

Sounding Scales: Monumental Landscapes in the Networked Anthropocene

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abstract

The landscape of the 21st century city is embedded with the hidden strata of electromagnetic fields and pulses of the postdigital environment. This technosphere is not confined to the city but is a contiguous landscape that envelops the planet's surface and extends upwards to the farthest satellite. Recent practices in sound art have increasingly engaged with this invisible electromagnetic landscape, developing tactics to reveal both its ubiquity and its nuance, an agency performed through intensive and environmental affects. The embeddedness of the networked technosphere to the discourse of the Anthropocene, spurred by the currency of landscape ecologies and the geological dimensions of digital media, implicates these sound art practices with a planetary significance. The qualities of the postdigital electromagnetic landscape which challenge cartographic agenda that seek to make extensive and map the intangible, provide intensive structures and activities which can contribute to some of the more problematic attributes of the Anthropocene. Specifically, the aesthetics of scale that are contested between the everyday and planetary and which lead to a state of 'scalelessness', might be more authentically approached through an agency that is intensive and embodied itself. This paper will examine emergent sonic art practices, including The Chronotopes (2017) project undertaken by the author, which interrogate the postdigital electromagnetic landscape. Specifically, these practices will be framed by the temporal and spatial aesthetics typically allocated to the category of the monument, where landscape is an embodied paradigm. Employed as a technicity and a means of reaching out, monumental processes can be instrumentalised within a postdigital landscape to propagate alternative ontological subjectivities and cultural conditions. New tactics of postdigital co-habitation are mobilised, resisting conventional hierarchies of linear alignments to participate in nonlinear planetary swarm networks.

keywords Anthropocene, Postdigital, Sound art, Monument

1. Introduction

The 21st century city is embedded with hidden strata of the postdigital environment. Drawing attention to this electromagnetic landscape, recent practices in sound art have developed tactics to engage with and reveal the presence of this dynamic and turbulent environment that distributes the postdigital. These sonic practices make lively a planetary vitalism, authorising an efficacy that deliberates on cloaked global electrical and electronic infrastructure. But how might this planet-spanning network be situated against the contemporary concerns of climate change and environmental devastation, equally planetary in their scale? Global complexities propose new ontological positions for those living inside and outside of the connected world, but does the materialisation and making physical of the digital impact such proposals?

Through an investigation of sonic arts practices, this paper will engage with the monumental landscapes of the contemporary postdigital in the pursuit of alternative (non)human ontologies that attest to the scale of the planetary. With a validation of the entangled visuality that both conditions and is a condition of the Anthropocene, framed by the geological status of the postdigital landscape, this research will propose a paradigm of 'scalelessness' as a procedure of occupation. This paradigm configures the instrumentalisation of sonic art practices that stimulate the body as a site of postdigital emergence, productive of intensities that resist and evade visuality, to participate in a 'scaleless monumentality'. This research will be synthesised through The Chronotopes, an artistic research project that activates embodied performances that are situated within the Very Low Frequency electromagnetic landscape, that exemplifies new means of co-habitation with the postdigital.

1.1 The Networked Anthropocene

Arising in the geosciences to stimulate the humanities and beyond, the contemporary discourse of the Anthropocene implicates the human with a planetary agency and energises space-time entanglements that confound normal human intuition. As a species, we have become a geological agent, moving “more sediment and rock annually than all natural processes such as erosion and rivers” (Gaffney & Pharande-Deschènes 2012). The irrefutable anthropogenic circumstances of climate change and resource depletion impact the lived present – and our increasingly precarious future – responsibility lying with a complexity of activities that include corporate industrialisation, colonialism and capitalism, rather than individual everyday human endeavour (Haraway 2015).

Geologically stratified in its character, the Anthropocene is arguably struck with a distinct digital and technological dimension. Our current postdigital condition, where the digital has become ubiquitous so firmly is it embedded in our everyday lived experience, is allocated a mineral ontology, assigned by media theorist Jussi Parikka as the “geology of media” (Parikka 2015). Underscoring the aggressive cultivation of mineral resources from the planets crust and the contaminating industrial processes of refinement and manufacture that dispense the essential materiality of the postdigital, a contiguous techno-geological landscape is framed, extending from the mineralogy of the earth to the highest satellite. This is the global infrastructure for the production and distribution of the digital. Millions of miles of copper cables and optical fibres, a spectrum of microwave and satellite telecommunications, and the energy and resources that power this network, gives rise to a dense and turbulent electromagnetic landscape entangled with the material activity of its own production. This planet-spanning invisible and intangible field is enmeshed with the physical activities that occur under the extraction of rare earth elements and other processes of planetary exploitation.



[Figure 1 – “A Beehive of Satellites”. Artists impression of manmade objects in space based on density. Image Credit: European Space Agency]

Cutting across geology, technology and capitalist industrial development, the planetary regime organised by these and more interrelated ‘tentacular’ discourses (Haraway 2016) challenges the sensibility of anthropocentric or human-centred scale. Electing perceptions of deep time in geological processes, the speed of light in optical fibres and the development of quantum computing, gesticulates an inhuman sensibility of the planetary, or indeed cosmological, anterior to one’s everyday lived immediacy. Any deliberation on the Anthropocene and its allied disciplines “pose special challenges insofar as they bring together the large and the small, the near and the far, the fast and the slow, the weak and the strong, making a mess of existing scalar conventions” (Lahoud 2016). Moreover, the popular currency of the Anthropocene seems to imply if we can authentically experience the scale of the planet, perhaps we can become more responsible inhabitants of it. If the completeness of the system can be witnessed, we might be in a better position to address the problems.

However, we appear to have already arrived at this point. As confirmed in T.J Demos' "Against the Anthropocene" (2015), it is the very systems that visualise and analyse climate change and other planetary processes that allows the Anthropocene to be made visible and designated such. Giving attention to a technological trajectory that includes the use of GPS, the World Wide Web, Geographic Information Systems, increased computational power and worldwide computer networks, accessibility to high resolution satellite photography, and the distillation of democratised globalised mapping such as Google Earth, the development of digital technologies simultaneously allows an expanded visioning the world which in turn shapes our relation to the world. A condition of the pharmakon – both cause of and solution to – our relation to the world is influenced through the way in which we sense it. Notwithstanding the geological ontology of the media that allows us to view the current sum of the planet, "the thin line that exists between observation and agency when it comes to sensing, surveillance and subjectivity" (Turan 2016) is brought sharply into focus, with planetary computing complicit with the fault lines on which it resides. Moreover, the top-down or god-like theocentric gaze conforms to a category of looking that could be designated as objective and contributes to a collective consciousness of what scientific information should look like. We can already apprehend the scale of the world via the digital means that allows the visualisation of the planet as it currently is, designating the destructive processes it is currently subject to. However, it is the structuring and contingent condition of this visuality that determines and distorts how it is viewed, and therefore a barrier to authenticity.

Acknowledging the postdigital visuality of the Anthropocene, the challenge remains for a planetary sensibility that can be experienced more directly, prior to mediation by visuality. The features of the electromagnetic landscape, specifically those leaning towards the conception of a 'datasphere', infer cartographic strategies open to structuring or regularisation. Such a mapping imperative sustains subdivision, the capacity to undergo systemisation and classification leading to cooperation with visuality. Pointedly, the means by which visuality is made visible, the apparatus of visualisation, is subject to control and influence; the decisions of what is rendered visible, and by what means, are contestable. If the distribution of visuality collaborates with quantification, in the sense data is primed in a hierarchical system, manipulation is compounded and regulation inevitable. But fixed predictability of the system is not guaranteed.

It is essential to consider the protocols by which data is distributed across the global network, where increased complexity contributes to the system becoming more efficient. Through the addition of hardware more paths are added, resulting in more possible routes to distribute information as efficiently as possible, with algorithmic protocols routing billions of bits of data every nanosecond. Information is distributed in a dynamic system, an ecology attributed with an algorithmic ontology always already outside palpability. However, deferring responsibility in a reductive fashion compels the regime of reproduction as an arrangement of Russian dolls, with distribution performed by increasingly discreet processes that in themselves are quantifiable but appearing at such distance from the originary point of reference that any meaningful or authentic relation is occluded. Such a framework further reinforces the conception of scales under review and the compounds the inherent interdependencies that exist between the visuality of the Anthropocene and the networked means of its production and distribution.

2. Towards Becoming Planetary

Returning to the issue of scale this text is concerned with, a topology emerges that includes a planetary visuality, the mineral ontology of its production and an algorithmic ontology of its distribution. Any effort to quantify this complex is complicit with its institutionalising momentum. Equally, a reductivist agenda leads only to a "withdrawal" of that which is under scrutiny (Harman 2005). Reflecting upon the character of scale itself, scale is contingent; scale requires a frame of reference or a point of comparison. As contextualised by the above, the problematic of scale is any frame of reference in conformance with visuality confounding any strategy of authenticity.

An alternative framework is needed to re-approach scale itself by means of radical methodologies. As Ross Exo Adams demands: "Emerging across many disciplines are sets of objects, processes, and phenomena visible insofar as they traverse traditional scalar and temporal categories – 'hyperobjects', flat ontologies, and vibrant matter that cannot be made legible unless we abandon our inherited epistemological frameworks and invent new ones" (Adams 2016). Concerned less about a legibility which can be requisitioned by visuality, an impetus is nevertheless directed towards methodologies in abeyance of traditional sensibilities of scale, capable of traversing the postdigital condition of the Anthropocene to account for a planetary ontology; a becoming planetary.

This research draws upon sonic arts practices to explore potential processes of engagement with the postdigital electromagnetic environment. Specifically, this research attends to methodologies that motivate an embodied disposition that evades visuality. As noted above, the contingency of scale demands a point of reference to validate itself, an exteriorised framework within which is structured as a near to a far, a big to a small, a this and not this. In antithesis to external duality, this research is focused on methodologies that demonstrate an intensive

conditioning, a sensibility without measure, except for the measure of measure itself – the indivisibility of larger and smaller, hotter and colder. In this respect, sound art is perhaps uniquely appropriate, validated though the spatial and temporal qualities of sound.

2.1 Studies in Sound Art



[Figure 2 – X Marks The Spot (2012-ongoing) by Matilde Meireles. Image credit: Matilde Meireles]

Visual and sound artist Matilde Meireles, a PhD alumna from Belfast’s Sonic Arts Research Centre, initiated the project X Marks The Spot (2012-ongoing)¹ to sonically map the data infrastructure of Belfast city centre. This involved the recording and subsequent analysis of the electrical drone or ‘hum’ emitted from public telecommunications switchboards, with individual boxes ‘tagged’ with posters to inform the public of the precise frequencies of audible drones emitted. Three independent but connected “modes” that include an online map, public interventions of posters, and gallery-based “re-interpretations” or sonic compositions, provide an apparatus that renders an immediacy to the telecommunications infrastructure woven through the urban landscape.



[Figure 3 – Electrical Walks (2004-ongoing) by Christina Kubisch. Image credit: Christina Kubisch]

A similar but less structured project is Christina Kubisch's Electrical Walks (2004-ongoing)², a series of participant excursions in over fifty global cities. These walks, in which participants are provided with electromagnetic induction headphones with audio coils that respond to electromagnetic waves, sonically explore the multitude of electromagnetic fields that are embedded in the urban environment. Participants can 'listen' to the sounds of not only telecommunications devices, but also street lighting, security cameras, ATMs, neon signage, mobile phones and a plethora of other electronic devices and installations. As Kubisch describes, made audible are "complex layers of high and low frequencies, loops of rhythmic sequences, groups of tiny signals, long drones and many things which change constantly and are hard to describe. Some sounds are much alike all over the world. Others are specific for a city or country and cannot be found anywhere else" (Kubisch 2017).



[Figure 4 – Cloud (2011/2017) by Christina Kubisch. Image credit: Christina Kubisch]

Also by Kubisch are the Cloud (2011/2017) series of sound installations. These gallery-based artworks rely on similar customised induction headphones as Electrical Walks, with audio reception directed towards the sculptural collections of wires and cables that are the physically manifested focus of the installations. These multi-channel sound installations use site-specific field recordings transmitted by various parts of the chaotic cable loops. The experience is comparable to the Electrical Walks, where the viewer or listener becomes an active component, creating individual audio compositions with their movement through the environment and orientation to the sculpture forms.

The work of these two artists engages with the artificially electromagnetic in subtly different modes. Kubisch delivers a mechanism that manifests a physical relationship of participant to electromagnetic sources, providing a sensation of locatedness within an invisible landscape. The dynamism and vibrancy of the invisible electromagnetic landscape is awarded a means to be experienced, where the movements of body, even the tilt of the head, can influence the sonic rendition of electromagnetism. The body becomes a site for postdigital emergence, rendering information and energy as sound through movement, an embodied audio performance that expresses an intensive condition. The turbulent fluidity of postdigital electromagnetics, from both fixed devices and broadcast signals, reified through the bodily movements are demonstrated as differences that are indivisible. The experience of this landscape is turned inward to the body of the participant, with physical position and poise giving presence to the fluidic materialisation of electrical compulsions.

In antithesis of Kubisch's intensive conditioning, Meireles might appear to demonstrate the making extensive of a postdigital mapping process. The cartographic impulse that underlies X Marks The Spot resolves a fixity and connection with place – the location of the distribution boxes – that intersplices with the contiguous electromagnetic

1 / An online portal to Meireles X Marks The Spot project is available at <http://xmsbelfast.com/>

2 / Further information on the past activities of Electrical Walks can be found at http://www.christinakubisch.de/en/works/electrical_walks

3 / For documentation of Meireles' collaborative compositions in situ at Platform Arts, Belfast, see <http://xmsbelfast.com/48hz>

landscape via the material measure of drones emitted, and their designation in a codified system of frequencies. Such cartographic activity is complicit within an institutionalising compulsion – a making-logos – that advances a structuring or Deleuzian striation of concealed space, contributing to a sensibility of regularisation. Not to deny the actual cartographic dimension offered in Kubisch's Electrical Walks, where potential routes for walks can be nominated, proposing compositional arrangements the public can 'follow' and explore. However, the autonomy and self-determination proposed in Electrical Walks, instrumentalised through the participant's body, awards a smoothing of space. The participant is a nomadic entity, territorialising the virtual electromagnetic landscape upon the physical urban environment via the composing of a sonic experience. This experience produces a 'non-scalar' intensity, a turning inward to an embodied condition that is without or prior to codification. An activity that, paralleled in the Kubisch's Cloud installations, resists capture by visibility, invoking an indivisibility framed as an interiorised sensibility of one's bodily motion in the globalised postdigital landscape; a planetary becoming.

The intensive organisation of Kubisch's artworks does not undervalue the efficacy of Meireles' tagged boxes, which act as physical signifiers of postdigital emergence. Indeed, any member of the public can roam and meander *dérive*-like through the landscape, giving attention to the audio, deterritorialising a pre-existing yet unseen codified system. These activities undertaken in the urban environment have the capacity to negotiate a psychogeographic – or more appropriately a 'psychogeophysical' – agenda, facilitating an emotive reconfiguring to one's sensibility of the urbanised electromagnetic landscape.



[Figure 5 – 48Hz (2014) at Platform Arts, Belfast. Image credit: Matilde Meireles]

However, attention should be aimed at the gallery based "interpretations" in which Meireles collaborates with other sound artists to construct sonic arrangements, using the collected field recordings as source material³. These sonic exhibitions are contextualised as 'soundscapes', a well-established milieu that privileges a spatial and environmental dimension for the compositions. These durational artworks have been installed in the gallery as a ring of inward facing speakers, inviting the gallery visitor to sit or lie within the circle. Inserting oneself in the auditory space, a reconfiguring of the field recordings, the listener experiences a more instrumental strategy of deterritorialisation.

2.2 Monumentality and Scalelessness

The intensive conditioning demonstrated by these sonic practices reveals the intangible landscape of electromagnetic emissions with the body as a site of emergence. The embodied performances enacted, the choreography of the body and the inflection of the aural experience deliver a sensibility of scale that is interiorised within the body. The sensation captured is akin to zooming in and out of Google Earth, a distinct spatial activity that informs a phenomenological position and a way with which to engage the world.

The aural experience of both Meireles' and Kubisch's projects arguably falls under the category of 'sonification', the process of rendering data as audio, using sound to convey information. Via sonification, for example, one could 'listen' to the changes of global temperature over the last one thousand years or experience what a brain

wave sounds like. Sonification charges the complex listening system of the human ear to discern patterns in excess of traditional techniques of analysis. Sonification is not restricted to the field of sound art, but has been engaged across many sciences, with astrophysicists listening to the sound of the Sun (Scudder 2017). However, the contradictions of sonification lie in the arbitrariness of its presentation, whereby the modus of its sonic processing – the mechanism or programming by which data is rendered sonic – is subject to human influence and conforms to a regime of a purely aesthetic order. It remains the privilege of the human producer to determine what it is that is heard. While data is designate of actually existing events – the change of climate over time or the dynamics of a star's interior – sonification delivers an aurality that collaborates with visuality. In the pursuit of accessing an authentic planetary sensibility sonification is appears defiant, deferring to representation.

It is the agency of the human in a potential planetary relation that underpins this research. Arguably, Meirele's collaborative compositions are tainted with a human bias, albeit undertaken as a deliberate decision within the parameters of the overall project. The exclusion of the human from influence in resistance to an anthropocentric position and the abeyance of representation advance a nonhuman condition or planetary becoming. Against sonification, the planet does not assert a condition upon the data it generates, only that it generates data irrespective of who may record and interpret it. Equally, the presence of the human body in an electromagnetic landscape of data and energy is indifferent, particularly when that environment is concealed. Conspicuously, the embodied movement is contingent on technological devices for activation. The customised headphones and vibrating distribution boxes are extensions of the body, imposing an other-than-human, or nonhuman, condition on the listener. Consequently, the acousmatic dynamism of the body in motion, capable of constructing a composition, musical or not, can be described as a nonhuman impulse. More pointedly, the impulse to construct a composition, nonhuman in compulsion, challenges what it is to be human, asking what is being listened to. Under this assertion it is possible to locate Mierele's soundscapes as giving parity to a nonhuman condition in deliberating where the human is located in the sonic experience.

As stated earlier, the apprehension of scale is contingent on some exterior feature against which to be validated. In mitigating an exterior circumstance thorough the intensive turning inward onto the interior, the sonic practices described above have motivated a non-scalar condition. In lieu of an external frame of reference, intensity stimulates embodied sensations where any frame of reference is unfolded from an interior position. The abeyance of an exteriority on which to resolve the measure of scale produces a condition of scalelessness; the desire for scale might be epistemologically comprehended, yet bereft of any exterior features, the sensibility is free floating and elastic, without any contiguous actuality to anchor it.

In anticipation of a resolution for the problematic of scale, this research is concerned with how such an outcome might be instrumentalised across a given milieu. As extrapolated above, the postdigital condition is made manifest by and through the distribution of data at a planetary scale, with potential ontologies arising from the multi-layered geological stratification of the condition. In contemplation of the patterning of distribution that supplements the ontological signification, this research will consider the capacity for the postdigital to not only distribute data but distribute the circumstance of scalelessness which the sound practices described above have exploited. Following a function of distribution, it is at this point that the category of the monument will be introduced in the pursuit of nonhuman and planetary ontologies. Under spatial and temporal arrangements where intensity is set against exteriority, the monumental can be contextualised as an exteriorised materialism with a distinct spatial and temporal function calibrated under socio-political and ideological frameworks that form part of a given milieu. As will be set out in the following, the category of the monument will become a key faculty under which sound practices can be processed with planetary ontologies.

The historical and contemporary status of the monument is complex and contested. The term monument is eternally interchangeable with memorial, its purpose to enact a memorialisation, "a function to recall, to animate the past, whether an event, person or other significant occurrence, in order to visualise the future" (Ashton 2016 p.47). From prehistory, monumental sites include natural and manmade landscape features, stone arrangements and other archaeological architectures. The function and use of these monuments is not as fixed as their materiality might imply and changed over time in response to social developments. Indeed, the varying configurations that developed over time indicate how domestic activities, hierarchical structures and the treatment of the dead shifted. But ostensibly these sites were for the transmission of rituals and other recurrent activities that included "prescribed postures, gestures and movements [...] characterised by a restricted vocabulary" (Bradley 1998 p.89), from one generation to the next for their careful preservation. The significance of maintaining such knowledge, whatever its character, designates a socio-political purpose to the prehistoric monument, through the conservation of social order. In more recent history, monuments assert a more deliberate political function, aiming to "commemorate important personages or patriotic events and memories" (Michalski 1998 p.8). Such acts of memorialisation are imbued with an ideological status, through what it is that is remembered, how it is remembered and how that remembering acts upon the present and the future-to-come. A monument enacts a narrative of history through the (re)telling of a past, deploying fact and/or fiction, to make visible a state's ideology

and story of nationhood; the cementing of a mythology for the future citizen “to guarantee origin and stability as well as depth of time and space” (Huyssen 1996).

The temporal character of the monument provokes a spatial topology with two interconnected layers. The first advocates the above ideological posture, whereby the continuity of the monument in time exerts a conditioning over the space in which it is deployed, attested by the inhabitants that sustain it. This territorialisation, sustained through a relational milieu, exhibits a cartographic tendency in the occupation of space by social means. A second layer is drawn from the arguable astrological function of certain Neolithic monuments that are subject to spatial alignments, through landscape interventions, forming expanded apparatus that capture people with celestial bodies. While the first layer imposes a decidedly social status to the monument, which appears to exclude the nonhuman, it is the second layer that provides the conditions for the first layer to arise, and in doing so designate it with a nonhuman capacity.

Apprehending the cyclical spatial arrangement of stellar bodies – spinning planets orbiting stars – in which day becomes night, the seasons turn year after year, provides the foundation of a perceived temporality in which rituals and remembrance occurs. While not all monuments exhibit a specific function of astronomical alignment, the impetus to remember – whether through collective activities or more individual responses – is contingent on temporality, collaborating with a wider monumental function. In positioning the human in a direct dialogue with the astronomical, the category of the monument has the capacity to signify sites of emergence of an entangled ontology (Barad 2007), where planetary becomings can be subjected with an ideological significance.

To resolve the contribution of sound art practices, it is essential to secure a proper geological status for the postdigital electromagnetic landscape and clearly isolate the monumental paradigm being proposed. Drawing a sonic experience from electromagnetic influence is by no means a recent development and the possibility was first encountered by Thomas Watson, assistant to the inventor of the telephone Alexander Graham Bell, when listening to the first test telephone test line. Hearing ‘natural radio’, what sound theorist Douglas Kahn designates as the ‘Aelectrosonic’, these where the sonification of atmospheric events such as lightening, and other natural electromagnetic discharges (Kahn 2011). Kahn draws attention to this electromagnetic landscape as a natural atmosphere distinct from artificial sources.

However, there is no fundamental difference between naturally and artificially generated electromagnetics. But Kahn does contradict himself, claiming “climate change has also diminished whatever fulsome meaning ‘nature’ once may have had by eradicating the possibility of being separate from human and human influence” (ibid p.43). Under this context, we are reminded that radio and television signals have been broadcast for over a century with transmissions travelling now through interstellar space. These electromagnetic signals, while increasingly diminished as they spread and ripple out from our planet, nonetheless achieve an authentic status within deep time. The postdigital strata described above, traversing from planetary crust to orbiting satellites and beyond, conforms materially, spatially and temporally to a geological scale in which the category of the monument is arranged.

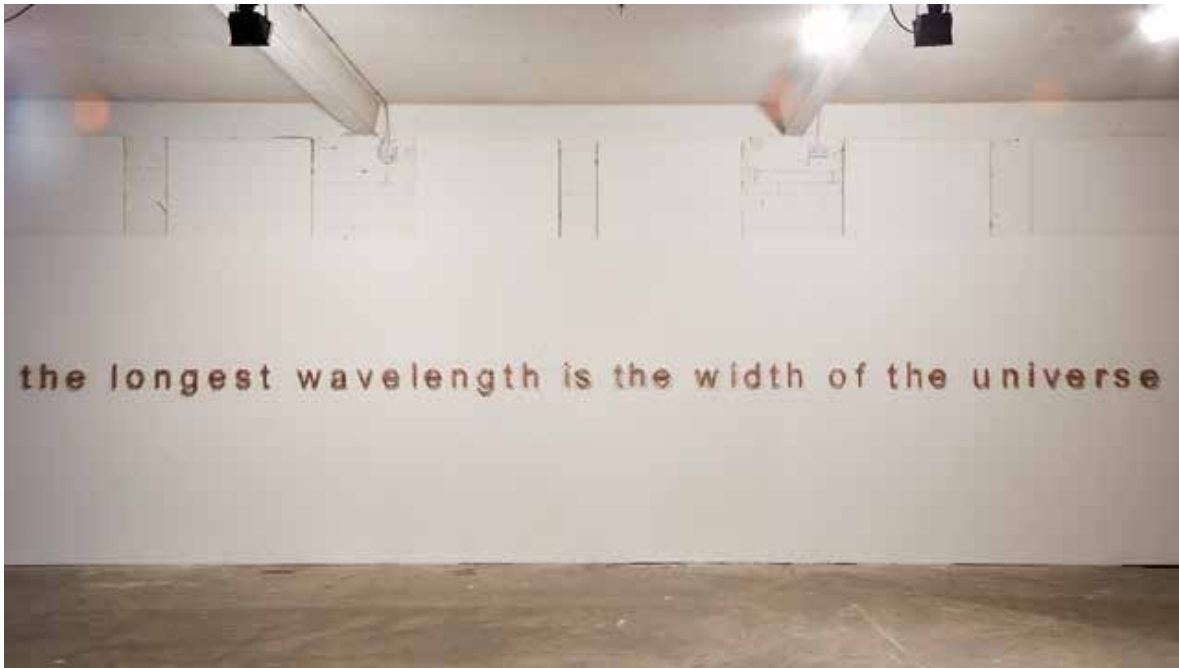
Located in a postdigital landscape that spans interstellar space, the sonic practices of Meireles and Kubisch are deployed as strategies with a discursive monumentality. Materialising the spatialisation of a plurality of temporalities contiguous with the lived present, the sonic artworks are monumental processes that insinuate an alignment or synthesis with the dynamic geological ecology of the postdigital. Delivering the sensibility of this vibrant landscape and underscoring an entangled co-habitation with data and energy, these monumentalisms eschew exteriorised striations in favour of intensive performances.

The nonhuman arrangements produced are not structured by prior conditions but are emergent from embodied processes, activated through the sonic artworks. Conceding the capacity for all monumentality to be subjected with an ideological significance as outlined above, this is not enforced by the striation of visibility, but emerges from the event of monumentalisation itself.

The specificity of Meireles X Marks The Spot awards a monumental contingency to the distribution boxes through their tagging, identifying them as devices within the urban landscape to which the postdigital public are always already aligned. While these totems express a cartographic fixity, the rhythm of the data and energy carried by the objects is in constant flux. Assenting that “energy may not be programmable, but currencies that represent energy expenditures can be” (Bratton 2017 p.29), the electromagnetic landscape throbs to the rhythm of globalisation and other postdigital infrastructures complicit with the Anthropocene.

Prior to a conclusion, this paper will contemplate a final sonic monumentalism. The Chronotopes (2017) is an expanded artistic research project undertaken by this paper’s author, and includes sound installation, sculpture and text-based artworks that took as its core syntax Very Low Frequency radio emissions. This project was developed to instrumentalise the initial findings that have been laid out above, and further test and draw to a conclusion the concepts proposed.

2.3 The Chronotopes



[Figure 6 – *The Chronotopes* (2017), installation shot. Image credit: Dave Loder]

Very Low Frequency (VLF) is designated for radio frequencies that occur between 3 and 30 kilohertz, corresponding to wavelengths between 100 to 10 kilometres respectively. Due to their large wavelengths, VLF transmissions diffract around large obstacles such as mountains, and can propagate as ground waves that follow the curvature of the Earth.

The primary uses for VLF is for radio navigation, time clock signals and military communication with submarines, due to the ability of the waves to penetrate salt water with broadcasting requiring extremely large high energy antennas which can be up to a mile across. More recently, VLF waves have been found to artificially create a bubble around the planet, through the interaction with high-energy radiation particles to provide protection from solar flares and coronal mass ejections (Koren 2017). The VLF bandwidth is also rich with natural occurring electromagnetic signals such as lightning and other atmospheric events, and geophysicists monitor VLF to measure electromagnetic conductivity across the surface of the Earth. The above exposition has anticipated a dynamic environment across all electromagnetic frequencies, but VLF designates a specific region of this landscape that is arguably more attuned to planetary processes.

A portable VLF receiver was custom-built for The Chronotopes project, a loop antenna fabricated from several hundred metres of copper wire coiled on a timber frame and a bespoke variable capacitor circuit with audio output. The antenna functioned similar to Kubisch's customised headphones, but with greater sensitivity to transmissions in the VLF band. However, in contrast to both Meireles and Kubisch, the apparatus was deployed in rural environments, specifically a number of Neolithic sites in County Down, Northern Ireland that included barrow mounds and stone circles.

The assumption might be, in antithesis to an urban vitality, that to survey the rural would be muted event. The actual vibrant experience demonstrates the ubiquity of the artificial electromagnetic spectrum, but nevertheless provides a 'quieter' environment where more discreet events can be witnessed.

Strapped to a rucksack and shouldered, the antenna was deployed as a posthuman prosthesis delivering an enhanced mode of listening to the postdigital. Similar to Kubisch's methods, the technologically augmented participant engages in a performance, the surveying encouraging a movement through the Neolithic sites, exploring the dynamic electromagnetics signals, at times delicately, at others times more robustly. The audio produced is perhaps different in 'flavour' to urban transmissions due to less exposure to localised sources such as street lighting and distribution boxes and the receptiveness of the antenna to long-range signals gave a distinct aesthetic. Among the layers of sonified activity can be found the repeating tones of navigation signals, echoes of terrestrial radio, bursts of static, drones, patterns of whistles and other indescribable effects. Dancing, weaving and spiralling through this exotic scenery, the performer endeavours to choreograph a sonic composition in the pursuit of VLF activity. But what is apprehended is without scale; no conceptualisation of the distances these signals might have travelled is available. Where Meireles' tagged distribution boxes provide a sense of locality, the Neolithic situations reinforce a sensibility of the planetary.



left: [Figure 7 – *The Chronotopes* (2017), surveying at Ballynoe stone circle, County Down. Image credit: Dave Loder]
right: [Figure 8 – *The Chronotopes* (2017), installation shot, antenna detail. Image credit: Dave Loder]

The specificity of the Neolithic sites gives focus to the monumentalism expounded previously, and indeed a valid agenda can be claimed for the surveying, investigating if there was any authentic radiological significance to the sites. Albeit the analysis to this end was cursory, no discernible pattern could be readily identified. Speculatively, the temporality of the site could be out of sync with contemporaneous surveying, with perhaps some electromagnetic significance detectable when the sites were in use in the Neolithic era. Nonetheless, the performativity of the surveying certainly emphasises the ritualistic dimension of the site. Arguably, the surveying could have been undertaken at an arbitrary site in an empty rural setting, and not predetermined a monumental significance, mitigating the ritualistic aspect, but not completely. These ruminations lead to the circumstance of alignment, in both time and space, with which monumentalism has been attributed.

As indicated earlier, the efficacy of monumental alignment is a concern with a planetary ontology. The sound practices discussed above have been located as a means of exploring or aligning oneself to the postdigital electromagnetic landscape, a planetary regime which is spatially and temporally dynamic, and complicit with a geological condition. This landscape functions with a distinct materiality, not only through its invisible and intangible forces, but in relation to the lived and experienced physical world. The dynamism of this ecology, distributed by the postdigital technological medium stratified by geology, is productive of an alignment that is vibrant and fluid. While the electromagnetic exists in simultaneity with the physical, the points at which they interfere are slippery, manifesting an alignment that can be apprehended as continually unfolding in the lived present yet in a dynamic which is planetary in condition. In its deployment upon Neolithic sites, *The Chronotopes* draws attention to this slippage.

As suggested earlier, Meireles' tagged boxes can be interpreted as markers to which the public can align themselves, analogous to the standing stones, both being conduits for territorialisation through alignment. However, where the materialism of the standing stones delivers the visibility of alignment, the embodied electromagnetic performance gives signification to the mineral ontology of data distribution, the means of distributing visibility. The Neolithic monuments display visibility, whereas the monumentalism of the electromagnetic distributes visibility. In the circumstances of the Neolithic, visibility – that which shapes the way the world is viewed – is exteriorised, whereas the electromagnetic landscape is interiorised. The becoming planetary of the Neolithic is extensive, whereas the sonic practice's becoming planetary of the postdigital is intensive and in abeyance of the visual. More pointedly,

the monumentalism on display is less concerned with physical monuments, but the embodied condition where performativity takes place. While *The Chronotopes* developed from the acts of both surveying and ritual, the impetus of the performance was to make or disclose an alignment. But exclusively, the ritual of the postdigital is unrepeatable and continually unfolding, where the Neolithic is cyclical and designed for repetition.



[Figure 9 – *The Chronotopes* (2017), installation shot, speaker detail. Image credit: Dave Loder]

3. Conclusion

The aim of this research paper is to investigate potential methodologies capable of delivering an authentic sensibility of the planetary, pursuing the demand by Ross Exo Adams to invent new epistemological frameworks that can account for scalar conventions under siege by the discourse of the Anthropocene. The central feature of the challenge concerns visibility, as that which mediates the discourses of the Anthropocene and by which the planetary is contingent. However, rather than uncovering strategies that might disrupt visibility, revealed is an entangled complexity where visibility is complicit with its own distribution. The visibility which determines the conception of the Anthropocene, is itself planetary in its distribution. But via the mode of monumentalism instrumentalised by the sonic art practices discussed, it is possible to motivate a planetary becoming which can reconfigure visibility intensively. Under this monumentalism, the feature of alignment is compounded with an ontological significance, under which the planetary is always already exposed to the socio-political through territorialisation. Extensive alignment is complicit with a cartographic impulse under which visibility is invoked, however intensive alignment can be deployed which is continually unfolding, in abeyance of a cartographic impulse. The continual unfolding, or smoothing, of postdigital ecologies through intensive methods, motivates the conception of scalelessness.

The significance of contribution of a scaleless monumentality lies in the fractured stratification that occurs between dynamic geology of the postdigital and the everyday lived milieu, and potential strategies of navigation across these strata. Specifically, the demise of the nation state that currently being witnessed can be attributed to the growing chasm between the distributed postdigital landscape and the historical socio-political conception of territorial scales. Where previously, there existed “an authentic ‘fit’ between politics, economy and information, all of which were organised at a national scale [...] [a]fter so many decades of globalisation, economics and information have successfully grown beyond the authority of national governments” (Dasgupta 2017). The capitulation of

regulation to the free market, made increasingly efficient by the postdigital, has allowed for the distribution of wealth and information to be excised beyond what national borders had traditionally kept in check. The capacity of the postdigital to be structured in contradiction of centuries established hierarchies of nationhood, dissolves conventional sensibilities of terrestrial scale under the same conditions that conceive of the Anthropocene. It is here that the category of the monument is most fittingly deployed. Where previously the traditional category of the monument which is complicit with ideology, supporting stories of nationhood, the scaleless condition for monumentality that has been developed can respond to a territorialisation which is without scale, as attested by the postdigital condition.

4. Acknowledgements

The development of The Chronotopes research project was kindly supported by the Arts Council for Northern Ireland. The presentation of this research at Tirana Architecture Week 2018 was supported by the Glasgow School of Art.

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