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AUGMENTED (RE)WILDING OF URBAN ENTANGLEMENTS IN JAKOB KUDSK STEENSEN'S AR PROJECT *THE DEEP LISTENER*

Abstract: The article examines Jakob Kudsk Steensen's 2019 artistic project, *The Deep Listener*, within the framework of Jamie Lorimer's relational ontology of wildlife. The artist employed Augmented Reality (AR) and audio technologies to reimagine the anthropocentric approaches towards the rewilding processes implemented in London's Hyde Park. As the text demonstrates, the artist perceives wildlife not merely as a technologically transformed nonhuman site but as a network of more-than-human materiality and sensory experiences, shaping its spatiotemporal dimension. *The Deep Listener* establishes techno-environmental interconnectedness explored by users through sensory experiences. The work thus serves as an ethical practice, allowing users to unlearn desensitized reactions and develop care-driven relation with the more-than-human environment of the park.

Keywords: urban wildlife, entanglements, Augmented Reality (AR), more-than-human, Jakob Kudsk Steensen

> Our site is a place to study "bare-ground ecohistories," that is, histories in which *humans* and *nonhumans* have each worked to remake a radically altered landscape anew.[1]

> The territory itself is inseparable from vectors of deterritorialization working it from within: either because the territoriality is supple and "marginal," in other words, itinerant, or because the territorial assemblage itself opens onto and is carried off by other types of assemblages.[2]

[1] A.L. Tsing, *When the Things We Study Respond to Each Other: Tools for Unpacking the Material* [in:] A. Jaque, M. Otero Verzier, L. Pietroiusti (eds.), *More-than-Human*, Het Nieuwe Instituut, Rotterdam 2020, p. 023.

[2] G. Deleuze, F. Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, Bloomsbury Academic, London–Oxford–New York 2016, p. 591.

Introducing the Feral

Feral Atlas, a collaborative online catalogue conceptualized by scientists, artists and digital makers, invites readers to explore the conditions of the Anthropocene, created wherein "nonhuman entities become tangled up with human-built infrastructures."[3] However, contrary to readers' expectations, the project does not solely concentrate on how to discuss, use and acknowledge the impact of separate infrastructures on the environment. Instead, it scrutinizes the dynamics of material integrations within the formation of the Anthropocene, unfolding the feral ecologies of the urbanized and agricultural areas. What matters to the creators is that these are not mere representations of nature but "varied material processes and feral dynamics through which the life continues to take the form."[4] The emphasis lies on the performative role of nature and socio-cultural factors responsible for the ongoing interconnectedness of human and nonhuman materiality. Hence, the curators of the atlas seek to draw alternative cartographies[5] that depict the connections of the more-than-human world, opening up multiple spaces exclusively reserved for nonhuman agents. Thanks to the visual and sonic materials, readers can immerse in the virtual areas and recognize the most affected, wounded, unprivileged and vulnerable experiences of the more-than-human existence. By uncovering the invisible spheres of our lives, the project challenges the binary geographies associated with nature and culture, human and nonhuman. It offers new models of knowledge production based on relational ontologies rather than their separation. The atlas serves as a platform for creating and learning new forms of inclusive imagination, in which nature is not viewed as a passive agent but is constantly remade by human and nonhuman actors involved in the socio-ecological processes.

Feral Atlas, with its multi-sited interconnections, has inspired me to reconsider the processes of urban rewilding as demonstrated in the artistic project of Jakob Kudsk Steensen entitled *The Deep Listener* (2019).[6] The project was developed in response to the global call for innovative architectural approaches that examine the systems and infrastructure of London's public spaces, along with their diverse ecosystems. The primary objective was to unmask the enduring effects of human im-

[3] J. Deger, A. Keleman Saxena, L.A. Tsing, F. Zhou F., *Feral Atlas: The More-than-Human Anthropocene*, 2021, https://feralatlas.org (accessed: 16.01.2024).

[4] Ibidem.

[5] Cartographies are understood here as spatiotemporal processes responsible for the formations and deformations rather than fixed representational maps. In other words, the paper concentrates on performative cartographies (Crampton 2009; Verhoeff 2012) oriented at actions that mobilize chains of differences to challenge the reproduction of the binary conceptualization of nature.

[6] *The Deep Listener* as the artist emphasizes on his website was developed as "AR application for iOS and Android devices and as Serpentine Augmented Architecture was commissioned in collaboration with Google Arts & Culture and Sir David Adjaye OBE App production and development by the Serpentine Galleries", http://www.jakobsteensen.com (accessed: 16.01.2024).

pact on urbanization,[7] and the digital project effectively answered this inquiry. By utilizing AR (Augmented Reality) and audio technologies, the artist connected users to previously unseen multinatural phenomena of London's park, facilitating novel ways of understanding and relating to its wildlife. What needs to be emphasized at this point is the perspective put forth by Jamie Lorimer via Sarah Whatmore, wherein wildlife is viewed as a process that describes "ecologies of becomings, not fixed beings with movements of differing intensity, duration, and rhythm. Wildlife is discordant with multiple stable states. It is not in any permanent balance."[8] With this approach in mind, this article focuses on the relational nature of knowledge production, exploring artistic, technological, architectural, bodily and wildlife entanglements. As entanglements emerge thanks to the relationality among various entities, *The Deep Listener* – a joint practice-based research encompassing field-based observation, digitalization and historical analysis – embraces relations to times, material, political territories, and, most significantly, our more-than-human entanglements. In this regard, as exemplified by Kudsk Steensen's project, urban wildness is not solely a technologically transformed nonhuman site but a network of more-than-human materiality and sensory experiences constituting its spatiotemporal dimension. As I will indicate, this approach allows the artist to revise the anthropocentric models of urban rewilding and, thus, foster collaborative and ethical strategies for our ecological survival.

Triggering the (Re)wilding Entanglements

Before I embark on the analysis of Kudsk Steensen's project, the question arises of how to redefine the prevailing approaches to wildlife conservation after the diagnosis of the Anthropocene has been announced. Given that humans have become a geological force equally responsible for planetary imbalances and degradation, it is crucial to summon and implement new environmental policies that embrace multispecies integration and promotion of models of responsibility that could be adequate in a given region. With this in mind, Jamie Lorimer advocates a multinatural approach to nature conservation in the Anthropocene, which acknowledges the vast differentiation of more-than-human agents that "adhere to multiple and discordant spatiotemporal rhythms."[9] He draws inspiration from the concept of multinaturalism developed by Eduardo Viveiros de Castro, entailing the turn to an Indigenous standpoint when investigating "Western multiculturalist cosmologies."[10] In contrast to the prevalent dichotomy between nature and culture dominant in the Western world, the perspective considers the coexistence

[7] See: https://augmentedarchitecture.org (accessed: 16.01.2024).

[8] J. Lormier, *Wildlife in the Anthropocene: Conservation after Nature*, University of Minnesota Press, Minneapolis 2015, p. 7.

[9] Ibidem, p. 5.

[10] E. Viveiros de Castro, *Cosmological Deixis and Amerindian Perspectivism*, "The Journal of the Royal Anthropological Institute" 1998, vol. 4, no. 3, p. 470.

of multiple natures, as depicted in Amerindian cosmologies. According to Viveiros de Castro, there is no single concept of nature; instead, various natures encompass human and nonhuman perceptions that share differences and affinities. Having developed this concept via Bruno Latour,[11] Lorimer suggests that nature studies should consist of "multiple forms of natural knowledge–not all of which are scientific or even human."[12] This multispecies co-existence and co-creation model highlights the relationality of human and nonhuman agents, emphasising that "wildlife is everywhere. It is among us – in our bodies, our homes, and our cities, as well as in the familiar territories that concern conservationists."[13] Thus, Jamie Lorimer proposes the relational ontology of wildlife that contributes to interdisciplinary debates and fields, "situating the wild within the diverse currents and flows through which multi-sited wildlife networks are configured."[14] In this respect, it can be concluded that to understand the complexities of the Anthropocene is to examine it from the multinatural prism.

The theoretical perspective contrasts with wilderness-based environmentalism and traditional conservation projects, which advocate for the institutionalized mechanisms of nature's protection based on the separation and recreation of specific ecosystems that existed before human interference. While these models aim to restore, they reaffirm the dominance of human agency over nature, reinscribing and further strengthening its exceptionalism, deepening the division between culture and nature. It may be inferred then that the traditional forms of conservation result from the reproduction of "binary geographies of 'nature' and 'society' and the associated purifications of human and animal lives",[15] as Sarah Whatmore and Lorraine Thorne notice. Still, suppose we apply this multinaturalist perspective to the study of urban rewilding. In that case, it can be deduced that it redraws the boundaries of what is considered natural and urban. As Bruce Braun asserts in *Towards a New Earth and a New Humanity: Nature Ontology and Politics*, "natures and everyday urban environments are woven into tight webs of socio-ecological and spatial relations."[16] And if multinaturalism promotes an interconnected and inclusive understanding of urban terrains, in that case, it can be deduced then that they are thus natureculture[17] zones made and remade by countless more-than-human actors.

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11 For Bruno Latour, as highlighted in *From Multiculturalism to Multinaturalism: What Rules of Method for New Socio-scientific Experiments?*, multinaturalist approach, based on the conviction of disunification of knowledge politics, can become an antidote to the old models of knowledge production.

12 J. Lormier, *Wildlife in the Anthropocene…*, op. cit., p. 2.

13 Ibidem, p. 180.

14 L. Thorne, S. Whatmore, *Wild(er)ness: Reconfiguring the Geographies of Wildlife*, "Transactions of the Institute of British Geographers" 1998, vol. 23, no. 4, p. 437.

15 Ibidem.

16 B. Braun, *Towards a New Earth and a New Humanity: Nature, Ontology, Politics* [in:] N. Castree, D. Gregory (eds.), *David Harvey: A Critical Reader*, Blackwell, Oxford 2006, p. 218.

17 D. Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness*, Prickly Paradigm Press, Cambridge 2003.

The relational ontology of the wildlife presented by Jamie Lorimer can also be understood through the prism of Karen Barad's agential realism, in particular ethico-onto-epistemology, which pinpoints the fact that materiality of the world is always active and triggers the inexhaustible dynamism of different matters. Nevertheless, in contrast to the concept of interaction, which emphasizes the separateness of human and nonhuman entities, Karen Barad proposes the notion of intra-action to signify the mutual constitution of entangled agencies. Her theoretical framework signalizes that individuals do not pre-exist as such but rather materialize in intra-actions;[18] they exist within "phenomena (particular materialized/materializing relations) in their ongoing iteratively intra-active reconfiguring of locally determinate causal structures with determinate properties, meanings, and patterns of marks on bodies."[19] As boundaries and properties of matters are constantly destabilized and stabilized through agential intra-actions, wildlife can be seen thus as the circulation of more-than-human entanglements that are always biological and socio-cultural. From this perspective, the agency of wildlife can be seen as the intricate web of relations in the world.

But what is more important, the application of the Baradian approach transforms the way we understand temporality and spatiality, which "emerge in this processual historicity."[20] Given the disruptions within the spatial temporalities, this model suggests that "relations of exteriority, connectivity, and exclusion are reconfigured. The changing topologies of the world entail an ongoing reworking of the very nature of dynamics."[21] And suppose we take into account the fact that the Anthropocene restored the idea that human and nonhuman histories are inextricably intertwined. In that case, it can be inferred that every human action carries more-than-human material traces. Both the inside and the outside, now and then, should be considered while examining the complexity of more-than-human relations. This perspective, to borrow from Sarah Whatmore and Lorraine Thorne, "unsettles the carceral contours of heterotopic sites, situating these 'exteriorizations' of the wild within the diverse currents and flows through which multi-sited wildlife networks are configured."[22]

So, how can we reimagine the rewilding processes and forms of environmentalism of urban spaces in artistic practices and not fall into the traps of a romanticised vision driven by the anthropocentric belief in the scientific progress and its planetary management known to us so well? If wildlife is seen as multinatural and intra-active – as highlighted by Lorimer, Whatmore and Barad – what matters is that it can be evoked and learned through "multiple multispecies entanglements which have dis-

[18] K. Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, Duke University Press, Durham–London 2007, p. 24.

[19] K. Barad, *Posthumanist Performativity: Toward an Understanding How Matter Comes to Matter*, "Signs. Journal of Women in Culture and Society" 2003, vol. 28, no. 3, p. 817.

[20] Ibidem, p. 818.

[21] Ibidem.

[22] L. Thorne, S. Whatmore, *Wild(er)ness…*, op. cit., p. 437.

tinct geographies and diverse temporalities."[23] In contrast to traditional representation methods, we need novel tools and techniques to capture, evoke and ethically respond to the complex character of more-than-human entanglements without reproducing human-centred visual strategies. For Jamie Lorimer, these are the more-than-representational knowledge practices[24] based on the "sets of embodied and skilful processes of learning to be affected by the environment"[25] that question the disembodied logic of our being in the world. Embodied and situated in multiple spatial and temporal formations, they "enable us to entangle and thus relate to them, become affected by them and modify our potential to affect others."[26] In other words, experimental and performative actions trigger affective intensities and capacities through which we can sense, get to know and explore the flux of wildlife. Once human-centred sensory experiences are challenged, it is easier to acknowledge that human and nonhuman agents become equally active subjects in constructing socio-ecological meanings.

But what is more important, the embodied practices play a crucial role in opening up to others and forming a "transpersonal space marked by emergent doings of various kinds."[27] These are performative spaces of encounters that result from non-hierarchical and entangled practices of engagement and collaboration of more-than-human agents. This approach entails realizing our responsibility, or response-ability in the Harawayan sense, for the world we co-constitute. However, it has to be accentuated that response-ability is understood here not only as a response but predominately as an action that triggers processes of transformation of our approach, which is a step outside the comfort zones of human centrism. Shaped by our attentiveness, mindfulness and response-ability, which stem from interconnectedness and entanglements, the embodied practices eventually activate the relational ethics of care. As the article demonstrates in the subsequent sections devoted to the analysis of *The Deep Listener*, the practices of wildlife conservation after the Anthropocene thus should be "performative, actively shaping subjects and ecologies concerning the knowledge it is informed."[28]

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23 J. Lormier, *Wildlife in the Anthropocene: Conservation after Nature*, University of Minnesota Press, Minneapolis 2015, p. 181.

24 As Jamie Lorimer highlights, more-than-human representational account of knowledge production withdraws from the Cartesian "separation between a rational mind and an instinctive animal body" (9). In this sense, it is parallel to non-representational methodology developed earlier by Hayden Lormier which sees the importance of practices, actions and performance in production of meaning.

25 Ibidem, p. 5.

26 M. Puig de la Bellacasa, *Matters of Care in Technoscience: Assembling Neglected Things*, "Social Studies of Science" 2011, vol. 41, no. 1, p. 99.

27 P. Vannini (ed.), *Non-representational Methodologies: Re-envisioning Research*, Routledge, New York 2015, p. 5.

28 Ibidem, p. 13.

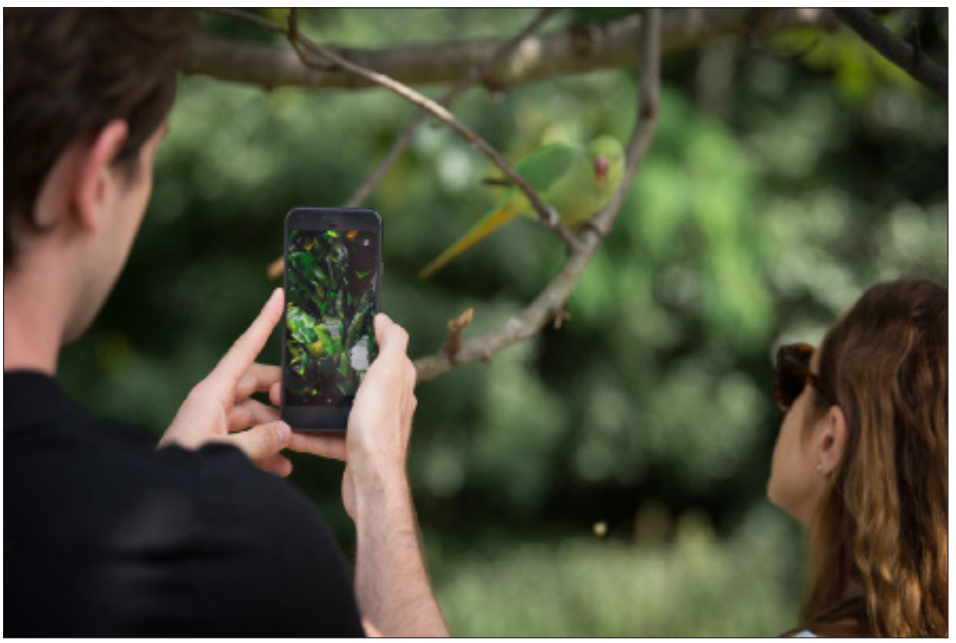

Figure 1: Jakob Kudsk Steensen, *The Deep Listener*, 2019. AR Visualisation. Courtesy the artist. Serpentine Augmented Architecture in collaboration with Google Arts & Culture.

Augmenting the Park's Wildlife: *The Deep Listener*

The performative formation of the relational ontology of wildlife constitutes the bedrock of Jakob Kudsk Steensen's 2019 collaborative project, *The Deep Listener*, which – as the title indicates – is an audio-visual experience via an AR application easily accessible to all the visitors of public spaces with a smartphone (Figure 1). Having scrutinized the existing landscapes of London's Hyde Park and Kensington Gardens, Kudsk Steensen enriched them with digital presences of the species rendered in Unreal Engine, a software used to create video games. As a result, the artist invites users to see and listen to the sights and sounds of five London species: plane trees, bats, parakeets, azure blue damselflies and reedbeds. When the app is opened, an introductory note appears, revealing to its users that "it is both a site-specific public artwork and a digital archive of species that live within the park."[29] Nevertheless, contrary to users' initial expectations, in the next step, they are taken on a journey during which they can delve into the "life in the park they do not see, sounds they do not hear."[30]

[29] See: https://augmentedarchitecture.org (accessed: 16.01.2024).
[30] Ibidem.

The artist explains that "together we will listen to species in the park. I am your guide"[31] to strengthen the cognitive effect of the artistic practice. The project allows participants to explore the park's ecosystem, previously ignored for it was considered intangible or simply invisible, employing the immersive technology. According to Kudsk Steensen, since "many species are often overlooked even though they are beautiful and have interesting natural histories", the experience of the more-than-human encounter via technology makes us stop and raise the following questions: "Why are they there? What biological rules do their lives follow? How do they sound?"[32] Therefore, while reactivating us to listen attentively and sense the more-than-human interconnectedness of London's Hyde Park, the artistic practice aimed to unfold the novel models of understanding, respecting, and engaging with urban wildlife.

The reserved approach towards the multispecies life in the park stems from our perception of it merely as a location adorned with architectural infrastructures. It serves as a backdrop for the existence of the more-than-human world, thereby enhancing urban landscapes. However, the artist's project has effectively transformed the park's role as a landmark through immersive and persuasive effects, providing experiential value through simulations, audio and narration richness.[33] By fashioning the world in which digital artifacts (texts, 3-D graphics and audio) "blend into, complement, and reinterpret the meaning of the physical",[34] his AR application produces broader connections between the virtual and the physical versions of the park. In effect, AR technology augments the environment of the park, becoming an annotation of the world around users. In this process, augmented reality (AR) technology acts as an audio-visual system, bridging the gap between the virtual to the physical realms, facilitated by the computational logic of the AR browser.[35] In comparison to VR technology, users are not directly transported into the virtual realm. Still, they become more conscious about their presence in the park's environment, enriched now with the digital materials. In other words, as Kudsk Steensen's work reveals, the Hyde Park remediated and amplified through technological tools, unlocks new potential for experiencing wildlife. This is a direct result of the public space no longer solely adheres to the conservational public practices that cater to London's residents' needs seeking solace from the bustling city life. But borrowing from Jamie Lorimer, "everyday environmentalism",[36] in which many people interact with the nonhuman world, now integrates into users'

[31] Ibidem.

[32] See: http://www.jakobsteensen.com/the-deep-listener (accessed: 16.01.2024).

[33] B.J. Fogg, *Persuasive Technology: Using Computers to Change What We Think and Do*, Kaufman Publishers, San Francisco 2003, p. 32.

[34] J.D. Bolter, M. Engberg, B. MacIntyre, *The Reality Media*, The MIT Press, Cambridge–London 2021, p. 33.

[35] M. Colleni, B.K. Litts, L. Yan, *Exploring the Rhetorical Affordances of Augmented Reality in the Context of the Anthropocene*, 6th International Conference of the Immersive Learning Research Network (iLRN), San Luis Obispo 2020, p. 110.

[36] J. Lormier, *Wildlife in the Anthropocene…*, op. cit., p. 165.

bodily experience and intellectual immersion, thanks to technological means. Users can explore the hybrid environment, becoming emotionally and intellectually engaged and further facilitating human–nonhuman relationality.

It is worth highlighting that the artist has been skilfully navigating multiple technologies, such as 3D animation, video games, immersive technologies, photography and sound design, for many years in his artistic works. He has aimed to reconnect the intricacies of ecosystems with human users through various virtual world formats. While examining the intersections of art, sciences, technology and ecology, his artworks are often the results of his extensive and prolonged collaborations with different researchers, digital makers, composers and graphic designers. What unites all of them is the shared idea of reanimation, recreation and re-enactment of ecosystems affected by anthropogenic factors, achieved through immersive technologies that often uncover the desensitized human-centred practices. Consequently, his projects focus on fostering practices of care that reactivate more empathic approaches to our current planetary conditions.

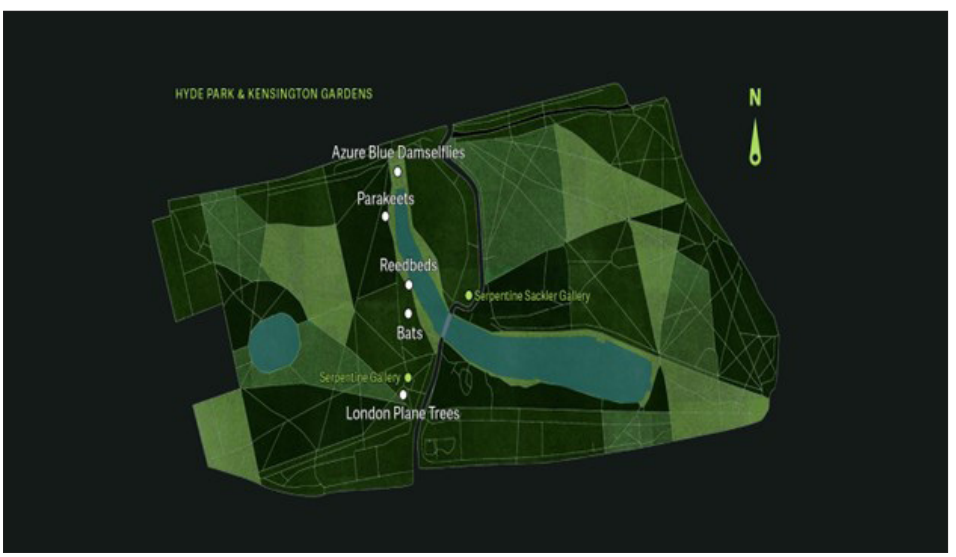

Figure 2: Jakob Kudsk Steensen, *The Deep Listener*, 2019. AR Visualisation. Courtesy the artist. Serpentine Augmented Architecture in collaboration with Google Arts & Culture.

For instance, his latest continuously evolving work, *Berl-Berl*, created in partnership with the Natural History Museum in Berlin after months of intensive fieldwork research, delves into the forgotten narratives of the wetlands surrounding Berlin. As Kudsk Steensen elucidates, this project manifests "a living simulation of a virtual

pulsating swamp."[37] Through a virtual live performance, this work materializes as an immersive experience, allowing the artist to merge different senses and establish the connection between the natural and digital world. In effect, the hidden urban stories of interconnectedness beyond human realm are unveiled. On the other hand, his 2018 *Re-Wilding*, a cinematic video centred around the reintroduction of previously extinct crows to the Big Island of Hawaii, serves as a living natural archive, which is the effect of the artist's collaboration with science fiction writers. For the artist, it "evolves into a new liquid reality, where species, technologies, and cultural mythologies about nature intertwine."[38] By reactivating the process of de-extinction, the artwork transforms the worlds and ecological conditions from the past, defying the boundaries of what was once considered impossible. This leads to the formation of a novel web of multi-species relations.

The Deep Listener has also this transformative potential to reimagine nature and challenge the anthropocentric perspective of contemporary representational technologies. Based on the AR application, the project features an interactive map (Figure 2) that enables users to navigate all five audio-visual experiences spread across the Hyde Park and Kensington Gardens. What needs to be highlighted is that each species is only heard and seen in its designated location. As users move, the soundscape and its tempo change in response to their proximity to the chosen species. In this regard, as described in the project's instructions for park visitors, "through these interactions, your own body becomes the mechanism to alter the environment around you, and technology becomes an active form of communication between human and nonhuman actors in the park."[39] By offering the opportunity to immerse and interact with the park's multinatural dimension, the application serves as a mediator between the user and the nonhuman environment, where the human and nonhuman entities become rhetorical actors circulating within AR.[40] The physical location, which holds significance to the users, is augmented by real-time annotations that reveal the complexities of the wildlife's relations. While immersing themselves in the audio-visual material and physically engaging with the park's infrastructure and wildlife, users can "experience the value exchanges designed in the interactions and act as agents in the media design process."[41] In effect, the traditional subject (human) and object (nonhuman) relations are reversed in the project that affords the nonhuman the agency of telling and co-constituting the whole experience. The wildlife is no longer reduced to a consumable spectacle of signs, which is typical of tourism, for instance. The application de-centres humankind's superiority, allowing users to acknowledge the agency of fauna and flora in the park's exploration. Users

37 See: http://www.jakobsteensen.com/berlberl (accessed: 16.01.2024).

38 See: http://www.jakobsteensen.com/rewildling-1 (accessed: 16.01.2024).

39 See: https://augmentedarchitecture.org (accessed: 16.01.2024).

40 J. Greene, *From Augmentation to Articulation: (Hyper)linking the Locations of Public Writing*, "Enculturation", 4.04.2017, http://enculturation.net/from_augumentationto_articulation.

41 M. Colleni, B.K. Litts, L. Yan, *Exploring the Rhetorical Affordances…*, op. cit., p. 109.

move around the physical locations, following the rhythm and directions indicated in the digital mapping. Thus, the nonhumans become their guides, thanks to which users can perceive the hybrid environment (physical and digital) and gain knowledge about the park, the realm of the multispecies.

The formerly desensitized and anthropocentrically embodied practices now play a role in forging novel naturecultre connections rooted in the multinatural richness of the park and its infrastructure mediated by the technological means. In this sense, the artistic practice not only reactivates the interactivity with the space but also leads to perceptual changes, redefining users' relationship to the park's surroundings. While moving in the directions designated by the application, users are allowed to observe fauna and flora from an unusual proximity, fostering interconnected and relational nature of our planetary lives. This approach transforms the reactive conservation methods that promote the separation of nature from urban and post-industrial surroundings, often enclosing it in thematic parks that comply with market demands. In contrast, Kudsk Steensen's application thus enriches the traditional educational methods of knowledge production embedded often in conventional understanding of the complexity of wildlife by offering a multinatural model which reveals that "wildlife lives among us."[42] The romanticized vision of nature, which characterizes forms of environmental governance, is substituted here by the forms of cultivation of companionship of humans and other species. From this perspective, the project aligns with Lorimer's revaluations of the rewilding processes, which should initiate, as he emphasizes, "encounters that can be recognized and channelled to catalyse new forms of environmental responsibility and citizenship."[43] By immersing users in augmented reality, the project heightens a sense of environmental awareness and makes users aware of more responsible attitudes towards the relational character of environment.

The deep listening effect in Kudsk Steensen's application strengthens the transformative experience, which creates the opportunity for further human self-reflexivity. The sonic layer of the project is a direct outcome of the collaboration with sound artists and field recordist Matt McCorkle, associated with the Museum of Natural History in London, and the curatorial team at Serpentine Galleries. According to the project's curators, the implementation of sounds becomes "a slow and embodied process of attentive and embedded listening to reflect and learn."[44] To instil educational value, Kudsk Steensen collected sonic and visual materials during his extensive fieldwork research conducted in Kensington Gardens and Hyde Park. Not only did he spend months deeply immersed in the park, observing and documenting its inhabitants and environments, but he also collaborated with biologists and naturalists in museums before crafting these audio-visual experiences. Having embraced various perspectives in his research, Kudsk Steensen endeavoured to integrate

[42] J. Lormier, *Wildlife in the Anthropocene…*, op. cit., p. 7.
[43] Ibidem, p. 165.
[44] Ibidem.

into the more-than-human world, expanding beyond the prevailing boundaries of socio-cultural imagination. What mattered was the emergent synergy that could bridge the realms of ecology and technology in the postnatural Anthropocene.

The title of Kudsk Steensen's work evokes Pauline Oliveros' concept of deep listening coined to heighten our consciousness of continuum of sounds by which we have been surrounded. Practiced daily, deep listening extends the receptivity of space/time sounds, making us realize the interconnected character of the whole of the environment. For the composer, deep listening is a form of meditation that contains bodily and breathing exercises. On the spectrum of sounds/silences, for Kudsk Steensen, it becomes also a mindful method of engaging users in the theme of extinction. Embodied and embedded, the artistic practice allows users to feel immerse and contemplate on both the digitally rendered and on-site captured audio materials. This coupled with the inclusion of sonic elements encompassing the more than-human sounds – which arise from the recordings of the park's fauna, flora and technological interferences – heightens users' attentiveness while investigating the park's multinatural wonders. Despite the various anthropogenic frequencies – couplings between humans, nonhumans and technology – found in the park's different locations, a sonic focus is produced. Users actively participate in examining the interconnectedness between human and nonhuman sounds that emerge from the technological process of revitalization of the wildlife. It seems that to acknowledge our intra-actions with the park's "natural, cultural contact zones" (Haraway), we need to realize that our lives are also intimately entwined with digital technologies that enable us to evoke audio sphere beyond our immediate grasp. Thus, the utilization of augmented reality (AR) technology in this project aligns with David Cecchetto's assertion that technologies should not merely be viewed as extensions but should be recognized as deeply entangled with our very being. In other words, technologies are not "tools that we use, nor objects in relation to which we are servomechanisms, but are rather pathways through a relational ontology."[45] Surrounded by diverse sounds produced by animals, plants, technologies and the city's infrastructures, users become enmeshed within complex spatial-temporal (techno-organic) relations that constitute the urban wildlife. As a result, the application, thanks to the deep listening effect, invites users to feel and immerse in the soundscape that extend beyond the human senses.

At this point, the question that comes to the fore is how immersive technology establishes relations with the nonhuman world, not reproducing the anthropocentric perspective? It is crucial to accentuate that while the AR technologies form the project's foundation, the species dispersed across the Hyde Park and Kensington Gardens take the major roles in the performative work generated by the software. On the other hand, humans and technology assume secondary roles in creating the AR worlding. To put it differently, technology becomes a tool for sensing anthropo-

[45] D. Cecchetto, *Humanesis: Sound and Technological Posthumanism*, University of Minnesota Press, Minneapolis–London 2013, pp. 5–6.

genically transformed ecosystem, formerly confined to the abstract realm accessible mainly to scientists. As Kudsk Steensen explains, "my primary interest in technology is not about technology itself. I am interested in how technology can create strongly poetic and sensory virtual landscapes, which we can share, explore and experience."[46] Even though *The Deep Listener* is based on real places and actual natural histories, the artist creates novel imaginations and ideas about what it means to be human living with technology and nature today[47]. In essence, technology enables the artist to establish the connection between its users and both the artistically reanimated park's wildlife and its infrastructure through the techno-ecological entanglements that facilitate our capacity to think and feel with (alongside) and for (on behalf) the more-than-human world. Kudsk Steensen advocates new documentation procedures that do justice to these multiple agencies by including the non-anthropocentric counter-narratives; they can induce further changes and environmental activism.

To achieve this effect, the artist enriched the audio material with short textual displays appearing on the screen before entering a particular experience. Though the language plays a primary role here, the project's multi-sensorial elements are strengthened as users become acquainted with the histories and significance of each species in shaping the more-than-human environment of the park. Consequently, each of the species is granted a voice; they recount intricate stories about their interconnectedness with the cityscape, emphasizing their role in co-shaping the park's life. Thus, as London's plane trees reveal,

> As London Plane Trees we were made
> a modern hybrid species
> A biological infrastructure archiving pollutants
> Your breathing is connected to us
> We are the lungs of London[48]

The trees (Figure 3) uphold their agential position, one that is non-anthropocentric, as they underlie the intra-actions that allow us to breathe, feel and establish connections with other organisms in the metropolitan area. As signalized, their hybrid composition is founded on the exchange of materials and energies that accelerate these urbanised rewilding processes, making users think about the non-determined materiality of human and nonhuman beings. What is particularly intriguing is the fact that the London plane tree, which was planted in London during the Industrial Revolution, is a hybrid of sycamore and plane trees originating from different parts of the world. As described by Kudsk Steensen in his commentaries on the project, the trees function here as

[46] S. Garg, *Jakob Kudsk Steensen's The Deep Listener Combines Art, Ecology and Technology*. *Interview: The Deep Listener*, "STIR World", 3.10.2019, https://www.stirworld.com/inspire-people-jakob-kudsk-steensens-the-deep-listener-combines-art-ecology-and-technology (accessed: 24.01.2024).

[47] Ibidem.

[48] See: http://www.jakobsteensen.com/the-deep-listener (accessed: 24.01.2024).

> an early form of bio-architecture, capable of withstanding extremely polluted conditions. The bark absorbs pollutants to protect the tree itself and clean the air we breathe, which is then regularly shed. The bark becomes an archive and historical document of particles and pollution that connects our bodies to the species that cohabit in the park.[49]

In other words, the trees are no longer merely biological organisms but affected by the industrialization and urbanization processes; they absorb the feral elements, creating novel more-than-human entanglements of which humans are a part. Though the artist decided to apply a strategy of anthropomorphizing this part of the experience, which often stimulates negative attachments, the trees enable users to think like specific organisms, witness and evoke nonhuman ways of being in the world. This technique kindles an "interest in how the material and ecological properties of particular organisms come to shape human–nonhuman relations."[50] And when combined with the sensory experience, the project does not present a romantic vision of a purified wildlife which acquired human skills but the continuum of more-than-human entanglements between the trees, the park's infrastructure and humans. While unfolding the shared histories of our companionship in the world, *The Deep Listener* enables users to recognize their decentered position in the co-construction of the multinatural park's environment. Hence, anthropomorphizing can be seen as one of the valuable techniques for building an ecological sensibility in oneself, as indicated in the project.

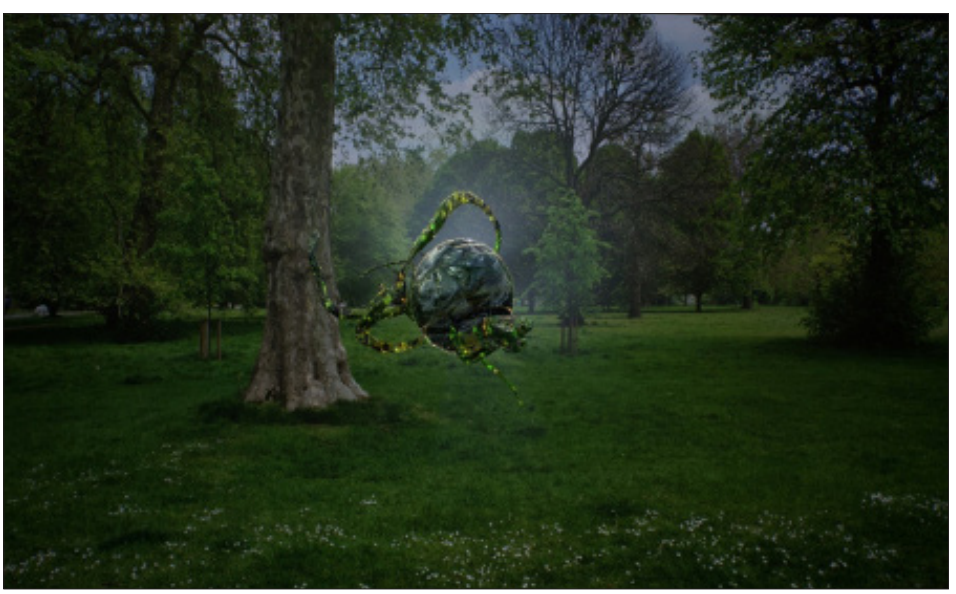

Figure 3: Jakob Kudsk Steensen, *The Deep Listener*, 2019. AR Visualisation. Courtesy the artist. Serpentine Augmented Architecture in collaboration with Google Arts & Culture.

[49] Ibidem.

[50] J. Lormier, *Wildlife in the Anthropocene*..., op. cit., p. 26.

In the context of Karen Barad's posthumanist materialist account of performativity, it can be deduced that the application's users become integral to nature's ongoing process of becoming "bio-architecture" in the park. It can be further inferred that the discursive aspect of the project is inextricably linked to the material processes of the physical and digital environment that shape our planetary lives. Seen from this light, the discursive component of *The Deep Listener* arises not only from "human-based activities but rather specific material (re)configurings of the world through which local determinations of boundaries, properties, and meanings are differentially enacted."[51] Considering Barad's emphasis on the importance of materiality alongside language, the project thus reinvigorates the productive nature of material-discursive practices, including technoscientific ones such as AR technology and environmental research. These practices reveal the entangled nature of all living and non-living entities within their unique historical contexts. While the project demonstrates that humans are not the sole contributors to the construction of socio-cultural meaning, it can be concluded that London's Plate Trees are living conduits of our shared earthly history. In this light, *The Deep Listener* becomes a living archive and spatial-corporeal platform for creating multinatural knowledge that can be shared and practised to sense the complexities of urban ecosystems.

Coda: Entangling Augmented Wildlife Ontologies

As a coda, I would like to refer to the quotation that opens this article, in which Anna Lowenhaupt Tsing observes the importance of examining "bare-ground ecohistories" to recognize the intricate material and socio-cultural complexities that shape the ruined landscapes of the Anthropocene. Both humans and nonhumans contribute to modifying the environment through their intra-actions, co-creating the ecohistories of a given place. For Tsing, thus, "landscapes are active life worlds, held by material traces and legacies, but yet open to emerging forms and possibilities."[52] This perspective stems from the claim that wildlife is opened "from the cordon of exteriority to the multiple spaces and fluid ecologies of performative networks."[53] As demonstrated in Kudsk Steensen's artistic practice, some species, such as the plane trees, develop the ability to establish themselves even in conditions affected by anthropogenic activities driven by destructive policies towards the natural surroundings. This phenomenon directly results from the continuous intra-actions between different materials – human and nonhuman, living and non-living – which collectively lead to the co-creation of urban wildlife. This viewpoint aligns with the assertion made by Gilles Deleuze and Félix Guattari in the second quotation opening the article, in which the philosophers highlight that all territories are susceptible to the process of deterritorialization. In

[51] K. Barad, *Posthumanist Performativity…*, op. cit., p. 823.
[52] A.L. Tsing, *When the Things We Study Respond to Each Other…*, op. cit., p. 021.
[53] L. Thorne, S. Whatmore, *Wild(er)ness…*, op. cit., p. 451.

this context, deterritorialization means an immanent transformative nature resulting from disturbances generated by various assemblages of human and nonhuman materiality. It can be deduced thus that urban wildlife is never pristine but rather embodies ever-evolving and dynamic conditions.

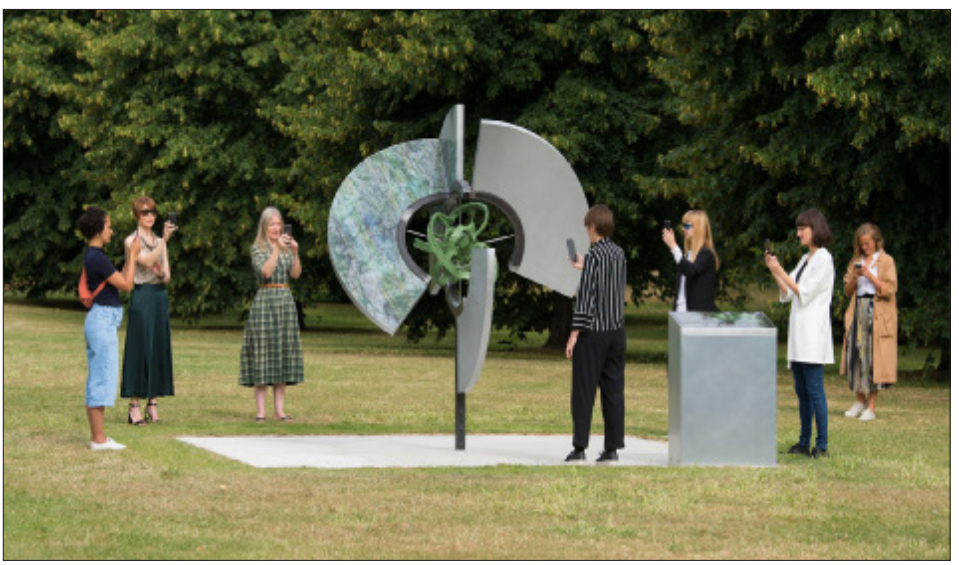

Figure 4: Jakob Kudsk Steensen, *The Deep Listener*, 2019. AR Visualisation. Courtesy the artist. Serpentine Augmented Architecture in collaboration with Google Arts & Culture.

These theoretical perspectives towards urban wildlife territories are accentuated in *The Deep Listener*. Having crafted the more-than-human audio-visual part of the project, the artist decided to create an abstract installation (Figure 4) encompassing more-than-human entangled materials – technological, environmental and urban milieu – applied via digital processes of AR technology. The fusion of entangled materials serves as the foundation for the work, which finds its place eventually in the Hyde Park. It presents the culmination of the augmented journey of *The Deep Listener*, embodying the process-oriented character of the artist's performative event to signalize the relational nature of our material existence within the world. The artist reappropriates contemporary techno-environmental interconnectedness, developing new sensibilities that are more tangible but beyond the established knowledge production systems. By combining this strategy with the reactivation of users who could collectively perform in the park's surroundings through the AR application, the multinatural method is proposed, thanks to which the urban wildlife can be sensed and explored. The practice makes users aware of the need to stay present and receptive to the material processes and ecological transformations in the urbanized area of London. The

work encourages unlearning the desensitized reactions towards urban wildlife and cultivating more emphatic relations with the nonhuman world, moving beyond the anthropocentric frames. In this regard, the project becomes a techno-ethical practice of nurturing alternative ways of thinking and caring for the more-than-human world profoundly transformed by anthropogenic factors. The techno-ecological perspective of the project indicates that, according to Bruce Braun, "eco-politics must be oriented not toward conservation since the world never holds still, but to the possibilities and consequences of a new earth and a new humanity that is still to come."[54]

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[54] B. Braun, *Towards a New Earth and a New Humanity…*, op. cit., p. 219.

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