested in the way epigenetic landscapes invite us to shift our view of organic development 'from reductionist linearity to situated, kinetic complexity, with ecological and global sociopolitical significance'.⁴⁵ One could argue that the poem 'Oestrus' acts as a form of epigenetic landscape; it offers a vision uncannily close to Waddington's visualization of the intersecting causations between genetic code and gene expression as the trajectory of a mountain river, which is always open to bifurcations, though generally canalized. The poem offers a powerfully sensorial model in which the

⁴² Conrad Waddington, *Organisers and Genes* (Cambridge: Cambridge University Press, 1940), p. 93, quoted in Susan M. Squier, *Epigenetic Landscapes: Drawing as Metaphor* (Durham and London: Duke University Press, 2017), p. 11.

⁴³ Squier, Epigenetic Landscapes, p. 11.

⁴⁴ Ibid., p. 16.

⁴⁵ Ibid., p. 18.

plasticity and creativity of language allow the reader to experience these branching pathways in organic development. Various types of causation, within and outside the body of the ewe, collide to produce a new body, the way geological processes meet human creativity, like the forming of limestone out of sedimented sea organisms to engender a stone hare in Clarke's *Making the Beds for the Dead*. It all begins with the experience of the invisible, 'in [the] brain's dark chamber', and ends with a new visualization of the organic development, a new mode of visibility based on Clarke's scientific imagination, envisioning the inside of the womb, 'like a match struck in the dark'.⁴⁶ To register that 'difference in the pulse of things', one needs to combine two modes of vision: poetry as an art of pulse and rhythm, and the scientific ability to play with scales.

Clarke's poetry endeavours to register the 'difference in the pulse of things', that interchange between the organic and the inorganic, in the following poem, entitled 'Virus', which stages the appearance of a virus as a form constantly mediating between life and death in its modes of being and in its potentially destructive interaction with its hosts:

wanting nothing but a living host to practice symmetry and cell division.

Brought from space on the heel of a star, a primitive chemical seething in soupy pools, its arithmetic heart bent on sub-division, multiplication.⁴⁷

The virus is one of the recurring forms of mediation between the organic and the inorganic in Clarke's poetry. Here again, the poem uses the lexicon of developmental biology—cell division and multiplication—to describe an entity at the crossroads of the living and the non-living. The poem moves freely between biological and geological imagery to try and envision the shifting nature of the virus: '[c]ell division' becomes 'its arithmetical heart / bent on sub-division, multiplication', in a process akin to the crystallization in inorganic matter investigated in *At the*

⁴⁶ Clarke, *Zoology*, p. 46, 27.

⁴⁷ Clarke, 'Virus', Beds, p. 56, 4-12.

Source. It looks at the formation of living bodies using mathematical laws shared by inorganic and organic matter. The poem then places its virus under an imaginary microscope: 'On screen, an image / of rotational symmetry / in a box of glass'.⁴⁸ Scientific visualization generates poetic imagery: the virus appears 'on screen', as an 'image', as an entity reconstructed by a computer, as a digital construct based on the laws of mathematics. Like developmental biology and crystallization, scientific imaging is based on mathematical laws. Those laws are thus represented as the generative principle at work both in the object and in its modes of representation. Art and scientific visualization then come together in the image of 'still life, / computer generated':

Or still life, computer generated, a dandelion head, each seed a field, folding, unfolding flower smaller than a bacterium, butting blind towards the living cell.⁴⁹

Within each microscopic 'dandelion head', each seed becomes a field. The sensory modalities explored in the poem create a game of scales close to the game Clarke used to call 'little and big' when she was a child, with its imaginary geographies based on sensory experiments with astronomical and microscopic scales. 'Virus' thus reveals the potential for new images and new visualizations contained in Clarke's references to science.

Sounding the Flesh

Clarke's poetry is about listening to matter, about attending to its sonic quality: it is about visualizing through sound. In *At the Source*, Clarke reminds us that hearing is about sensing vibrations through direct contact: 'I passed no childhood day without the company of stones, [...]. When I put my ear to it I could hear the stone purr like the sea in a shell; I could feel the Neolithic in the stone, like touching the arches when a train crosses a viaduct'.⁵⁰ Two poems in *Zoology*, 'Damage' and

⁴⁸ Clarke, Beds, p. 56, 13–15.

⁴⁹ Ibid., p. 56, 19-24.

⁵⁰ Clarke, Source, p. 51.

'Audiology', are about scar tissue formed in the inner ear of the poet when she was an infant, probably from the sound of exploding bombs during World War II.⁵¹ The two poems explore the tactile dimension of sound, which can strike, hurt, and enter the very fabric of the body. In these reflective poems, sound paradoxically becomes what resists the timeline of development; it embraces the temporality of trauma, as it becomes part of the material memory of the body:

> On the screen, a scar, crow on a wire, scored word on the cochlea of a baby born to war, or a gun fired too close that summer of skies crying out loud

when bombers roared the cradled corridors spiralling down the ear's conch, scorching newborn skin, till a lifetime later the scar surfaces, a blemish, blurring sound.⁵²

A scar from a very long time ago resurfaces. The scar made by the violent contact of a sound is translated into a visual representation. These images hint that there is something tactile and intimate about poetic imagery and medical imaging alike. In 'Glâs', poetry is also a mode of sounding, trying to form the image of some hidden material construct through the exploratory use of sound:

and I'm dreaming that secret web of water underfoot, down through the storeyed strata in Earth's unmappable corridors of stone. [...] invisible silvers silent as ultrasound.⁵³

In places from which sight is excluded, imaging is possible through the use of ultrasound, through the experimental use of sound. Science and poetry are imagined as reconstructing blind landscapes such as the depths of the Earth, in which everything is packed with matter, and there is no distance for the eye to build a sense of perspective. The poem carries out another sensory experiment through touch: the sense of tactility and the feel of gravity built by 'underfoot' and 'down through'

⁵¹ Clarke, Zoology, p. 80 and p. 81.

⁵² Clarke, 'Audiology', 1-8.

⁵³ Clarke, 'Glâs', Ice, p. 43, 6-8, 14.

allow the poem to follow the 'seeping' of water as it 'run[s] black in the aquifers',⁵⁴ revisiting the poetics of direct contact that connects the geological and poetic scales in 'A Recipe for Water'.

In 'Scan', dedicated to the use of ultrasounds on pregnant ewes, the homology of method between poetry and scientific imaging is explored further, in the ability to translate sound waves into images:

> The scanner eyes the womb. Cells have multiplied, the buds of limbs, the casket of a skull.⁵⁵

Through innovative imaging, and in particular through the exploratory use of sound, science and poetry alike offer a reconstruction of inner spaces that are inaccessible to the eye, as the young body of the lamb takes shape inside the womb. They also offer a reconstruction of the inner times of ontogeny, as in 'Oestrus'. The forming brain of the lamb is twice concealed: inside the skull, itself inside the womb. The skull and the womb are not only vessels but also formative layers of tegument, as if the young body of the lamb and 'the buds' of its limbs were a germinating bulb. There is a tactile quality to sound in the poem, as it allows for the digital reconstruction of the outlines of the womb. The body of the 'lamb unfolding in her womb'⁵⁶ forms in contact with the walls of the uterus, staging the interactions of genetics and epigenetics: in the poem 'Oestrus', fleshly contact appears to be just as formative as the unfolding of the genetic code.

Science in the Landscape

Clarke's interest in science stems from a sense of emergency as several temporalities meet head-on. The colliding timescales of the poet's lifetime and of climate change are present in all her recent collections, from 'Aftermath' to 'Glacier', 'Polar', or 'New Moon', to quote only a few poems.⁵⁷ For instance, in 'Glacier' the polar landscape suddenly loses its solidity, in a shift emphasized by the homophony of 'floe' and 'flux':

⁵⁴ Clarke, Recipe, p. 20, 4-6.

⁵⁵ Clarke, Zoology, p. 51, 7–10.

⁵⁶ Ibid., p. 51, 15.

⁵⁷ Clarke, Beds, p. 76, Recipe, p. 34, Ice, p. 9, and Zoology, p. 112.

Oh, science, with your tricks and alchemies, chain the glacier with sun and wind and tide, rebuild the gates of ice, halt melt and slide, freeze the seas, stay the floe and the flux for footfall of polar bear and Arctic fox.⁵⁸

The landscape suddenly acquires the fluidity, provisionalness, and vulnerability of human culture. Conversely, the poem calls for a science powerful enough to act on a planetary scale, hence the poetic voice's appeal to science. Clarke thus wonders in *At the Source*:

Would Keats, in the light of our knowledge today, have complained about the unweaving of the rainbow? Would he not have found a new nature poetry that praises the way a rainbow is constructed from the seven colours of light split and refracted by a water drop? To combine a curiosity for science with love of the natural world is how humankind must live on earth now, and poetry should speak of it. It is no longer just the concern of those described as 'nature poets' to protest at the spoliation of the earth, or of scientists to show curiosity and concern for the earth.⁵⁹

The need to invent a new poetics is the direct consequence of the altered state of nature. In Clarke's poetry this ambition often takes the form of a dialogue with some of the Romantic poets, who offered renewed visions of nature and of its interactions with humans and their language, in the age of modern science. For instance, in 'A T-Mail to Keats', the poetic voice writes to John Keats to start an imaginary discussion through time (hence the T-mail) about his claim in *Lamia* that science is 'unweav[ing] the rainbow':⁶⁰ 'I want to talk with you of the new nature, / of your grief at science for *unweaving the rainbow*'.⁶¹ For Clarke, 'the climate is unweaving the poetry': that unravelling happens both in cultural representations and to the actual rainbow, through the alteration of climate phenomena.⁶² In *At the Source*, Clarke meditates on the gradual disappearance of a local species of bluebells: 'Bluebells. *Endymion non-scriptus*. [...] Will Endymion be lost to climate change?'⁶³ Romantic

⁵⁸ Clarke, Recipe, p. 34, 10-14.

⁵⁹ Clarke, *Source*, pp. 13–14.

⁶⁰ John Keats, *The Major Works*, ed. by Elizabeth Cook, 2nd ed. (Oxford and New York: Oxford University Press, 2001), p. 321, II, 237.

⁶¹ Clarke, Recipe, p. 17, 6–7.

⁶² Clarke, Source, p. 92.

⁶³ Ibid., pp. 96–97.

poetry might soon become unreadable since it has built its poetic idiom on living beings doomed to disappear. For Clarke, it becomes urgent to work out a renewed covenant between natural phenomena and poetic language. Her recent poetics is directly inspired by scientific research because it comes from an awareness of the urgency of fighting climate change. As a result, her work is both a poetry of place, deeply rooted in Wales, and also—especially since her shift towards environmental questions—a poetry of migrations and melting glaciers, exploring the complex interconnections between the local and the global. In terms of literary periodization, it seems to unfold along different timelines: it is both deeply postromantic, and uncannily close to new materialist thinking.

The autobiographical poem 'Waves' captures some of the most salient elements that this study has explored in *Making the Beds for the Dead, A Recipe for Water, Ice,* and *Zoology.* The vibrant poetic language of 'Waves' captures the constant metamorphoses between the organic and the inorganic in ways which are not entirely accessible to the sciences it first drew inspiration from. In *At the Source,* Clarke remembers her conversations with her father during their frequent walks; he used to tell her stories but also scientific facts. Clarke remembers the way science animated her sense of wonder as a child:

I left education largely in ignorance of science, but I know now that the seeds of excitement about the facts of physics, biology, mathematics, were sown on those westward journeys with my father when, between the stories, he taught me about electricity, gravity, how radio worked, how he sent messages in Morse code during his years at sea as a wireless engineer, where the weather comes from, what the stars are.⁶⁴

The conversations with her father are interwoven with old Welsh stories, so that both take on a cosmological dimension. They deal with the sky and the stars but also with the physics of the transmission of messages. That sense of scientific wonder is revived in 'Waves':

When long ago my father cast his spell with wires and microphones, he told me he could send sound on waves the speed of light to touch the ionosphere and fall

⁶⁴ Ibid., p. 14.

home to the wireless on our windowsill.

Sometimes, radio on, half listening, struck still by a line of verse, a voice, a chord, a cadence, I think of living light in a breaking wave, not breath, not fire, not water, but alive, the sudden silver of a turning shoal,⁶⁵

The father's signal transmission and the daughter's writing process are interwoven through the motif of the wave. The sound waves bearing the message sent by the radio engineer reflect poetic language: in both cases, the words are made up of sound waves, they are such stuff as the energies of matter are made on, mere disturbances of the air. The waves then materialize on the imagined landscape of a seashore: sound waves become actual waves of water and turn into 'living light in a breaking wave', a vision of light waves and sound waves coming together in the figure of a school of silvery fish, 'the sudden silver of a turning shoal'. This image generates an assemblage of physical forces, living bodies, and poetic language.

In 'Waves', different interacting agencies coexist in one formation: the landscape, the living body and its physical memories, and language embodied in sound. It generates its own complex temporality, weaving together geological, biological, and artistic timescales. In its ability to enter assemblages, poetic language thus performs the vitality of organic and inorganic matter alike.

My thanks to Liliane Campos and Pierre-Louis Patoine for organizing the symposium that led to this chapter, and for their extremely helpful feedback throughout. They greatly improved this chapter with their creative and enlightening suggestions, from the figure of the epigenetic landscape and the subversion of extractive capitalism in Clarke to the possibility of ontogeny as a form of inner temporality. I am also grateful to the Institut Universitaire de France for supporting my research for this chapter.

⁶⁵ Clarke, Zoology, p. 19, 1–10.

Works Cited

- Bennett, Jane, Vibrant Matter: A Political Ecology of Things (Durham and London: Duke University Press, 2010), https://doi.org/10.1215/9780822391623
- Timothy Clark, *Ecocriticism on the Edge: The Anthropocene as a Threshold Concept* (London and New York: Bloomsbury Academic, 2015).
- Clarke, Gillian, A Recipe for Water (Manchester: Carcanet, 2009).
- Clarke, Gillian, At the Source: A Writer's Year (Manchester: Carcanet, 2008).
- Clarke, Gillian, *Ice* (Manchester: Carcanet, 2012).
- Clarke, Gillian, Making the Beds for the Dead (Manchester: Carcanet, 2004).
- Clarke, Gillian, Zoology (Manchester: Carcanet, 2017).
- Cook, Elizabeth, ed., John Keats, The Major Works, 2nd ed. (Oxford and New York: Oxford University Press, 2001).
- Entwistle, Alice, *Poetry, Geography, Gender: Women Rewriting Contemporary Wales* (Cardiff: University of Wales Press, 2013).
- Gregson, Ian, The New Poetry in Wales (Cardiff: University of Wales Press, 2007).
- Jarvis, Matthew, *Welsh Environments in Contemporary Poetry* (Cardiff: University of Wales Press, 2008).
- Love, Alan, 'Developmental Biology', *The Stanford Encyclopedia of Philosophy*, Spring (2020), https://plato.stanford.edu/archives/spr2020/entries/biology-developmental/
- *Oxford English Dictionary*, 2nd ed., version 4.0.0.2 (Oxford: Oxford University Press 2009) [on CD-ROM].
- Slack, Jonathan, *Essential Developmental Biology*, 2nd ed. (Malden, MA: Blackwell Publishing, 2006).
- Solnick, Sam. Poetry and the Anthropocene: Ecology, Biology and Technology in Contemporary British and Irish Poetry (London and New York: Routledge, 2017).
- Squier, Susan M., *Epigenetic Landscapes: Drawing as Metaphor* (Durham and London: Duke University Press, 2017).
- Waddington, Conrad, Organisers and Genes (Cambridge: Cambridge University Press, 1940).
- Wynn Thomas, Meurig, *Corresponding Cultures: The Two Literatures of Wales* (Cardiff: University of Wales Press, 1999).