



Kent Academic Repository

Damianos, Alexander (2026) *Interspecies communication and the problems of translation*. Theory, Culture & Society . ISSN 0263-2764.

Downloaded from

<https://kar.kent.ac.uk/116574/> The University of Kent's Academic Repository KAR

The version of record is available from

<https://doi.org/10.1177/02632764261479587>

This document version

Publisher pdf

DOI for this version

Licence for this version

CC BY-NC (Attribution-NonCommercial)

Additional information

Versions of research works

Versions of Record

If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

Author Accepted Manuscripts

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in **Title of Journal** , Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

Enquiries

If you have questions about this document contact ResearchSupport@kent.ac.uk. Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our [Take Down policy](https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies) (available from <https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies>).

Interspecies Communication and the Problems of Translation

Theory, Culture & Society

1–18

© The Author(s) 2026



Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/02632764261479587

journals.sagepub.com/home/tcs**Alexander Damianos^{1,2}** 

Abstract

Across law and science, interspecies translation has emerged as a consequential aspiration: from legal efforts to grant rights to animals and rivers, to AI-powered attempts to decode cetacean communication through bioacoustic machine learning. I examine the Cetacean Translation Initiative (Project CETI) as a case study in the constitution of such aspirations, arguing that AI-assisted interspecies translation constitutes the parties to the relation it purports to mediate. Situating Project CETI alongside the ‘rights of nature’ movement, I trace the linguistic presuppositions underlying approaches to language as an engineering problem divorced from semantics, an inheritance running from Shannon and Weaver to contemporary Large Language Models. I then demonstrate how the Generative Adversarial Networks Project CETI deploys perform communication in ways that are normatively constitutive. The technical novelty of AI and the normative novelty of Rights of Nature converge in a single operation: AI-assisted interspecies translation performs the parties whose encounter it mediates.

Keywords

artificial intelligence, communication, interspecies translation, language, machine learning, noise, rights of nature

Introduction

In Alvin Lucier’s sound piece, *I Am Sitting in a Room* (1969), the American composer records himself, or as he puts it, ‘the sound of his voice’, reciting a prepared statement:

¹Kent Law School, University of Kent

²Institute of Advanced Legal Studies, University of London

Corresponding author:

Alexander Damianos, Kent Law School, University of Kent, Eliot College N2.N3, Canterbury, CT2 7NS, UK.

Email: a.damianos@kent.ac.uk

I am sitting in a room different from the one you are in now. I am recording the sound of my speaking voice and I am going to play it back into the room again and again until the resonant frequencies of the room reinforce themselves so that any semblance of my speech, with perhaps the exception of rhythm, is destroyed. What you will hear, then, are the natural resonant frequencies of the room articulated by speech. (Lucier and Simon, 2012: 29–30)

With each iteration, the signal becomes harder to distinguish from the noise. The human voice dissolves into the ‘resonant frequencies’ of the room. *I Am Sitting in a Room* was recorded not long after the publication of Marshall McLuhan’s *Understanding Media*, the first chapter of which featured the now famous slogan that ‘the medium is the message’.

Lucier’s work performs McLuhan’s hypothesis, extending it in a Kittlerian vein, wherein media determine our situation (Kittler, 1999: xxxix). The material infrastructure recording the signal comes to be heard to a greater extent than the signal it iteratively records. The channel of communication appropriates what is communicated on a first-order level (i.e. the signal), affirming a theory of communication that, since the mid-20th century, insists on noise as a *condition* of communicability (Shannon and Weaver, 1948). Bronislaw Malinowski introduced the term ‘phatic communication’ to refer to language intended for bonding, rather than to communicate or inform (‘how are you?’ or ‘lovely weather today’ are examples of English usage of this form), which Roman Jakobson developed further in his ‘Linguistics and Poetics’ of 1960 to refer to ‘messages primarily serving to establish, to prolong, or to discontinue communication, to check whether the channel works’ (Jakobson, 2015: 68; Siegert, 2015: 19–23).

These perspectives, which shall be explored further in this article, designate a common principle: the conditions under which technical media impose communication not only define what counts as communication and what does not, but also constitute the sender and the receiver. Moreover, what is medium and what is message, or how the distinction is drawn between signal and noise, emerges from the technical operations of transmission.¹ Dialogue is introduced by an excluded third, which *I Am Sitting in a Room* makes clear, demonstrating the creative significance of the channel’s carrying capacity as constitutive of our situation in ways that continue to surprise us today.

I introduce Lucier as a prelude to what this article argues is a contemporary example of a similar exercise. Since 2017, a group of engineers, marine scientists, and linguists have sought to establish a technical means of translation between sperm whales and humans. Their group is called Project CETI, which stands for the Cetacean Translation Initiative.² The name explicitly references Project SETI, or the Search for Extra-Terrestrial Intelligence: a mid-20th century experiment in listening to potential frequencies from undiscovered alien life in outer space. Both projects invoke a cultural imagination about the possibility of communicating with nonhuman life – to become addressable to ourselves in a new way by virtue of novel technologies of communication and classification (Dixon-Román, 2016; Konior, 2026: 59). Both Project CETI and Project SETI seek to act on this imaginary as a question of channel capacity. Achieving contact with nonhuman life, in both cases, is a question of the ‘optimum channel’, as Cocconi and Morrison put it in 1959, anticipating Project Search for Extra-Terrestrial Intelligence, on the possibility of interstellar listening (Cocconi and Morrison, 1959: 844).

The aspiration to establish communication between whales and humans unfolds from a set of technical operations, determining a channel that constitutes the parties whose

relation it mediates. New technologies, mainly Artificial Intelligence, are thought to promise the advent of new social formations. My analysis of those technical operations suggests that in applying new media to the question of interspecies diplomacy, the parties to that relation are (re)constituted in ways that perturb the aspirations of interspecies translation and diplomacy. Diplomacy implies cooperation between existing parties. In devising new means of technical mediation between whale vocalization and human language, the interface reconstitutes the entities that are party to it.

My argument unfolds in four parts. First, I situate Project CETI's claims within the ongoing 'rights of nature' movement – a normative trajectory unfolding in law seeking to obtain legal personhood status for nonhuman animals, rivers, and other landscapes. Rights of nature discourse catalyses a crucial manoeuvre in how Project CETI position themselves and their aspirations to facilitate a technical means of interspecies translation, such that, as recent media coverage on Project CETI put it, 'whales could one day be heard in court – and in their own words' (Keim, 2025). Because Project CETI position themselves as an entity devoted to the translation of, and into, *language*, the second part of this article examines how the technical operations of Project CETI's initiative proceed on the basis of a particular presupposition concerning what language is. I explain how this presupposition unfolds from Shannon and Weaver's efforts to reconfigure language as a problem of *energy*, divorced from the *meanings* of language. Paradoxically, however, the understanding of language that such presuppositions perform are at odds with how the communicative capacities of whales are *performed* by the technical operations that Project CETI employ in their efforts to achieve interspecies translation. I demonstrate this by explaining how the particular neural network they employ, called a Generative Adversarial Network (GAN), performs an understanding of language more closely resonating with Michel Serres's genealogy of language as evolving from noise. In the final section, I argue that the effort to translate whales into English, as pursued by Project CETI, unfolds as an appropriation of sender, receiver, and the social problem of nonhuman representation in human legal systems whose realization, it is suggested, it can perform.

Hearing Animals

The initiative to translate whale vocalizations into English is arguably founded on two factors that have little to do directly with whales: the 'rights of nature' movement in law, and the advent and ubiquitous spread of neural network software, specifically, Large Language Models (LLMs) and Generative Adversarial Networks (GANs). The aspiration for legal representation of nonhuman animals invokes scientific expertise to justify its claims. Likewise, scientific expertise looks to traditional sources of normative authority, such as law, to regulate what it reveals (Kang, 2019). In this section, I provide context to the rights of nature movement and its influence for contemporary interspecies translation initiatives.

The 1972 United States Supreme Court case *Sierra Club v Morton* concerned a proposal from the Disney Corporation to develop the Mineral King Valley of the Sequoia National Valley Park into a Disney-themed ski resort. The Sierra Club contested the permission that the US Forestry Service had granted Disney Corporation on the grounds that it would significantly disrupt the quality of the area. The case reached the Supreme

Court following a decision that Sierra Club lacked legal standing to bring the case. Given that Sierra Club did not own the land, it had been found they had no legitimate interest in contesting how the land ought to be used. This decision was upheld by the Supreme Court. And yet, the case is noteworthy given the dissenting opinion of Justice Douglas:

environmental issues should be tendered by the inanimate object itself. Then there will be assurances that all of the forms of life which it represents will stand before the court – the pileated woodpecker as well as the coyote and bear, the lemmings as well as the trout in the streams. Those inarticulate members of the ecological group cannot speak. But those people who have so frequented the place as to know its values and wonders will be able to speak for the entire ecological community. . . . This suit would therefore be more properly labelled as *Mineral King v. Morton*. . . . The voice of the inanimate object, therefore, should not be stilled. (*Sierra Club v. Morton*, 405 U.S. 727, 741–43 (1972) (Douglas, J., dissenting))

At the same time as Sierra Club was going to court, Christopher Stone was writing an article asking: ‘should trees have legal standing?’ (Stone, 1972). Stone draws a parallel between the rights of nature and the rights of humans previously without legal voice. ‘We are not only developing the scientific capacity, but we are cultivating the personal capacities *within us* to recognize more and more the ways in which nature – like the woman, the Black, the Indian and the Alien – is like us (and we will also become more able realistically to define, confront, live with and admire the ways in which we are all different)’ (Stone, 1972: 498). Invoking Dane Rudhyar’s work on planetary consciousness, Stone perceives the expansion of legal standing as a reformulation of Western mythologies that place the (white, male) human as the foreground to a mute, passive backdrop. ‘What is needed’, explains Stone, ‘is a myth that can fit our growing body of knowledge of geophysics, biology and the cosmos’ (Stone, 1972: 499).

Despite the ambition to acknowledge continuity between the privileged human subject of law and all other life, voice and speech are clearly distinguished in Douglas’s judgement. Humans ‘speak for the entire ecological community . . . whose voice should not be stilled’. This is a difference in *kind*, rather than *degree*. Language, and words such as ‘animal’, ‘inanimate object’ or ‘ecological group’ deceive us. ‘Non-human animals do not and cannot speak as one person with one voice – thinking this would yet again deprive them of a response’, argues Eva Meijer (Meijer, 2019: 27). Douglas’s discursive arrangement reinforces human exceptionalism precisely in the gesture of extending logos to a generalized category that is more-than-human (Derrida and Mallet, 2010: 31), echoing more recent efforts to secure the right of ‘the entire ecological community’ to ‘speak’. In 2015, Justice Barbara Jaffe of the Supreme Court of the State of New York issued a writ of *habeas corpus* on behalf of two chimpanzees, following persistent efforts by the Nonhuman Rights Project (Wise, 2002). Several thousand pages of affidavits were submitted to the court, drawing a parallel between scientific and legal definitions of ‘autonomy’ (Cupp, 2017: 585–6). The contents of these affidavits were intended to justify claims that chimpanzees routinely ‘bear duties and responsibilities’ and ‘possess moral agency’:

The evidence that chimpanzees and humans share the capacity for ‘autonomy’ is strong (King Aff. at ¶¶11; Osvath Aff. at ¶11). Autonomous behavior demonstrates that a choice was made; it was not based on reflexes, innate behaviors, or any conventional categories of learning, or

concept formation (King Aff. at ¶¶3–4) . . . the simplest explanation for chimpanzee behaviors that look autonomous is that they are based on similar human psychological capacities (King Aff. At ¶12).³

Autonomy, in this case, bridges scientific expertise and the normative authority of law. Wise is keen to identify such actions as ‘autonomous’ because it is a term that appears in decisions of the New York Court of Appeals and the New York Code of Law. ‘Nearly every jurisdiction embraces the paramount importance of autonomy’, says Wise, ‘liberty to freely choose how to live one’s life’ (Wise, 2019: 386). Referring to the New York Court of Appeals’ decision on *Rivers v. Katz*, he explains:

In our system of government, where notions of individual autonomy and free choice are cherished, it is the individual who must have the final say in respect to decisions regarding his medical treatment in order to insure that the greatest possible protection is accorded his autonomy and freedom from unwanted interference with the furtherance of his own desires. (Wise, 2019: 386)⁴

Insistence on autonomy functions both to draw a parallel between science and law, but also between human and chimpanzee. On the basis of affidavits providing authoritative scientific expertise of cognitive autonomy, Wise argues adequate demonstration of autonomy as defined by the legal precedent and code.

A persistent criticism of what is often called the ‘rights of nature movement’ concerns an inability to exceed an anthropo-logo-centric order, according to which incumbent legal techniques remain the exclusive remit of human representatives (Reeves and Peters, 2021). In 2017, the Te Awa Tupua (Whanganui River Claims Settlement) Act was issued by the New Zealand Government to acknowledge Whanganui River as a legal person. The enthusiasm of such developments, expressed via jubilant popular media coverage, is balanced by a growing scepticism among legal scholars, who argue that, upon further examination, nonhuman animal personhood is not as radical a development as it may appear (Pottage, 2024). Section 20(2) of the Act outlines the conditions of political representation that remain the privileged remit of humans: ‘One person must be nominated by the *iwi* with interests in the Whanganui River and one person must be nominated on behalf of the Crown’ (Te Awa Tupua (Whanganui River Claims Settlement) Act 2017, n.d. S20(2)).

Furthermore, the Act explicitly refuses to extinguish any existing property rights in the Whanganui River; nor does it affect any rights to, or interests in, water, wildlife, fish, aquatic life, seaweeds, or plants. Te Awa Tupua performs absolution of legacies of colonial land expropriation, only to reinvent, and thereby extend, the appropriation of land and non-Western cosmologies in service of upholding settler common law as the final word. The claims of indigenous communities appear to be acknowledged, with the effect of conserving rights of access and property interests over all that had been captured, juridically or otherwise, through the exercise of colonial land expropriation (Povinelli, 2002). The ‘natural world’, and the human subject that acts in, against, or through it, is performed by techniques of legal (mis)recognition, rather than existing prior to their exercise. How do such initiatives catalyse novel technoscientific trajectories, such that, on the basis of the multiple and incongruous approaches to realize the ‘rights of nature’, claims that humans will develop the technical capacity to communicate directly with animals are becoming increasingly commonplace?

Language: The Optimum Channel

While legal efforts to recognize nonhuman personhood grapple with the problem of ‘standing’, novel digital technologies can also be observed to perform the inner worlds of animals in ways that merit greater critical reflection. The late Karen Bakker described the emergence of a ‘google translate’ between humans and animals ranging from bats to whales (Bakker, 2022). This is translation in the sense of maintaining meaning across two distinct languages: human and more-than-human. The assumption that there is a ‘language’ to translate into human communication habits, for example of law or speech, is worthy of critical reflection in itself. How does such an assumption predetermine the meaning made of the encounter between two parties, whose relation is constituted through the technical operations underpinning assertions of translatability?

Project CETI’s ambition is to ‘understand what whales are saying’.⁵ In a 2022 paper outlining Project CETI’s ‘roadmap to deciphering the communication of sperm whales’ (Andreas et al., 2022), the authors define their ambition as ‘the collection and processing of massive bioacoustic data of sperm whales, detecting their basic communication units and language-like higher-level structures, and validating these models through interactive playback experiments’ (Andreas et al., 2022: 1). They continue:

Understanding language-like communication systems requires answering three key technical questions: First, by analogy to the phonetics and phonology of human languages, what are the articulatory and perceptual building blocks that can be reliably produced and recognized? Second, by analogy to the morphology and syntax of human languages, what are the composition rules according to which articulatory primitives can be structurally combined? Third, by analogy to semantics in human languages, what are the interpretation rules that assign meanings to these building blocks? Finally, there may possibly be a pragmatics component, whereby meaning is additionally formed by context. (Andreas et al., 2022: 1)

The first and second questions presume an understanding of language as carrying pre-existing meaning. Language is presumed as a structure, that carries across, and perhaps even pre-exists, the distinguishing characteristics of humans from other entities. Ferdinand de Saussure defined language as ‘a system of interdependent terms in which the value of each term results solely from the simultaneous presence of others’ (Saussure, 1959: 114). This image of language as system lends itself to the ‘building block’ metaphor, ‘whose parts can and must all be considered in their synchronic solidarity’ (Saussure, 1959: 87). The consequence of this understanding of language is to introduce a distinction between an abstract system and the outside in which systematicity is performed. Saussure’s definition of language explicitly ‘presupposes the exclusion of everything that is outside its organism or system’ (Saussure, 1959: 20).

Where the line is drawn between what is inside and outside is determined internally, by the system of language presumed by Saussure: ‘everything that changes the system in any way is internal’ (Saussure, 1959: 23). Explosive enthusiasm for structural linguistics has been evident for several decades already. Claude Lévi-Strauss remarked that ‘structural linguistics will certainly play the same renovating role with respect to the social sciences that nuclear physics, for example, has played for the physical sciences’ (Levi-Strauss, 1975: 33). Ripples of this explosion can be felt today, extending into cognitive

sciences, where language is argued to be not ‘the ineffable essence of human uniqueness but . . . a biological adaptation to communicate information’ (Pinker, 1994: 19), repositioning language as a cognitive rather than cultural phenomenon, physically located in the brain (Weatherby, 2025: 41).

Noam Chomsky’s 1959 review of Skinner’s *Verbal Behaviour* argues against the view that language is a learnable behaviour shaped by environmental reinforcement (Chomsky, 1959). Language, according to Chomsky, is not learned at all, but an innate and biological endowment specific to the human species. Children routinely produce and understand sentences they have never encountered before. This includes nonsensical ones, such as ‘colourless green ideas sleep furiously’ (Chomsky, 1956: 116), which is grammatically coherent but semantically absurd. No amount of environmental exposure or reinforcement, argues Chomsky, can account for this peculiar capacity, demonstrating that language must be ‘an innate predisposition’ (Chomsky, 2015: 25).

Chomsky asserts the existence of a species-specific cognitive structure he calls ‘universal grammar’ that underlies all human languages and makes their acquisition not only possible but inevitable (Chomsky, 2015: 4). In asserting language as an innate attribute of humans alone, Chomsky’s universal grammar bears echoes of Aristotle’s understanding of the human as uniquely equipped with *logos*, which means both reasoning and ‘word’, or language. Other animals are without language; without *φωνή* (*phone*), or voice, in a manner persistent in contemporary Greek language, such as the word ‘*alogos*’ for horse: the unspeaking. The boundary between humans and other animals is designated by and through language, which, for Chomsky, is biological essence (Deacon, 1997).

The premise of interspecies translation both affirms an essentialist understanding of language while undermining claims that language is an innate and unique attribute of humans. Linguists involved in Project CETI’s interspecies translation initiative have recently argued that language is an entity whose definition by structural linguists, and in particular Chomsky, provides an authoritative account of what language *is* by way of what linguists *do* (Beguš et al., 2025). Large Language Models perform convincingly when tested on ‘higher-level metalinguistic abilities’, a turn of phrase used to refer to the ‘ability to refer to the ability to analyse language itself and to generate formal, theoretical analyses of linguistic phenomena – simply put, to refer to *the work that linguists do*’ (Beguš et al., 2025: 2).

Open AI’s Large Language Model, o1, is identified as outperforming all other models, tested on a series of prompts derived largely from a Chomskyan school of linguistic analysis. Specifically, the models are prompted to accurately identify and explain linguistic recursivity, ambiguity, syntactic movement, and phonological rules. Yet the details of the experiment are less significant than the use to which the findings are put. Beguš et al. conclude that Open AI’s o1 demonstrates ‘not only linguistic ability, but also metalinguistic ability, i.e. the ability to theorize about language itself, is not unique to humans and may arise in artificial systems such as transformers’ (Beguš et al., 2025: 13). The methods by which language has been argued as a specifically human essence, and therefore unlearnable, most commonly attributed to Chomsky (1959), underlie this effort to demonstrate that machines can, in fact, learn language. This paradoxically suggests that language is both structural and prior to ‘what words do’ in speech (Austin, 1975), while demonstrating that language arises through the operations of technical media.

This approach recalls Deleuze and Guattari's description of the abstract machine of language appealing to extrinsic factors. Deleuze and Guattari argue that language is neither informative nor communicative, but *control*: 'the set of all order-words, implicit presuppositions, or speech acts current in a language at a given moment' (Deleuze and Guattari, 2011: 79). Order-words, or '*mot d'ordre*', develop Austin's speech-act theory (Austin, 1975). Deleuze and Guattari take utterances such as 'I do', or 'I name this ship Boaty McBoatFace', as illocutionary, wherein action unfolds from utterance. Language is never the expression of an individual subject, human or otherwise, who would precede and originate an utterance. Speech is transformative: a bank robber who says 'I have a gun' transforms the bank into a prison, and the bank clerks into prisoners. That transformation occurs under specific circumstances, which the speech act both intervenes in and unfolds from. Deleuze and Guattari use the term 'collective enunciative assemblage' to refer to the 'variables' according to which speech-acts perform normative significance (Deleuze and Guattari, 2011). The concurrent variability of presuppositions, performative utterances, institutions, and circumstances *assemble machines*, a metaphor that emphasizes that no *part* can be discrete; no 'language' can exist independent of the conditions of its occurrence as speech, or in isolation from the pragmatics of reciprocal interaction between a machine's components.

Project CETI performs language by way of a heterogenous arrangement of its own, comprised of, in the words of Project CETI lead linguist Gaspar Beguš, 'humans, animals, and the machines' (Ballardo, 2026). This is an assemblage that arises from, among other factors, cognitive linguistic understandings of human language, novel developments in data processing afforded by a species of machine learning known as neural networks, decades of research into the behaviour of cetaceans, significant financial investment in and from companies seeking commercial applications of Artificial Intelligence, and the explicit normative appeal of the 'rights of nature' movement. Machine learning operationalizes a notion of language as abstract, innate, a cognitive structure, with the paradoxical effect of *performing* language as the expression of action ('what linguists do'; Beguš et al., 2025: 2) that is not specific to humans, and even machinic in a literal sense (of what machine learning does).

The novelty of Project CETI's approach resides in foregrounding the technical operations of neural networks, which in purporting to facilitate communication between whales and animals, structures the conditions according to which communication is performed. Proponents of Project CETI admit that 'estimating cetacean intelligence and language abilities is particularly difficult because their world and habitats are in many ways different from those of humans' (Rodríguez-Garavito, 2025: 13). And yet, precisely in this gesture of acknowledging alterity, the technical operations of neural networks are implied as a strategy for resolving otherwise unbridgeable alterity. '[A]n apparent lack of language in nonhuman animals may reflect human perception limitations rather than actual communicative capabilities of the nonhuman animals' (Rodríguez-Garavito, 2025: 13). In extending language to machines, Beguš argues that 'this kind of experiment shows us that something we thought was uniquely human [. . .] is not true anymore. And that really changes our perspective about languages, and who can learn languages. If you don't have to be human to learn language, maybe other species have something complex and interesting as well' (Ballardo, 2026). The capacity for agency is elicited by novel competencies afforded by new technology, rather than an innate attribute.

Project CETI's analysis proceeds on the basis of a presupposition that language is informative, communicative, and divorced from meaning. A 'real' is presupposed that is both represented 'through' language – as 'building blocks that can be reliably produced and recognized' or as 'rules according to which articulatory primitives can be structurally combined' – and which language carries (Andreas et al., 2021: 5769). This presents a structural incoherence that, as Claire Colebrook describes, performs 'a real that is *then* represented and a subject who *then* represents' (Colebrook, 2000: 60). An alternative understanding of the technical operationalization of language as performance may be derived from apprehending neural networks as parasitic on the relations purported to be realized through the application of neural networks. Before proceeding to an explanation of how the technical operations of neural networks are generative of sender and receiver, as well as the message communicated, it is important to point out that the presuppositions that orient Project CETI's aspirations, at least as posed in the arguments presented by linguists involved in their effort, propose a unified system of language as an external real that the mathematical operations of Large Language Models have learned to emulate. This is a perspective that assumes 'that knowing something simply means thinking the right sentence and grasping how it connects to other sentences in a big web of all the true claims we know' (Browning and Lecun, 2022).

What is artificial in the mimicry of language by machine learning is not intelligence but communication (Esposito, 2022). The capacity of Large Language Models to manipulate symbols and words has become sufficiently convincing as to induce some users to conclude that they are dealing with a sentient being (Lemoine, 2022). Yet this perspective conflates the performance of statistical analyses of datasets (extant texts) to emulate understanding in seemingly reactive ways, with the existence of a sentient entity endowed with capacities to understand and make meaning, autonomously. To attribute meaning making to statistical procedures that assemble words in ways that external users (namely: humans) find meaningful is similar to assuming that, in seeing resemblances of saints in the pattern of browning on toast, we have evidence that *the bread believes in Jesus* (Browning and Lecun, 2022).

Language, to the contrary of being a universal, innate system, can be observed to be historical, evolving at a far faster rate than human biology (Deacon, 1997: 102–42). Most contemporary speakers of English struggle to understand Middle English, even though our physiognomies are hardly different from those for whom that language was more familiar. Invoking a vocabulary that resonates with the Deleuzo-Guattarian understanding of language as collective enunciative assemblage, Deacon argues that to collapse language in this way 'ignores the effect of forces that could modify word formation and syntax over time, and of factors promoting converging or parallel trends, [as well as] forces that stabilize language structure and are thus responsible for maintaining concordant use among contemporary individuals' (Deacon, 1997: 121). In a direct rebuttal to the 'poor stimulus hypothesis' on which Chomsky positions his universal grammar argument (i.e. that children competently navigate linguistic complexity even without correction), Deacon concludes: 'Children's minds need not innately embody language structures, if languages embody the predispositions of children's minds!' (Deacon, 1997: 109).

Communicative systems are parasitic, not determinative. Deacon is explicit on this point: 'it is helpful to imagine language as an independent life form that colonizes and

parasitizes human brains, using them to reproduce' (Deacon, 1997: 111). It is now argued as common practice that cetaceans possess certain vocal habits, known as 'coda', produced by clicking sounds generated by a complex architecture of air sacs in their head (Amorim et al., 2020; Owen et al., 2019; Rendell and Whitehead, 2001, 2003). Groups of whales, spread across the world, possess distinct codas that they have been observed to use in 'greeting' other like-species, on the basis of which they form new groups (Rendell and Whitehead, 2003). Yet scepticism persists as to whether these coda amount to 'language'. '[T]he function, if any, of coda dialects is thus a matter of speculation' (Rendell and Whitehead, 2003: 229). Luke Rendell, a prominent specialist in whale codas, describes convincing David Attenborough against using the term 'language' to describe whale vocalizations as a crowning achievement of his career (Rendell, 2024). We may have more to learn from appreciating all the ways in which human communicative habits are fundamentally *different* and incomparable to those of cetaceans. Communication, as it allegedly occurs between species via AI, refers to an appropriative act, pre-emptively attributing the competence of translatability to machine learning. It may be more accurate to say that Large Language Models have confirmed, through statistical analysis, a conception of language-as-universal-structure already held by those developing the above-described novel applications of machine learning techniques.

Noise, Deception, Appropriation

Claims of AI-mediated interspecies translation unfold as an appropriation of normative claims precipitating from the 'rights of nature' movement, by appeal to the technical operations of machine learning. Neural networks are the condition for this interspecies dialogue, while simultaneously presented as the excluded third party to communication between whale and human. Large Language Models perform communication in a manner reminiscent of Serres's understanding of the parasite. For Serres, the exclusion of the interruption that is, nevertheless, the condition of communication is not simply an epistemological claim but a question of origins. 'Background noise is the first object of metaphysics, the noise of the crowd is the first object of anthropology. The background noise made by the crowd is the first object of history. Before language, before even the word, there was noise' (Serres, 1999: 54). There is no logos without noise (Serres, 1999: 7). Serres laments the false dichotomy posed by the imposition of noise as the absence of meaning, and language as the pure, absolute meaning of the message. The gesture of Serres's inversion is to reposition this background noise, not as interruption, but as 'the universal condition of all exchange' (Serres, 2025: 148).

Reliance on Large Language Models for alleged interspecies communication suggests that whales are constituted operationally in the instance of their translation into English. Serres's configuration of noise, not simply as a technical necessity of the channel that constitutes sender and receiver, but as a naturalized *a priori*, indicates that the conditions of our knowledge and experience are not an eternal structure of our understanding, but irreducibly embedded in the noises and rhythms of the world (Watkin, 2020: 221). This is not to suggest that whales do not exist except for when their vocalizations are recorded and processed using whichever neural network most closely performs the ambitions of those involved in 'realizing' interspecies translation. It means, more precisely, that whales,

humans, and the ethics attendant to the ‘rights of nature’ movement, through which proponents of AI-assisted interspecies translation position their effort, are appropriated by a technical determinism that one has reason to suspect of Project CETI, given their close association with entities exposed to the commercial success of AI applications.⁶

Large Language Models emerge out of a mathematical theory of communication inherited from Shannon and Weaver (1948). As employees at Bell Labs, Shannon and Weaver were concerned with an emerging communications technology of their time: the telegraph (Mindell, 2004). This novel channel presented communication as a problem of energy, rather than semantic meaning alone; *an engineering problem*, quite apart from the question of meaning:

The fundamental problem of communication is that of reproducing at one point either exactly or approximately a message selected at another point. Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These semantic aspects of communication are irrelevant to the engineering problem. (Shannon and Weaver, 1948: 379)

Shannon and Weaver estimated that 50% of the English language is redundant. Half of the signals transmitted through telegraph channels refer to symbols that can be grouped together to preserve channel capacity and reduce distortion and noise that interrupt the signal. Signal capacity can be conserved by grouping predictable sequences of letters, assigning shorter sequences to predictable groupings and longer sequences to less common ones. Longer sequences demonstrate greater entropy, insofar as they require more energy, exacerbating the channel’s capacity to accurately transmit a signal. Their mathematical theory of communication excludes meaning as a feature of language. Language is, instead, a signal source whose statistical properties can be defined and exploited for compression, as a function of channel capacity.

There is a direct lineage from Shannon and Weaver’s entropic understanding of communication to the technical operations of contemporary Large Language Models. The ‘distributional approach’ of contemporary Large Language Models is summarized in linguist John Rupert Firth’s maxim that ‘you shall know a word by the company it keeps’ (Firth, 1957). Sahlgren summarizes the distributional hypothesis as the belief that ‘there is a correlation between distributional similarity and meaning similarity, which allows us to utilize the former in order to estimate the latter’ (Sahlgren, 2008: 34). The distributional hypothesis performs the communicative capacities of language as probabilistic calculation. The meaning of a word is reducible to a function of where it appears rather than what it refers to. Contemporary Large Language Models presuppose meaning as a function of distributional pattern rather than reference or intention, such that semantics become a distributional epiphenomenon. The above described interspecies translation initiatives apply distributional modelling to whale vocalizations, such that the question of whether whales have language is enrolled into a theory of communication that operationalizes indifference to the meaning of what whales might actually have to say.

While the rhetoric of AI-assisted interspecies translation aligns with a structuralist understanding of language, inherited from Chomsky via Shannon and Weaver, the method demonstrates the continued significance of a pragmatist approach to language,

more closely aligned with Deleuze and Guattari. A material and machinic infrastructure of remote sensing technologies, including ‘fixed underwater hydrophone arrays . . . on-whale sensors, underwater robotic gliders, and expert whale biologist observations’ (Rodríguez-Garavito, 2025: 128) underlie the claim that whale vocalizations amount to *language*, and that this language is both uniquely complex while also similar enough to human language to be translatable into English, even incorporable into human legal frameworks. AI is presented as both a revolutionary breakthrough that facilitates advanced processing power beyond the capacities of human researchers while also making it possible ‘to set aside anthropocentric biases as it attempts to decode sperm whale communication’ (Rodríguez-Garavito, 2025: 129). Such initiatives might more accurately be described as *encoding* rather than *decoding* whales – ordering the encounter that is presented as arising from fortuitous applications of cutting-edge technology. What is the technical manner of this performance?

The primary mechanism through which Project CETI-affiliated linguist Gasper Beguš enacts whale communication, and subsequently, translation, is through a type of neural network known as Generative Adversarial Networks (GANs). Beguš applies Generative Adversarial Networks in pursuit of performing meaning from communication systems in the absence of any such meaning. ‘How do we approach a communication system for which we not only do not understand what is meaningful but are also unsure about how to go about testing for meaning?’ (Beguš et al., 2023a: 1). Generative Adversarial Networks are a species of neural network that emerged in 2014 by now-Google engineer Ian Goodfellow (Goodfellow et al., 2014). They operate according to a distinction between at least two neural networks: a ‘Generator’ and ‘Discriminator’. The Generator produces outputs, which the Discriminator compares to a training dataset that it alone has access to. The Discriminator’s function is to estimate the probability that a sample is derived from the training data rather than from the Generator. Through iterative exchange, the Generator’s objective is to induce error in the Discriminator’s operations.

Generative Adversarial Networks are employed in situations where it is desirable to induce failure in the capacity of the Discriminator to distinguish between the contents of the database it has access to and anything else. Goodfellow et al. describe Generative Adversarial Networks as achieving optimization through deception. ‘The generative model can be thought of as analogous to a team of counterfeiters’, explain the authors, ‘trying to produce fake currency and use it without detection, while the discriminative model is analogous to the police, trying to detect the counterfeit currency. Competition in this game drives both teams to improve their methods until the counterfeits are indistinguishable from the genuine articles’ (Goodfellow et al., 2014). The invocation of policing as an explanatory mechanism recalls Deleuze and Guattari’s revocation of the postulate that language is informational and communicative, according to which, and via Austin’s *speech acts*, they pose the order-word as a more accurate description of ‘what language does’.

Because Generative Adversarial Networks learn through an internal architecture wherein two networks compete to police and deceive, they are particularly apt in the production of ‘deep fakes’ (Tolosana et al., 2020). In the context of Project CETI, the training set that the Discriminator refers to, and which iteratively trains the Generator, consists not of images but a combination of audio recordings of whale vocalizations and

information of those recordings translated into vectors (Beguš, 2021). The Generator learns what patterns make the Discriminator think that the Generator's outputs *are* the content of the Discriminator's database. For Generative Adversarial Networks, 'learning' describes the process by which a trajectory is mapped from the 'random noise', that is its initial input, to a stable position between the two neural networks (Goodfellow et al., 2014: 3). That the starting point of this process is designated 'random noise' is not incidental: it encodes, at the level of machine architecture, Shannon and Weaver's premise that signal is always extracted from, and defined against, noise, rather than transmitted *despite* it.

The Generative Adversarial Network model was fed 2209 training samples of raw whale vocalizations, or click 'codas', sorted into five types. The Generator produces outputs that the Discriminator either rejects as 'noise' or accepts as 'signal' compatible with its training dataset; on this basis, the Generator iteratively adjusts its internal weights. The Causal Disentanglement with Extreme Values (CDEV) technique adds a third network, functioning to isolate each of the five preset variables and set them to extreme values, testing for properties hypothesised as meaningful by the researchers. In the case of this experiment, those include the *speed* of clicks, the *pitch* of clicks, and *click regularity*, to name three of the five. As Beguš et al. explain, 'the incompressible noise – X – entries are sampled randomly, while the featural encoding t is set manually to a desired value' (Beguš et al., 2023b: 3). The revealed property is then assumed to constitute a legitimate interpretation of the 'real-world' meaning of the original vocalizations.

Beguš et al. argue that this method reveals both properties 'posited as meaningful by human researchers as well as novel properties . . . not yet hypothesised as such' (Beguš et al., 2023b: 2). Yet the approach presupposes that whale vocalizations harbour a singular, recoverable meaning; an assumption homologous with the structural presuppositions informing Chomsky's universal grammar. Following Kittler's observation that 'the dominant information technologies of the day control all understanding and its illusions' (Kittler, 1999: xl), one might ask whether meaning here is not innate to whale vocalizations but an effect of the technical operations applied to generate it.

What the above described methods demonstrate, in other words, is the constitution of the very entities whose communication they purport to reveal. In creating a representation of an ongoing act, they also enact it; a process in which describing and enacting what is described coalesce (Mackenzie, 2005: 73). The technical operations of such neural networks demonstrate the constitution of social significance that arises through a technically mediated, *sui generis* drawing of the distinction between noise and signal. Recalling Shannon and Weaver's conceptualization of noise as integral to the system by which the transmission occurs, we could follow Serres in associating noise as deviation, whereby 'deviation is part of the thing itself, and perhaps it even produces the thing' (Serres, 2007: 13). 'The thing', in this instance, is the possibility of interspecies communication, which is both normative presupposition and constituted through technical operations.

Project CETI operates on two distinct registers simultaneously – even in contention with each other. The first is 'to set the stage for forward-looking analyses that consider the impact of understanding the content of cetacean communication' (Rodríguez-Garavito, 2025: 123). The second is to demonstrate the capabilities of novel neural network techniques by constructing, through their application, a continuity of communicative

capacity across humans, whales and machines. This latter effort unfolds as a performance of control, which, in the information age, is no longer discursive, but largely informational (Lash, 2006: 3). This insight effectively collapses the distinction between the two registers of law and technoscience.

The channel figures as the precondition of the normative development that the ‘rights of nature’ movement implies:

The arc of the moral universe is already bending towards justice for nonhuman animals. A deeper comprehension of their nature and communications could facilitate the transformative shifts needed to emancipate them from the confines of property under the law. Insights gleaned from both successes and setbacks in the quest for legal personhood, coupled with observations of cetacean behaviour mirroring elements of contractarianism, collectively indicate that understanding cetacean communication could significantly impact the ongoing legal discourse. (Rodríguez-Garavito, 2025: 189)

We cannot know whether whales, bats, or machines ‘really’ speak. In listening through technical, legal, and scientific apparatuses, do we hear anything other than what Lucier alluded to as the ‘resonant frequencies of the room’? Translation is performed as a condition of the channel that constitutes the entities whose communication is constituted by its own technical operations. The above outlined machine learning methods demonstrate that noise is the condition of such constitutive techniques. Claims of decoding species language rest on layers of mediation that perform the reality whose revelation positions the normative significance of Project CETI’s ambition. To acknowledge this is not to retreat into scepticism, but to acknowledge an appropriative act, performed by the channel, in which the radical alterity that constitutes the relation of human to whale is never overcome but continually remade.

Conclusion

How do self-descriptions unfold from descriptions of others? This article has argued grounds for scepticism toward claims that humanity is on the verge of a ‘Google translate’ between humans and whales. I have sought to demonstrate why we should be sceptical toward the possibility of interspecies translation at all. Yet it attracts significant investment and attention.⁷ Proponents of AI-assisted interspecies translation claim to be using machine learning networks to overcome the radical alterity that constitutes the difference between humans and whales. I have argued that, instead, it is an iteration of a long-standing practice of imposing anthropocentric (and particularly Euro-American) assumptions onto the more-than-human. The technical novelty of Artificial Intelligence and the normative novelty of Rights of Nature converge in a single operation, repeating the anthropocentric, with difference. In describing the Other, the Self is repeated, but with difference (Dixon-Román, 2016).

The technical operations of machine learning demonstrate how distinctions between noise and signal are constitutive of entities whose communication they purport to otherwise passively facilitate, or reveal. Generative Adversarial Networks do not facilitate communication between whale and human so much as parasitically mediate the relation

between those entities whose meaning is abstracted from their real-world presence for the purposes of the channel itself, and the normative ends to which they are applied (e.g. to realize an imaginary of interspecies diplomacy). Acts of translation, whether granting a river legal personhood or decoding whale vocalizations, are always mediated (Serres, 2007). What counts as voice, meaning, or signal is synthesised through legal, technical, and medial channels through which it is heard.

This critique carries limits of its own. It identifies what current interspecies translation initiatives perform. It does not yet specify what a non-appropriative practice might look like. Any such practice would require, at minimum, transparency about the black box most deliberately sealed: the algorithmic parameters of commercial AI models deployed toward the ambition of interspecies translation. Opening that box could help situate interspecies translation as a commons rather than a capital venture, and to resist its instrumentalization as cover for the resource appetite of AI infrastructure (Terranova, 2022). Machine learning carries utility for the study of whale vocalizations, a long-standing source of mystery and wonder (Peters, 2015: 53–114). It is, at best, premature to treat its outputs as the ‘truth’ of what whales communicate. As with any translation, the result reflects the situatedness of those who translate. That responsibility needs to be assumed beyond the space of capital, extended to those rendered voiceless by the encroachment of Artificial Intelligence into everyday life (Dixon-Román, 2016). The ‘mute world’ speaks only through the noisy, partial, and situated media. In hearing it, we and what we hear from are iteratively reconstituted.

ORCID iD

Alexander Damianos  <https://orcid.org/0000-0002-5036-1221>

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

Declaration of conflicting interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Notes

1. Thanks to Professor Bernhard Siegart for suggesting this formulation.
2. The organization calls itself ‘Project CETI’ in the same way that Open AI is an entity that officially goes by its acronym. For this reason, I leave Project CETI abbreviated as an acronym throughout this article.
3. See: <https://www.nonhumanrights.org/wp-content/uploads/2013/12/Memorandum-of-Law-Tommy-Case.pdf> page 9.
4. *Rivers v. Katz*, 495 N.E.2d 337, 341 (N.Y. 1986) quoted in Wise (2019): 386.
5. As stated on their homepage, available at <https://www.projectceti.org/>
6. Project CETI’s most recent annual report, of 2024, indicates that they have received \$33 million from the philanthropic arm of Audacity, a venture capital fund investing in commercial applications of AI. See: <https://2024annualreport.projectceti.org/>

7. The Jeremy Collier Foundation has initiated a \$100,000 prize to ‘develop an algorithm for communicating with non-human animals’. The latest financial reports of Project CETI indicate several million dollars in revenue. See: Project CETI, Inc., 2025; ‘Straight from the Horse’s Mouth’, 2026.

References

- Amorim TOS, Rendell L, Di Tullio J, et al. (2020) Coda repertoire and vocal clans of sperm whales in the Western Atlantic Ocean. *Deep Sea Research Part I: Oceanographic Research Papers* 160: 103254. <https://doi.org/10.1016/j.dsr.2020.103254>
- Andreas J, Beguš G, Bronstein MM, et al. (2021) Cetacean translation initiative: A roadmap to deciphering the communication of sperm whales. <https://arxiv.org/abs/2104.08614>.
- Andreas J, Beguš G, Bronstein MM, et al. (2022) Toward understanding the communication in sperm whales. *iScience* 25(6): 104393. <https://doi.org/10.1016/j.isci.2022.104393>
- Austin JL (1975) *How to Do Things with Words: The William James Lectures*, 2nd edn. Clarendon.
- Bakker KJ (2022) *The Sounds of Life: How Digital Technology is Bringing Us Closer to the Worlds of Animals and Plants*. Princeton University Press.
- Ballardo J (2026) Linguistics professor discusses AI’s role in scientific discovery at OpenAI Forum. *UC Berkeley Letters & Science*, 10 February.
- Beguš G (2021) CiwGAN and fiwGAN: Encoding information in acoustic data to model lexical learning with generative adversarial networks. *Neural Networks* 139: 305–325. <https://doi.org/10.1016/j.neunet.2021.03.017>
- Beguš G, Dąbkowskie M and Rhodest R (2025) Large linguistic models: Investigating LLMs’ metalinguistic abilities. *IEEE Transactions on Artificial Intelligence* 6(12): 3453–3467. <https://doi.org/10.1109/TAI.2025.3575745>
- Beguš G, Leban A and Gero S (2023a) Approaching an unknown communication system by latent space exploration and causal inference. <https://arxiv.org/abs/2303.10931>.
- Beguš G, Sprouse R, Leban A, et al. (2023b) Vowels and diphthongs in sperm whales. <https://osf.io/285cs>.
- Browning J and Lecun Y (2022) AI and the limits of language. *Noema*, 23 August.
- Chomsky N (1956) Three models for the description of language. *IRE Transactions on Information Theory* 2(3): 113–124. <https://doi.org/10.1109/TIT.1956.1056813>
- Chomsky N (1959) A review of BF Skinner’s verbal behavior. *Language* 351: 26–58.
- Chomsky N (2015) *Aspects of the Theory of Syntax: MIT Research Laboratory of Electronics: Special Technical Report (50th Anniversary Edition)*. MIT Press.
- Cocconi G and Morrison P (1959) Searching for interstellar communications. *Nature* 184(4690): 844–846. <https://doi.org/10.1038/184844a0>
- Colebrook C (2000) Questioning representation. *SubStance* 29(2): 47–67.
- Cupp RL (2017) Litigating nonhuman animal legal personhood. *SSRN Electronic Journal*.
- Deacon T (1997) *The Symbolic Species: The Co-Evolution of Language and the Brain*. W. W. Norton & Company.
- Deleuze G and Guattari F (2011) *A Thousand Plateaus: Capitalism and Schizophrenia* (Ed. 2004, Repr. 2011.). Continuum.
- Derrida J and Mallet M-L (2010) *The Animal That Therefore I Am*. Fordham University Press.
- Dixon-Román E (2016) Algo-Ritmo: More-than-human performative acts and the racializing assemblages of algorithmic architectures. *Cultural Studies ↔ Critical Methodologies* 16(5): 482–490. <https://doi.org/10.1177/1532708616655769>
- Esposito E (2022) *Artificial Communication: How Algorithms Produce Social Intelligence*. MIT Press.

- Firth JR (1957) A synopsis of linguistic theory, 1930–1955. In: *Studies in Linguistic Analysis*. Blackwell, pp. 1–32. <https://api.semanticscholar.org/CorpusID:208093066>
- Goodfellow IJ, et al. (2014) Generative adversarial nets. In: Ghahramani Z, et al. (eds) *Advances in Neural Information Processing Systems*, vol. 27.
- Jakobson R (2015) *Language in Literature*. The Belknap Press of Harvard University Press.
- Kang HY (2019) What if all we can see are the parts, and there is not a whole: Elements and manifestations of the making of law of ‘climate justice’. *Law Text Culture* 23(1): 138–170. <https://doi.org/10.14453/ltc.663>
- Keim B (2025) Whales could one day be heard in court – and in their own words. *National Geographic*, 24 April.
- Kittler FA (1999) *Gramophone, Film, Typewriter*. Stanford University Press.
- Konior B (2026) *The Dark Forest Theory of the Internet*. Polity.
- Lash S (2006) Critique of information. *Theory, Culture & Society* (Reprint.). Sage.
- Lemoine B (2022) Is LaMDA sentient? — An interview. *E-flux Notes*. <https://www.e-flux.com/notes/475146/is-lambda-sentient-an-interview>
- Levi-Strauss C (1975) *Race, Science, and Society*. Columbia University Press.
- Lucier A and Simon D (2012) *Chambers: Scores by Alvin Lucier*. Wesleyan University Press.
- Mackenzie A (2005) The performativity of code: Software and cultures of circulation. *Theory, Culture & Society* 22(1): 71–92. <https://doi.org/10.1177/0263276405048436>
- Meijer E (2019) *When Animals Speak: Toward an Interspecies Democracy*. New York University Press.
- Mindell DA (2004) *Between Human and Machine: Feedback, Control, and Computing before Cybernetics*. Johns Hopkins University Press.
- Owen C, Rendell L, Constantine R, et al. (2019) Migratory convergence facilitates cultural transmission of humpback whale song. *Royal Society Open Science* 6(9): 190337. <https://doi.org/10.1098/rsos.190337>
- Peters JD (2015) *The Marvelous Clouds: Toward a Philosophy of Elemental Media*. University of Chicago Press.
- Pinker S (1994) *The Language Instinct*. W. Morrow and Co.
- Pottage A (2024) Why nature has no rights. In: A Alvarez-Nakagawa and C Douzinas (eds) *Non-Human Rights*. Edward Elgar Publishing, pp. 39–65. <https://www.elgaronline.com/view/book/9781802208528/book-part-9781802208528-8.xml>
- Povinelli EA (2002) *The Cunning of Recognition: Indigenous Alterities and the Making of Australian Multiculturalism*. Duke University Press.
- Project CETI, Inc. (2025) Audited Financial Statements. Available at: https://cdn.prod.website-files.com/643ddd7ffdf12273933a8cec/6a5a14d0e96626d69b531718_Project%20CETI_2025%20Audited%20Financial%20Statements.pdf (accessed 1 August 2026).
- Reeves J-A and Peters TD (2021) Responding to anthropocentrism with anthropocentrism: The biopolitics of environmental personhood. *Griffith Law Review* 30(3): 474–504. <https://doi.org/10.1080/10383441.2022.2037882>
- Rendell LE (2024) Are we really about to talk to whales? *The Conversation*, 16 May.
- Rendell LE and Whitehead H (2001) Culture in whales and dolphins. *Behavioral and Brain Sciences* 24(2): 309–324. <https://doi.org/10.1017/S0140525X0100396X>
- Rendell LE and Whitehead H (2003) Vocal clans in sperm whales (*Physeter macrocephalus*). *Proceedings of the Royal Society of London: Series B: Biological Sciences* 270(1512): 225–231. <https://doi.org/10.1098/rspb.2002.2239>
- Rodríguez-Garavito C (2025) What if we understood what animals are saying? The legal impact of AI-assisted studies of animal communication. *Ecology Law Quarterly* 52(1). <https://doi.org/10.15779/Z383X83N5Q>

- Sahlgren M (2008) The distributional hypothesis. *The Italian Journal of Linguistics* 20: 33–54.
- Saussure F (1959) *Course in General Linguistics*. <https://archive.org/details/courseingenerall-00saus/page/n5/mode/2up>.
- Serres M (1999) *Genesis*. University of Michigan Press.
- Serres M (2007) *The Parasite*. University of Minnesota Press.
- Serres M (2025) *Hermes II: Interference*. University of Minnesota Press.
- Shannon CE and Weaver E (1948) A mathematical theory of communication. *Bell System Technical Journal* 27(4): 623–656.
- Siebert B (2015) *Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real*, trans. G. Winthrop-Young. Fordham University Press.
- Stone CD (1972) Should trees have legal standing? Toward legal rights for natural objects. *Southern California Law Review* 45(2).
- Straight from the Horse's Mouth (2026) *The Economist*, 25 June. <https://www.economist.com/the-world-in-brief/2026/06/25/d0ad0153-f52e-47be-881c-aaacca029650>
- Te Awa Tupua (Whanganui River Claims Settlement) Act 2017 (n.d.). <https://www.legislation.govt.nz/act/public/2017/7/en/latest/#DLM6830851>
- Terranova T (2022) *After the Internet: Digital Networks between Capital and the Common*. Semiotexte/Smart Art.
- Thalles Santos S (2017) A short introduction to generative adversarial networks. *S Thalles Blog*, 7 June. <https://sthalles.github.io/intro-to-gans/>
- Tolosana R, et al. (2020) Deepfakes and beyond: A survey of face manipulation and fake detection. *Science Direct*. <https://www.sciencedirect.com/science/article/abs/pii/S1566253520303110>
- Watkin C (2020) *Michel Serres: Figures of Thought*. Edinburgh University Press.
- Weatherby L (2025) *Language Machines: Cultural AI and the End of Remainder Humanism*. University of Minnesota Press.
- Wise SM (2002) *Drawing the Line: Science and the Case for Animal Rights*. Perseus Books.
- Wise SM (2019) The struggle for the legal rights of nonhuman animals begins: The experience of the nonhuman rights project in New York and Connecticut. *Animal Law Review* 25(3).

Author biography

Alexander Damianos is a lecturer and researcher in law at Kent Law School, University of Kent. He is an Associate Research Fellow at the Institute of Advanced Legal Studies, where he founded and convenes the Law and Environmental Humanities Network. His book *Science, Politics and the Anthropocene Working Group: What Was the Anthropocene?* was published in 2025. In April 2026, he organized and co-curated a symposium and exhibition entitled 'Ecological Translation' at Goethe-Institut Athen.