Nightcall Radio. Radio – anthropocene entanglements

Kate Donovan

Abstract

This essay begins the work of unpicking radio-anthropocene entanglements, in an effort to think and do them *otherwise*. I use the concept of *expanding radio* to open out the notion of radio to include human and more-than-human electromagnetic signals and argue that by drawing upon practices of *expanded listening*, more-than-human radio ecologies can be revealed, thus enabling a constructive move beyond the anthropocene.[1] I consider magnetite a material embodiment of radio-anthropocene entanglements; anthropogenic magnetite is produced by traffic fumes and can affect human memory, while biogenic magnetite can be found in migrating organisms to aid wayfinding. I conclude by bringing all of these issues together in describing the radio art piece *Nightcall Radio.*

Keywords: Radio ecologies, more-than-human anthropocene, expanded listening, radio art, magnetite, otherwise

I'm calling from the garden,
from the radio,
from the night.
…and I'm waiting.

I'm waiting…
I'm waiting for a nightingale,
but not the one that sings.

I'm waiting for the listening one,
the one that's moving with the stars,
the one that's using all its tiny particles to feel
where is north and where is south.

I'm waiting for the one that's listening out.
It's listening out for a call.
It's listening out for a nightcall…
(excerpt from *Nightcall Radio)*[2]

Link to sound file

[1] In using the terms 'expanded' and 'expanding', I recognise the risk of perpetuating certain norms of radio (as a solely technological medium) and listening (as human-ear-oriented) (see Vágnerová's critique of extended vocality, 2016). Yet I hope that it is a risk worth taking in order to reassess and move beyond these norms.

[2] *Nightcall Radio* is a 120 minute durational broadcast (stream) & narrowcast (microFM transmission) by Kate Donovan, including the poem *oktopus* by Kinga Tóth (translated by Owen Good and published in xtro realm's extrodæsia, 2019); short-wave radio sounds via ETGD at the University of Twente; live VLF natural radio sounds via abelian. All other sounds by Kate Donovan. *Nightcall Radio* was produced and streamed single-handedly, live from a Berlin garden at the beginning of May 2020, during both the COVID-19 lockdown period and the nightingale season in Berlin. It was commissioned by Soundcamp, London, as part of an extended programme for their annual *Reveil* event. http://streams.soundtent.org/2020/projects/nightcall-radio. It has been re-broadcast at One Day Without Humans; Datscha Radio; Radiophrenia (2020); Kaamos Radio (2021).

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Radio – anthropocene entanglements

This essay begins the work of unpicking radio-anthropocene entanglements, in an effort to think and do them *otherwise*. I intentionally de-capitalise the word anthropocene, as a gesture of scepticism and disempowerment, as a way of acknowledging its inadequacies. The anthropocene is deeply problematic for many reasons, not least for its positioning of "humanity in the driving seat of the planet's ecology, first as the unwitting inflictor of 'stresses,' and then, ever so swiftly, as the deliberate and self-assured inflictor of corrective management technique" (Horton 37). This centring of a universalised human disregards the uneven effects of the anthropocene (Hecht; Yusoff). Yet, however problematic, I stay with this term in an attempt to overcome its weaknesses, to work towards an undoing of universalism, a de-centring of the Anthropos, and above all to acknowledge and take seriously the interconnectivity and agency in/of more-than-human worlds.

Radio is entwined with the anthropocene in an interesting yet rather complicated manner. Both radio and anthropocene have their roots firmly planted in/through the violence of colonialist ideals, both grew out of a motivation for mastery, power, 'progress' and control. In the same way that the desire to conquer or overcome distance was at the heart of early radio and wireless technologies, the concept of the anthropocene is an attempt to overcome, or intellectually come to terms with, humanity's place within a larger framework of time: "The 'Anthropocene' is commonly understood to signify a crisis of scale, bringing into focus the temporal, spatial, and causal extent of the human" (Horton 35).

Radio is central to discourses on the onset of the anthropocene, either in the form of broadcast radio (as a sign of Western modernity's technological turn towards the end of the 1800s), or, more commonly, the atomic age. The radioactive elements that spread across the planet from nuclear weapons testing in 1945, are seen by the majority of the Anthropocene Working Group to mark the beginning of this potentially new epoch.[3] This global movement of particulate matter from nuclear fallout gave new perspectives of scale and interconnectivity; I think of it as the radio version of the Blue Marble effect in visual culture (Belisle, 2020).

One of the lesser understood entanglements of radio and anthropocene, however, is the anthropogenic generation of electromagnetic frequencies, which tends to remain outside anthropocene discourses; *LIMEN. Ecologies of Transmission* (2016) is an insightful exception to this rule. The constant generation of materials—plastics, concrete, asphalt, electrical goods and countless other physical things—and the effect of these on biodiversity, climate change, and the ability for organisms to thrive, is a key aspect of the anthropocene. Indeed, in 2020 it was found that "global human-made mass exceeds all living biomass" (Elhacham et al). Humans are also generating multitudes of less tangible matter, such as CO2 and the less-discussed matter of electromagnetic waves, or radio. Humans live, breathe and interact in a soup of electromagnetic waves, with a super-highway of information riding on these waves, which is both relied upon and contributed to at the same time. Daniela Silvestrin notes how the "Wireless Age can thus be regarded as equally profound and irreversible to our societies as the geological ones defining the Anthropocene to our planet – while also being part of the latter" (29). This is the place of mobile phone networks and Wi-Fi internet, Bluetooth, microwave

[3] See more on the Anthropocene Working Group here: http://quaternary.stratigraphy.org/working-groups/anthropocene/. On their vote on the onset: https://www.nature.com/articles/d41586-019-01641-5?sf213079426=1. For a more in depth look at the research group and a breakdown of differing opinions, see: https://www.theguardian.com/environment/2019/may/30/anthropocene-epoch-have-we-entered-a-new-phase-of-planetary-history

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ovens, remote controls, cordless telephones, satellite systems, and baby phones. This is the ubiquitous place of 'smart' technologies and the unseen spectrum that humans contribute to on an ever-growing scale and at an ever-growing density:

> The density of artificial manmade radiation on Earth has grown to 10^18 higher than what we would be surrounded by naturally. Man has not changed any other living environment in such a monumental way (Silvestrin, 30).

By examining these troublesome roots and simultaneously trying to unpick them, it's important to ask, what does it mean to be engaged in concepts and media built on violent and problematic foundations? How can we do radio and anthropocene *otherwise*?[4]

The *Feral Atlas* project provides a useful framework from which to think through more-than-human entanglements of the anthropocene (Tsing, Deger, Saxena and Zhou).[5] Although radioactivity is included in two case studies (Brown; Hesse-Honegger), anthropogenic electromagnetic frequencies, such as those used in wireless communication networks, are not included. Thinking of such radiation as *feral* is a step towards recognising radio as agential, as part of "agential assemblages of things" (Bennett). Communication systems can be severely affected by natural electromagnetic bursts from lightning strikes and solar activity. Because water is conductive and therefore reflects radio waves,[6] one of the main interferences in mobile phone networks is rain (Howard & Vaughan), and, in particular, wet leaves on trees. The dis/functioning of these infrastructures and the potential disruption of transmissions is part of a larger dynamic of more-than-human radio ecologies.

At the same time, many types of radio propagation rely on the dynamics of natural phenomena. *Skywave*, for example, refers to radio transmissions that are reflected back to earth from the ionosphere, thus enabling long distance communications. *Meteor burst communications* use the ionised trails of meteors burning up in the upper atmosphere to propagate signals and this is used in automated climate data monitoring systems such as Snow Telemetry (SNOTEL), which send data from remote locations and are designed to operate unattended for one year at a time. Perhaps most importantly for this essay is *grey-line propagation*, which refers to the atmospheric change between day and night, the twilight zones that perpetually shift around the earth. Within this grey line, improved conditions allow for stronger, long-distance radio transmissions. Udo Noll's *Surfing the Grey Line* (2014) offers an informative and situated radio listening experience centred around this phenomenon. Also in this twilight zone, the earth's magnetosphere is weakened, allowing more natural radio signals from the sun to filter through.

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[4] Quite understandably during times of ecological crises, there is a call to think, do and strategise differently. Together with Monaí de Paula Antunes, we have been pursuing the question of *Radio Otherwise*, in the form of an ongoing conversation, radio show and university seminar. We take influence from Haraway's notion of *storying otherwise* (Terranova, 2016). See also: "MAKING THINGS OTHERWISE On the Feminist Critique of the Anthropocene, Decolonising Geology and Sensing Media Environments. An Interview Jennifer Gabrys and Kathryn Yusoff by Petra Löffler, Birgit Schneider and Léa Perraudin https://www.zfmedienwissenschaft.de/online/making-things-otherwise

[5] "*Feral Atlas* invites you to explore the ecological worlds created when nonhuman entities become tangled up with human infrastructure projects. Seventy-nine field reports from scientists, humanists, and artists show you how to recognize "feral" ecologies, that is, ecologies that have been encouraged by human-built infrastructures, but which have developed and spread beyond human control. These infrastructural effects, *Feral Atlas* argues, are the Anthropocene." https://www.feralatlas.org/index.html

[6] See Sophie Dyer and Sasha Engelmann's (2017) *Lore of the Radio Fossil* for a speculative imagining of multiple radio frequencies reflecting back into the atmosphere from a lake in Finland: https://temporaryartreview.com/lore-of-the-radio-fossil/

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This larger framework for the intricate mesh of radio relationships has been described by Anna Friz as *transmission ecologies*, which, she says:

> refers to processes rather than the idea of the electromagnetic spectrum as a map of quantifiable or saleable real estate. I intend transmission ecologies to mean not just a symbolic space, but also an invisible but very material Hertzian space of electromagnetic interactions. In this final sense, ecology is not about homeostasis, but about constant change, where media function also as environments, and environments as media. Thinking ecologically about transmission suggests more than 'who owns the airwaves' by questioning the shifting relationships and territorialisation between all actors in the environment, from human to device to localised weather system to nearby star. These relationships also support a theory of technology where people are not the absolute controllers of things, but where a push and pull of collaboration occurs within complex material and cultural environments (*Radio Revolten*, 35-36).

Similarly, I have used the term *expanding radio* (Donovan), to mean opening up beyond the notion of broadcast radio and communication technologies to include the whole radio spectrum, as well as large and small non-anthropogenic electromagnetic signals. Yet the concept of *more-than-human radio ecologies* works more concretely towards shifting the balance away from the human, and recognising the trans-scalar relational dynamics between multiple transmissions and entities. *Natural radio* is caused by lightning strikes, solar winds, meteors burning up in the upper atmosphere, and the aurorae borealis and australis. But I also include smaller transmissions in this framework, such as natural radioactivity and the frequencies made by bees' vibration pollination tactics. Photosynthesis occurs when molecular antennae in plants respond to the sun's radiation.[7] I include magnetoreception and biomagnetism within this expanded definition of radio; the magnetite crystal located in some migratory birds' upper beaks in order to sense the earth's geomagnetic field and assist with wayfinding is an example for thinking about materiality and scale within more-than-human ecologies of transmission and reception.[8]

Magnetite is both a biogenic and anthropogenic magnetic mineral. Migrating organisms—ranging from insects, birds, reptiles, and molluscs to bacteria—use magnetite as part of a complex process of navigational technique. Humans also have biogenic magnetite in their brains, which is theorised to be associated with long-term memory, and often also anthropogenic magnetite, which is theorised to be connected with neurodegenerative diseases such as Alzheimer's (Gieré; Banaclocha et al; Pankhurst et al). Anthropogenic magnetite, in the form of airborne particulate matter, is made and released by burning wood, coal and fossil fuels, the majority of which is produced by traffic pollution.

If radio frequencies can be seen as feral entities, so too has magnetite an intrinsic ferality, "a descriptive characteristic of a more-than-human Anthropocene."[9] I conceive of magnetite as a material embodiment of radio-anthropocene entanglements, in which radio reveals itself as geologic, atmospheric and elemental media that works across species, materialities and scales. Unpacking magnetite and its workings in this way requires an expanded form of listening, a

[7] "Hundreds of chlorophyll molecules assemble into antennae complexes. Countless such antennae arrays form up into thylakoid discs. Stacks of these discs align in a single chloroplast. Up to a hundred such solar power factories power a single plant cell. Millions of cells may shape a single leaf. A million leaves rustle in a single glorious ginkgo" (Powers 155-56).
[8] I draw on Tim Ingold's definition of *wayfinding,* rather than navigation, because it "more closely resembles storytelling than map-using" (219).
[9] "*Feral Atlas"* uses it [ferality] as a descriptive characteristic of a more-than-human Anthropocene."https://feralatlas.supdigital.org/?cd=true&bdtext=introduction-to-feral-atlas

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kind of tuning in—intellectually, bodily, instinctively, speculatively: expanding radio requires expanded listening.

Expanded listening can mean exploring the boundaries of human sensory perception, through various practices and technologies, to try to listen beyond human capabilities, to realise, recognise and reckon with the limits of human sensory perception. It can mean paying attention to the silence and silencing, the untold or forgotten stories, the perspectives and knowledges that fall out of dominant modes of historicising (Donovan "Listening beyond Radio, listening beyond History"). It can mean imagining, speculating, fictioning, as in Haraway's Speculative Fabulation (SF) (Haraway, Truman).[10] But it can also mean to expand perspectives and consider listening from a non-human or more-than-human position.

One of the huge violences of the anthropocene is the separation of the human from 'nature', which can be seen as an extreme development of the dualisms of Western philosophy. Heather Davis and Zoe Todd describe this violence as "the Anthropocene continues a logic of the universal which is structured to sever the relations between mind, body, and land" (761). *Deep Listening,* along with various other human listening practices, has been developed in order to mentally and physically engage with the world more fully, as a practice of being in and with the world, a practice of awareness, patience, and giving space.[11] At a time when Western culture privileges the spectacle and the speech, it is important to consider the cultural and performative act of listening. Listening can be seen, in itself, as an act of resistance.[12] Listening can be a tool to overcome some of the problematics of the anthropocene, to undo the violence of separation. As decolonial scholar Rolando Vásquez notes, "the critique of the separation between the human, nature and the cosmos is an example of how a thought grounded on the notion of *relationality* brings to question the dichotomic mechanisms of thinking that characterizes modernity (original emphasis)" (4). Indeed, Vásquez turns to the "task of listening" as "a direct challenge to the processes of silencing and oblivion" (7).[13]

In communication theory, *relational listening* generally means to listen with empathy, to pay attention to the emotions conveyed by another (Halone & Pecchioni). Artist Ximena Alarcon has drawn on Lawrence English's theoretical approach to relational listening, as the possibility to "listen to a listener's listening" (Alarcón Díaz), together with Pauline Oliveros' concept of deep listening, in order to develop her project *INTIMAL: Interfaces for Relational Listening*:

> INTIMAL is a physical-virtual embodied system for *relational listening* that explores the body as interface that keeps memory of place, in the context of human migration. INTIMAL integrates technological interfaces that invite people to listen to their migrations

[10] See also Tobias Skiveren's article *Fictionality in New Materialism: (Re)Inventing Matter* (2020): https://journals.sagepub.com/doi/10.1177/0263276420967408

[11] Deep listening can be traced to Miriam-Rose Ungunmerr's "word, concept and spiritual practice that is dadirri (da-did-ee) [and] is from the Ngan'gikurunggurr and Ngen'giwumirri languages of the Aboriginal peoples of the Daly River region (Northern Territory, Australia)," which she describes as "inner, deep listening and quiet, still awareness." (1988). Coincidentally, in the same year the U.S composer Pauline Oliveros developed her own concept of paying attention to internal and external sonic environments and coined the term "deep listening", which continues in her wake: https://www.deeplistening.rpi.edu/

[12] On listening as activism, see Listening Geopolitics and the Anthropocene Contact zones of the Bali and Georgia Strait, Freya Zinovieff and Gabriela Aceves Sepúlveda, Leonardo Music Journal, 2020, Vol. 30, 114-118.
On the practice of radical, caring listening, see Valerie Palmer-Mehta's "Theorizing Listening as a Tool for Social Change: Andrea Dworkin's discourses on listening" (2016).

[13] See the work of Sally Ann McIntyre (Radio Cegeste) in relation to absence, extinction, colonialism: https://radiocegeste.blogspot.com/

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> and to improvise with body movement, voice and words, in networked and telematic performances (between distant locations) (Alarcón Díaz).

In these cases, the interconnection between humans is at the heart of relationality. Blackfoot elder and educator Leroy Little Bear explains how the notion of relationality encompasses "all my relations"—all that is alive and animate— "if all are energy and spirit then one can relate to them, be they humans, animals, plants, rocks, the earth, the sun, the moon, the stars, and so forth" (9). What happens when such a more-than-human relationality is placed in combination with listening?

In their article "Listening geographies: Landscape, affect and geotechnologies", Gallagher et al. argue for a more bodily and materialist approach to listening, which, by referencing "bodies of all kinds" (1) does not negate the human, "but rather allows other things to flood in as well" (5):

> Bodies, in this formulation, include human and more-than-human entities, while materials could include everything from microscopic particles to large-scale land forms. Our interest is not simply in how sound moves through these bodies and materials. Rather we are concerned with those situations where bodies and materials become particularly responsive to sound, resonating, amplifying or relaying vibration - situations where sound makes a difference in some way. Expanded listening starts with the ear but goes beyond it to include the whole body (4).

Thinking of listening in this way is a way of recognising other 'bodies and matter' as receptive and responsive and works against the logic of the anthropocene to challenge this dynamic of human—more-than-human relations. Through this potentially or partially speculative approach, a certain recognition for more-than-human ecologies may be formed.

Radio ecologies can be considered as *radio bodies* because of radio's intrinsic materiality, which is explored here through magnetite. In writing about the Datscha Radio festival in 2017, Gabi Schaffner pursued the question of "whether or not a radio day can be envisaged as a body". The "symbiotic broadcasting body" (14) in this case rests more heavily on, or perhaps is even propelled by, the imaginative. In Sophie Dyer and Sasha Engelmann's *Lore of the Radio Fossil*, on the other hand, the radio body is highly political, and revealed in atmospheric layers.[14]

Despite the relative long teeth of broadcast radio's existence within the history of electronic communication technologies, radio art is still an emerging and expanding field, and therefore not easily definable. Just as radio spans across spectrums and scales, so radio art ranges from sound works for broadcast, to installation, spatial design and performance works dealing explicitly with the materiality of radio frequencies.[15] Anna Friz has positioned radio art as an inquisitive medium which listens, as the outcome of experiments which involve listening as part of artistic practice: "listening in a different register, listening for something that might be missing" (Radio Revolten Opening Speech).[16] In radio art practice, the medium of

[14] For the *Radio Techno Fossil* iteration, see "the diagram we used as the map for our journey" for clarification: https://www.oneacre.online/incipit/

[15] For an extensive overview of (albeit predominantly Western) contemporary radio art, see the publication *Radio Revolten,* published in the aftermath of the International Radio Art Festival which took place over 30 days in Halle (Saale), Germany, in 2016.

[16] See also Gregory Whitehead: "That's why I have always been uncomfortable with any notion of radio art that focuses too exclusively on the sounding, or the sending out, because so much of the play takes

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electromagnetic radiation is used to explore and share acts of expanded listening, often within trans-scalar networks. Radio art allows for trans-scalar awareness, for 'bodily' listening, receptivity, speculation, and the tuning in of/to all these things.

Nightcall Radio

In the European spring of 2020, I was set to do a live site- and time-specific radio art performance at the Stave Hill Ecological Park, London, as part of Soundcamp's extended programme for the annual Reveil event. Reveil is a 24+ hour radio broadcast following sunrise around the earth on Dawn Chorus Day. The intention for the artwork was to re-transmit—or share through listening—the various signals taking place in that location at dusk—the dusk chorus of birds and frogs, for example—and, as the earth gradually turned, moving onto the night signals from the bats and various radio signals (anthropogenic and natural), which were to be narrowcast via microFM transmitters and broadcast via AM transmitters to listeners on site in the park and its surrounds at sunset.

As with many festivals and events, the outbreak of COVID-19 shifted the extended programme online, to run simultaneously on the Reveil platform. My work was to be produced and performed remotely, from my home city Berlin. I still intended to make a site- and time-specific radio piece, but of course the conditions had changed. In the run-up to the performance, Berlin residents were in quarantine and movement was restricted. Meanwhile, the nightingales were returning north from sub-Saharan Africa. Although the numbers of nightingales are dwindling in many European areas, in Berlin the population is growing as the city's green areas (and loving neglect) provide these birds with perfect nesting ground in the understory (Olterman). This year especially, out of the hush of minimised human movement and activity, people seemed to notice this bird's night song even more. As could be seen in many areas of bio- and geo-acoustics, the effects of COVID-19 on human movement provided an unusual moment for listening (Rosmolen; Lecocq).

The nightingale is a migratory bird, spending winters in sub-Saharan Africa, returning north around April each year. At home on multiple continents, the nightingale, like radio frequencies—and the universalising gaze of the anthropocene[17]— knows no geo-political borders. Nightingales are famed for their night song, and have been written about, mused upon and romanticised for ages in the countries where they dwell. Male nightingales return to Europe first, to find and build their nests, often returning to the very same spot each year. It is not that these nightingales do not sing during the day—they do, even joining in with the collaborative goodnight song of the dusk chorus—but after dark, when all other songbirds have gone to rest, the nightingale sings out its complex song. It sings to attract a companion, and it sings at night because this is when the female nightingales make their migratory journeys, guided by the stars of the night sky and the geomagnetic field. In this constellation, the male songbird has the loudest voice, with a dominant place in cultural and natural histories. But I am interested in the listening one, the sensing one, the one rarely mentioned, yet ever-present, and indeed, the nightingale's night song, or nightcall, is a sign of the arrival of this figure. This figure is the protagonist of the work *Nightcall Radio.*

place in the space of listening, within the consciousness of the listener, who can never be named or measured. The sound doesn't matter when the play is the thing, and for the wireless imagination, the play is everything. Qualities of indeterminacy and ambiguity make analog broadcast the ideal medium for philosophical drift and free association." (Whitehead 2011:2-3)

[17] The effects of the anthropocene, however, are not so universal (Hecht).

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There have been other sound, music and radio works made with and about nightingales. Beatrice Harrison's duet for cello and nightingale is one of the most notable, and was broadcast live from her garden on the same date each year between 1924 and 1942.[18] More recently, musician Sam Lee has performed a kind of contemporary reenactment of Harrison's piece, and continues to do performances with nightingales situated in their natural habitats.[19] In 2019, musician and philosopher David Rothenberg released music, a book and a film titled *Nightingales in Berlin.* These examples all centre on the vocality of the male nightingale, and indeed can be seen as a kind of intervention in order to create interspecies musical collaboration. In 2019, the garden radio art project Datscha Radio centred its first *nightgardening* session on the *night of the nightingales;* we broadcast from sunset until sunrise, including sound art performances, stories, conversation and music in the extended programme. It was much more about collective listening and sharing than intervening. *Nightcall Radio* went a step further, by focussing on the moments before the nightingale sings out at night—listening out, listening with—as a speculative, relational form of listening.

So what was initially *Nightfall Radio*, focussing on the multi-species voices of a dusk chorus for on-site as well as online/on air collective listening, became *Nightcall Radio*, from my garden, the sharing of a site- time- and radio-specificity, focussing on the unheard receiver of the nightingale's night song, of starlight, of the geomagnetic field. In this re-working of the initial idea under new (COVID-19) conditions, the onsite, shared listening experience was fragmented into a solitary, yet, via livestream, still a collective one. The transmission began at 21.15 CET, to coincide with the official onset of the night. As the earth turned from the sun, the grey line of twilight shifted over Berlin, allowing natural radio signals through the weakened magnetosphere. I worked and transmitted and listened out alone from my garden. Both the signifier and the protagonist of this work, and also the distant radio-listener, were imagined to be solitary too. Together in our solitude.

The setting for *Nightcall Radio* was my garden, a private garden in what is known in Germany as a *Schrebergarten*, or, rather ironically, a garden colony, the German version of an allotment garden. It is an area of fenced off gardens for growing fruit, vegetables and herbs, but also for leisure. Many of these gardens, like mine, have a tiny house for overnighting. I bring garden and radio together, in theory as well as practice, as sites of cultivated space entwined with multiple forms of agency (Donovan "The Radio Garden: On Datscha Radio 17").[20] Both garden and radio are embedded in and with imperceptible ecologies of transmission within human and more-than-human realms.

A radio can be cultivated in much the same way as a garden; structures can be set in place to allow for 'organic' development, seeds can be sown, ground prepared, areas laid out, research made, pieces cut back or pruned, and there can be a sense of wonderment at how/which new (unfamiliar/ unplanned/ unexpected?) seeds fly in on a breeze. And the garden can be transmitted in much the same way that it transmits itself all the time. The garden is naturally

[18] This is reported to have been the first outdoor radio broadcast: https://www.bbc.com/news/magazine-35861899. For a technical overview of the *Nightingale Broadcasts*, see: Iain Baird, *Capturing the song of the nightingale* (2015).

[19] See: https://samleesong.co.uk/projects/singing-with-nightingales/. It is interesting to note the shift in dynamic as the performance concept as been developed for a larger audience this year, to be experienced from the comfort of an auditorium rather than a trek through the woods. Through the use of "3G technology" (which sounds somewhat anachronistic as many cities roll out 5G), the nightingale is to become a live, yet unwitting musical presence in the theatre, no longer a part of a direct musical exchange.

[20] See also Datscha Radio, and the work of Gabi Schaffner.

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awash with/in multispecies frequencies. The radio and the garden are similar in that they can both be considered as temporary networks; a garden is a complex inter-species network (with both parasitic and symbiotic tendencies) with trans-scalar effects, that is controlled (at least in theory), maintained and cultivated by humans, as is a technological radio network. There are ecologies to both garden and radio, in which the complexities of care are embedded.[21] Considering the radio and the garden in a community context (as in free/community radios, community or educational gardens), it is perhaps the easiest way to draw parallels between the two seemingly disparate spaces and activities. They are both about collective involvement, establishing fruitful structures from which to share, and engaging in communal practices with elements of work and leisure. They may both embrace DIY culture and the bigger concept of sharing and caring, intermingling the individual within the community or the collective. They create sites for socialisation and engagement, from which to cultivate knowledges, to generate collective knowledges within open platforms, and, perhaps most importantly, to engender resistance to dominant ways and structures.

But, just as the radio and the anthropocene can be seen to have their roots in colonialism, so does the garden. As a cultivated space, it is also embedded in practices of violence and domination, especially in spaces of plantation, deforestation, extraction and monoculture farming. The birth of agriculture is even seen by some to mark the onset of the anthropocene; indeed the "plantationocene" has been suggested as an alternative name or concept for the current epoch (Haraway).[22]

My garden is part of a large garden colony nestled between Berlin's suburban south and a canal, on the other side of which is a motorway: "*Es ist ein bisschen unheimlich, das Schreien im Hintergrund, was ist das?* (It's a bit eerie, that screaming in the background, what is that?) — It is traffic" (Donovan and Schaffner). The dominant sounds of this garden, especially at night (when most activity is dampened, yet our auditory senses are awakened), were the undulating yet unwavering sounds of traffic. In the same way that the nightingale song was a signifier of the unheard one, the traffic sounds were a signifier of human movement, of pollution, of micro plastics released into the air from the friction between tyre and road, of atmospheric change caused by exhaust fumes, of heavy metals being released at such a scale as to render them imperceptible to humans. Anthropogenic magnetite is one of the nanoparticles produced by traffic fumes; it moves through the air and finds its way into the human brain, and is theorised to affect human memory.[23] This magnetic mineral, biogenic or anthropogenic, in humans as well as other organisms, is inherently connected to movement and memory.

Nightcall Radio is a work about remote yet collective waiting for a signifier of the silent one. A microphone in the garden was connected to a microFM transmitter, which was streamed live to the Reveil platform. While we listened in/to the garden and waited, we also listened to various anthropogenic and natural radio signals, from the Radio Twente Wideband receiver,

[21] See María Puig de la Bellacasa, *Matters of Care. Speculative Ethics in More Than Human Worlds.* 2017 University of Minnesota Press.

[22] See also *Reflections on the Plantationocene: A Conversation with Donna Haraway and Anna Tsing* (2019) https://edgeeffects.net/haraway-tsing-plantationocene/
And Robin Wall-Kimmerer's *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants* (2013) for profound reflections on symbiosis, exchange and gratitude in human-plant relationships.

[23] Rather ironically, one of the ways for humans to overcome these memory issues connected to neurodegenerative disorders such as Alzheimer's disease is to walk by self-navigating without the aid of visual maps.

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and from a live VLF (natural radio) website, along with hydrophone recordings. With this sonic aesthetic, radio was expressed as an elemental and atmospheric media. While we listened in/to the garden and waited, I told some tales of histories of magnetism, to pull apart the force of its materiality, its corporeal embodiment. But these were the classic tales, and it is important to reimagine histories in order to imagine and enable possible futures. So I told a more-than-human legend of the history of magnetism, one that transcends human histories. As the narrator, I had a voice (I was the signifier). I was also making a call—a *nightcall*—and waiting and listening for the non-response of my listener/s. The radio-listener was the unheard one, the listening one, likened to *Nightcall Radio*'s protagonist.

In this piece, we waited for the call of the nightingale, and we imagined other unheard signals of the garden, of the radio, and of the anthropocene. I imagined creatures of all shapes and sizes. I imagined the chemical transmission between flowers and insects. I imagined the numerous signals between trees and plants and water. And I imagined the garden to be listening. And I wondered: Is this what it means to listen in the anthropocene? To tune-in by listening out for the unheard, listening one?

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