Junctures
The Journal for Thematic Dialogue

**23: inter-**
October 2023

ARTICLE

https://doi.org/10.34074/junc.23002

JOE CITIZEN

# ALIGNING THE VIBRATIONS: RESOUNDING MATTERS

Published by Otago Polytechnic Press. Otago Polytechnic Ltd is a subsidiary of Te Pūkenga – New Zealand Institute of Skills and Technology.

https://doi.org/10.34074/junc.23002

JOE CITIZEN

# ALIGNING THE VIBRATIONS: RESOUNDING MATTERS

***Te Kore, to Te Pō, to Te Ao Marama***

Te reo Māori (the Māori language) is an oral language, so these "Te Kore, to Te Pō, to Te Ao Marama" words are most commonly encountered as spoken. Unlike Western traditions, precontact Māori cultures did not impose Cartesian divisions between nature and culture on the world. Nor does te reo position entities in an oppositional manner, as for instance the Greek prefix 'in-' does on the words 'tangible' and 'intangible.' Similarly, the Greek prefix 'inter-' inscribes the possibility that within oppositional entities there is always an in-between. Sound vibrates, resonates and reverberates, sound is always inherent to material movement, both in its generation and propagation. Vibrations are one of the ways that the material world makes itself felt. If language is communication, then in this understanding it is not just a human prerogative.

As a non-Māori, I wonder if I will ever really understand these kupu (words/ utterances)? Te Kore is variously described as the realm of potential being or the void; Te Pō refers to the realm of darkness, night and death; and Te Ao Marama is the world of light, life, tangible materiality. The phrase immediately brings attention to potentiality, space and time, with each aspect consisting of many other sub-parts, so that the whole forms a cosmogonic whakapapa (genealogies/ layers) specific to different hapū (sub-tribes). This is a generalised and approximate summary, but I hope to provide some indication to those who are not familiar with te ao Māori (the Māori world) about what is at stake here – a cultural knowledge framework that understands the universe as operating in "continuous creation and recreation."[1]

Describing Te Kore as either 'potentiality' or 'void' does not sufficiently convey that "it is the primeval matter that comprised the seeds of the universe,"[2] which suggests that potentiality is grounded in the tangible, rather than in the absence of matter, as is the case with some Christianised conceptions of the void. Similarly, 'time' doesn't readily describe how in "Māori philosophy, there were only two dimensions to time – past and future [...] the individual is conceptualised as travelling backwards in time to the future, with the present unfolding in front as a continuum into the past."[3] Time cannot be singularly defined as either linear or dynamic, but rather it is a mixture of both, where the "temporal is subordinated under the cosmic process and denotes not time but sequences in processes and events which occur in the cosmic process."[4] To a Pākehā (non-Māori

New Zealander of European descent) like myself, this description bears some similarity to Karen Barad's description of quantum physics, where time and space are dynamically enfolded into one another and co-constitute continuously emerging phenomena.[5] However, Barad's Bohranian account of quantum mechanics is grounded in material realism, so this provides a point of access rather than asserting any claim of cultural correspondence.

The pre-eminent New Zealand statesman Sir Āpirana Ngata described words as "charged particles"[6], which suggests an agency to language which appears to be missing in action in English. Eurocentric cultural traditions have tended to ascribe agency to humans alone, informed by the medieval Christian hierarchical structure known as the Great Chain of Being. Deriving from Plato and other Greek philosophers, it placed God at the top of a graded structure with angels placed below him, followed by European humans (men, then women), then non-European peoples, who were considered to be closer to the less capable and lower-tiered categories of animals and plants, with minerals at the bottom.[7] It perhaps goes without saying that Māoricentric traditions were not grounded in this schema, and are far more at ease with acknowledging how nonhumans can "be understood as determining events, as exerting forces, as volitional, or as instructing people."[8] In summary, what language is and who or what employs it is foundationally informed by different cultural knowledge frameworks and their attendant metaphysics.

As a speculative researcher I do not seek to answer questions or address specific problems,[9] but instead seek to understand how different metaphysical frameworks help to determine what knowledge is. Within Western academia, speculative research has been most recently informed by post-humanist and new materialist critique, and has been described as an attempt to challenge "the dominance of representationalism, brought about by the impact of the linguistic turn."[10] As a Pākehā whose work is located at the intercultural hyphen space[11] in Aotearoa-New Zealand, attempting to understand the assumptions of what baseline underlying reality is, has importance, not least because of our shared but dissimilar cultural experiences of colonialism. The term 'culture' is not neutral, however, as it reinforces a European Enlightenment tendency to reduce complexities into singularities, so that they can be employed within a field of causal relations. This paper therefore uses the suffix '-centric' to help indicate the diverse and pluralistic nature of cultural trajectories, that nonetheless have distinct originary differences.

Metaphysical critique such as this are not limited to the discursive issues that beset settler–colonial societies. Contemporary global concerns about climate instabilities and technological disruptions such as Artificial Intelligence (AI) are increasingly coupled with a widening disenchantment with Western science's ability to provide solutions to these concerns. That Western science and its universalist claims to truth have also acted as a part of the legitimising apparatus of settler–colonialism means that when new materialist writers call for "the need to look beyond the human as a location of meaning, value and agency,"[12] then speculative research becomes, as Rosalyn Diprose puts it, both "ontological and political."[13]

If new materialism has been summarised as an attempt to "develop a new philosophy of science and a way to move away from Kant,"[14] then continuing to subscribe to Eurocentric language and sound traditions without being aware of their cultural power to shape or influence knowledge may be limiting. What science may or may not be is already politicised in Aotearoa-New Zealand, where colonial discourse has traditionally presumed the superiority of Western science based on "the discovery of empirical, universal truths."[15] Typically absent from these assertions is a lack

of knowledge about how such universalist claims are propped up by a culturally and historically contingent metaphysics. The great chain of being forms the basis for Descartes' famous humancentric assertions that rational human thought is superior to dumb materiality. This in turn informed Kant's "sensible intuitions" which assert that a priori universal truths already exist.[16] In other words, their underpinning logic is circular – universal truth exists because it has always–already existed.

In general terms, the similarity between mātauranga Māori (Māori science) and Western science is that they are both based on observation, but that "Māori science has over a thousand years of close attention to local environment indicators in Aotearoa … [That] it has learnt and communicated in different ways."[17] Simplifying in the extreme, Eurocentric philosophical trajectories have valued visual and representational modalities with emphasis on logic and its descendent epistemologies, whereas Māoricentric trajectories have valued relationality and performative modalities, with emphasis on whakapapa and their descendent ontologies. Informed as they are by atomistic and humancentric trajectories, Eurocentric traditions have typically positioned sound as passive, an innately deceptive component of our sensory apparatus, whereas Māoricentric traditions have not considered sound in such a passive manner, because it "is the relation, or connection, not the thing itself, that is ontologically privileged in indigenous and Māori thought."[18] For example, taonga pūoro – sometimes referred to as traditional Māori music – refers to 'taonga' (anything prized) and 'pūoro,' which is comprised of the kupu 'pū' (origin/foundation) and 'oro' (reverberations/vibrations), so that as "a kupu, 'pūoro' looks at vibrations and origins of sound."[19] This helps to explain why taonga pūoro does not sit easily within a Eurocentric understanding of music, but rather is typically understood as being located within rongoā Māori (Māori wellbeing practices). As the eminent taonga pūoro expert Horomona Horo puts it, "Taonga pūoro is rongoā." (Horo, pers. comm., 6 September 2023)

Some further explanation is needed here. The domains of 'music' and 'health' are typically distinct in Western taxonomies, with understandings of health arising from traditional differences between being well or unwell. Since Eurocentric ideologies have historically positioned indigenous Māori cultures as 'savage' or 'exotic,' mātauranga Māori has tended to be framed in terms of the mystical or esoteric. Understanding taonga pūoro as rongoā therefore requires a willingness to understand cultural knowledge as being in the everyday, as lived experience. As Horo puts it when describing the practice of playing a pūmotomoto into the fontanelle of a new-born:

> In terms of the child, it's used in process of one's growth. That's not really saying that the child is sick, that the child needs help. That's playing the instrument to the fontanelle, because the name of the instrument depicts – translates – as the fontanelle. It's not used as a healing mechanism, it's just an instrument that's used in the development of that child. It's just used to bring comfort – like any other type of music.
>
> (Horo, pers. comm., 6 September 2023)

Taonga pūoro can here be understood in a complementary or holistic manner, in relation to everything else also going on: "it's a combination of things, like a recipe." (Horo, pers. comm., 6 September 2023) What music and sound are, however, depends on the lens through which they are viewed. For instance, the late Pākehā taonga pūoro practitioner Richard Nunns identifies how, in Māori traditional healing practices, some tohunga rongoā (healing experts) would use stones sized to an "afflicted organ or joint, and tapped the stone with a rod also made of stone [making]

adjustments to the position of the stone according to the sound [...] When the stone was positioned to the tohunga's satisfaction, karakia began and the stone, chosen for its porous qualities, drew the infection from the identified site."[20]

Nunns goes on to suggest that such practices "may indicate an aspect of traditional healing knowledge that parallels bio-electric points and acupuncture meridians, and ultrasound treatment."[21] Ultrasound problematises terms like 'sound' and 'music' by bringing attention to sound being a type of wave energy, where waves are "disturbances in the medium, not materially discrete entities (particles)."[22] Taonga pūoro as rongoā is informed by cultural knowledge systems that understands sound as part of the language of movement, rather than one that classifies sound, music and language as belonging to different categories. As Horo rhetorically asks: "What is the difference between pūoro and waiata (songs)? In te reo Māori, they're one and the same." (Horo, pers. comm., 6 September 2023)

Language, then, prescribes the conditions of knowledge. It is not neutral or innocent of affect, as the vital materialist Jane Bennett (2010) identifies when she recognises the necessity and difficulty of attempting to rewrite "the default grammar of agency, a grammar that assigns agency to people and passivity to things."[23] Similarly, the quantum physicist Karen Barad is adamant: "Language matters."[24] There is no Cartesian rift between thinking and being – language itself is performative, in that it forms part of the "practices of engagement with, and part of, the world in which we have our being."[25] By this Barad is not just referring to the symbolic or representational power of language to affect change in the world, but to the material aspect of language itself. The word 'performative' for Barad does not refer to performance in the same representational sense that an actor performs, but instead draws attention to the way actions in the world enact meaning. Performativity in language "is not to *describe* my doing of what I should be said in so uttering to be doing or to state that I am doing it: it is to do it"[26] [italics in original]. For example, the bio-electrical functioning of our neurons when we think, the vibrations of our speech and the binary electrical power oscillations that Artificial Intelligence (AI) systems such as Chat GPT3 require to access its 175 billion parameters[27] all form part of the material substrate of language in its articulation. Understanding the performativity of language is to engage with its discursive aspects, not simply within the power relations of communication, but as "the material conditions for meaning-making."[28]

Barad's primary metaphysical concern lies with the Eurocentric claim that there is always an in-between or middle ground between entities, as suggested by the prefix 'inter-.' Coining the neologism 'intra-action' which "*signifies the mutual constitution of entangled agencies*"[29] [italics in original], she identifies that phenomena are always co-constituted, which is to say that "*agencies are only distinct in relation to their mutual entanglement; they don't exist as individual elements*"[30] [italics in original]. Her use of the prefix 'intra-' is an attempt to redeploy the English language in order to acknowledge that language itself has agency. She is trying to more clearly distinguish between the ontological implications of that which is within continuously emerging phenomena, on the one hand, and the epistemological implications inherent in a physics which asserts that there are different subject positions in-between discreet entities, on the other.

It is unsurprising that mātauranga Māori about sound and language is not more widely known beyond te ao Māori. There is a long history of Eurocentric ethnographic bias that presumes its own cultural superiority, with the influence of Latin grammar simply forming part of the Enlightenment

era's self-proclaimed trajectory of progress. For instance, the "logic of English grammar (object: passive; subject: active) reflects and reproduces a Western subject-object dualism"[31]. This hidden aspect of Eurocentric cultural syntax is still common, as the original call for this journal's issue demonstrates. Authors were invited to submit responses in relation to the Latin prefix *inter–* inadvertently reinforcing a Western cultural claim that not only is a middle ground between differentiated entities possible, but is universally achievable. The danger of not being alert to our own cultural syntax is that the very language we use reinforces materially discursive claims as to what reality is and how it operates: "The difference between Western and Indigenous languages is reflected in divergent worldviews or concepts about reality."[32]

This is not simply a translation problem. Eurocentric epistemological emphases that divide the tangible from the intangible, past from present, human from non-human, do not readily grasp Māoricentric ontological emphases that are premised on the dynamic relationality of all entities across a fluid understanding of space–time. The kupu whakapapa, for instance, is often erroneously translated as 'genealogy,' but is "made up of the causative prefix 'whaka-' and the stem word 'papa' with a literal meaning of ground or layer, and which calls to Papatūānuku (Earth Mother) at every utterance (Mika, 2017) – hence giving the meaning of 'to make layers' or something like 'generative' (Barlow, 1991)."[33] There is no separation between the tangible and the intangible or the material and the spiritual embedded within whakapapa, because whilst "one most evidently stands upon 'papa,' one also stands *within* and *due to* it. That is, it (she, Papatūānuku) organises us in her construction of us."[34]

Te ao Māori does not assume distinctions *between* entities, but rather acknowledges co-emergence and relationality *within* entities. Carl Mika makes this point when he talks about a shared theme of many indigenous writers, which he terms "worldedness." This "relates to the confluence of all things in the world, such that there is an underlying, driving move of all those things to be in conversation with each other."[35] Concerned as he is with the colonising influences of a Eurocentric metaphysics of presence, which he recognises as partly being reinforced through the "language medium,"[36] he identifies that from a Māori worlded understanding, "one is always contingent on things in the world (and things in the world are themselves language in a Māori worldedness, to the extent that they are both constituted by/ constitute language, and arrange themselves so that the self gives expression to the world in particular ways)."[37]

Barad's intra-activity, which recognises that "distinct agencies do not precede their interaction,"[38] may only partially provide access to what Mika is describing for, like many Western writers reconsidering Kantian metaphysics,[39] she remains grounded in a material realism that does not readily admit spirituality, woven[40] with materiality, or otherwise. This is a good illustration of how different cultural knowledge frameworks don't have one-to-one correspondences, for material realism usually assumes a Eurocentric bias that distinguishes between spirituality and materiality as distinct categories. As a result, European cultural anthropologists have traditionally misunderstood Māori Indigenous spirituality as animism. Absent from this appraisal is a lack of self-awareness about how material realism itself arose from the European Enlightenment's own struggles between scientific rationalism and idealism, as informed by a Plato-informed Christianity that identified the spiritual as lacking materiality. This, coupled with a further lack of knowledge about distinctions between mauri (regenerative life-force), hau (the breath of life) and wairua (spirit or soul), helped to inform an ongoing history of "lingering racism and evolutionism that motivate distinctions between the animate and the inanimate."[41]

That the tangible and intangible exist co-instantaneously in te reo Māori is not just a reflection of a cultural 'belief.' As the president of the Association of Tertiary Learning Advisors of Aotearoa New Zealand (ATLAANZ) Tania Oxenham puts it, the syntax of te reo Māori "derives from the reverberations heard and received physically and spiritually, and its transmission or interpreted translation into the spoken word." In other words, there is no separation between the physical and the metaphysical in te reo, because there is no Cartesian-informed separation between the words used and the ideas conveyed. Rather, each kupu, each spoken word, "has its own mahi (work/ performance)" to achieve. (Oxenham, pers. comm., 19 May 2023) What is important is how te reo as it is spoken addresses the whakapapa of each 'thing' under discussion. This aspect of te reo has been missed by those more accustomed to judging written literacy as superior, not least because "dominant (Euro-American) cultures have a strong ethnocentric bias that honours the written text over the oral form."[42]

Eurocentric conceptions of symbols, writing and images have been historically informed by the ancient Greek idea of *logo*, which is a graphical mark derived from the word *logos,* defined as logic or reason as articulated through human speech.[43] Within the European cultural imaginary that identifies the philosophies of ancient Greece as the birthplace of civilisation, further examination of logos reveals a humancentric bias that distinguishes between the intangibility of ideas and the tangibility of material forms. Aristotle for instance, makes the claim that "raw" material forms are different from their non-material essences.[44] Similarly, Plato holds that objects in themselves are fundamentally unknowable, but that their "pure forms" exist independently from them as Ideas.[45] The influence of this embedded cultural syntax cannot be understated – both Aristotle and Plato informed Christian conceptions of heaven with a God as a divine architect, where "God first created an intelligible world akin to the Platonic forms and thereafter the sensible world."[46] Further reverberations of these culturally informed metaphysical distinctions between ideas and materiality exist through Descartes and Kant, articulating themselves in the Shannon-Weaver model of communication,[47] semiotics, and cybernetic conceptions of data as existing independently to material form.[48]

Returning then, to the mahi of the kupu pū and oro, and their associations with origins and reverberations, requires an understanding that sound is not a passive sensory perception, but is at the beginning of things in a non-linear way because, as previously mentioned, time in te ao Māori is relational:

> In essence, the Māori world is viewed through a genealogical matrix of complementary but different counterpoints – generative dualisms (Tapsell 1995) – which is symbolically summarized by the spiral of creation or Takarangi. This complex double spiral embodies moments in time where two disparate streams intersect to generate a new consciousness. The intersectional moment represents the point of creation where the past continuously meets the future.[49]

The reverberations of oro are therefore not stuck within a codified and easily forgettable past, but within the co-created moments of now as it continuously unfolds. The cultural syntax of te reo is more like open-ended free-form poetry than the functional active subject/ passive object relationships found in English. Like the word pū, oro resounds at the core of things, as articulated by the kupu orokohanga, which is:

> Sound emanating from the creation of life, the sound of the air, the sound of what we hear and don't hear, of the heard and the unheard, across creation. In the moments of the unfolding now. Oro is impartial to time. It's at the beginning, at the present, at the future. The activity of oro – the different manifestations of oro, not just the sound but every moment, is a captured sound. (Oxenham, pers. comm., 19 May 2023)

Oro exists in the material and the spiritual simultaneously because they are not separated, but rather "the material proceeds from the spiritual and the spiritual [...] interpenetrates the material physical world of te ao Mārama."[50] Oro is therefore unburdened by the need to situate origins as belonging to past–present–future causalities. Its activity is vibrational because sound is at the origins of things – it refers to the energies themselves. Compare this to the meaning of the word whakapapa, which is not the same as genealogy in a linear, materially causal sense, but refers to the generative layers that bring relevant awareness of the material and situational aspects at hand. Being organised and constructed within Papatūānuku[51] means that whakapapa helps to identify the patterns of ongoing journeys, not the material forms themselves. As Horomona Horo puts it: "It's the patterns that are important not the materials – it's the patterns that create the connection, it's the patterns that bring those different things into accountability." (Horo, pers. comm., 26 May 2023).

Emphasis on identifying patterns does not also imply that materiality is unimportant, in the same way that Eurocentric traditions celebrate abstract knowledge but, rather, the presence of materiality is acknowledged because there are always relationships with the natural world as it unfolds: "Pū and oro relate to the material, we are always in the material" (Horo, pers. comm., 26 May 2023). Materiality is, as already stated, not atomistic but reverberates with different types of energies. Post-humanists and new materialists may even recognise these energies as material agencies, or describe them as agentic capacities, but these terms are freighted by a habituated syntax which has been normalised across its own enculturated milieu. Once more, here is the difficulty of attempting to reconcile concepts across different knowledge frameworks, for each has its own shaping of the knowable and the unknowable, and who or what has agency, along with how knowledge is engaged with.

In Eurocentric trajectories, the desire to escape human finitude and know the unknowable has been taken to be self-evident, because the pre-conditions of knowledge rest on human exceptionalism and the pre-eminence of humans within a strict vertical hierarchy of relations. Māori cosmogony does not subscribe to this schema – the unknown is always present because the positionality of humans in the orders of creation means that we are only the most recent arrivals after the rest of te ao Tūroa (the enduring/ natural world). We are latecomers in the order of creation and need to acknowledge that we only have a small part of the knowledge of those that came before. As the Waikato–Tainui kaumātua Tame Pokaia puts it: "Humans are the juniors, they are the seniors."[52] Since it is not just humans who are knowledge-holders, language is not the sole provenance of humans and the agency of language is not limited to human agency: "Indigenous belief [...] thinks about language as a thing in its own right and tends to source language in what is not present as much as the visible world."[53] The vibration/reverberation of oro in language and sound makes itself felt, communicates, across persons human and nonhuman. Taonga pūoro can now be understood in a way that transcends instrumentalism:

> An instrument is just a material until a person gives a piece of their mauri [generative life-force], their ngākau [spiritual force] into it. The vibration, the energy, can break through. Persons are not always human. Persons can be classed as the species of life – can be, for example, rocks. Who's to say a rock or a tree doesn't breathe? It just doesn't breathe like humans. We know this by the way it changes. (Horo, pers. comm., 26 May 2023)

When this understanding of personhood is compared to the Latin prefix 'non-,' it becomes clear that distinctions between who or what has agency in the world are baked into language. The differences between human and non-human enables objectification as much as discrimination, which legitimises particular types of behaviour towards nonhumans. For instance, identifying animals as nonhuman means that "these categories *can* be deployed nominally and descriptively so that such violence can be deployed to this or that specific animal. 'Animal' in other words, is one of the ways we say 'Other.'"[54]

Such ontological violence through the unconscious replication of cultural syntax operating within language isn't just cause for environmental or cultural concern, but has ramifications for Informational Technologies (IT) such as AI. The apotheosis of the Cartesian and Kantian bifurcation between the intangibility of agentic human thought and the tangibility of dumb and inert matter is illustrated through the notion that data as information operates in an atomistic manner and is divorced from its originary contexts. Based on the semiotic theories of Saussure, Pierce and, later, Barthes,[55] the division between signifiers and what they signify underpinned much of Eurocentric understandings of 'classic' communications theory. Following the Second World War, the forerunners of early cybernetics turned to mathematical models as a means to theorise what was not yet technologically possible, concluding in the process that the "semantic aspects of communication are irrelevant to the engineering problem."[56]

In te ao Māori, whakapapa provides the relational context to data. The originary context(s) of data determines its relative importance: "Personal data, which relates to the individual, carries a high level of sensitivity and should therefore be considered a taonga. Utility also influences perception when contemplating whether data is a taonga."[57] Often translated as anything that is highly prized, taonga are not limited to material objects and, as Sir Hugh Kawharu describes, refer to "all dimensions of a tribal group's estate, material and non-material – heirlooms and wahi tapu, ancestral lore and whakapapa, etc."[58] All taonga therefore have whakapapa – they are intergenerationally connected through layers of relations, across time and space, across the tangible and intangible. "All data has a whakapapa (genealogy) and a mauri"[59] affirms the agency of taonga, so that data as taonga "do not necessarily need subjects to think them (but may themselves call forth or *produce* selves – and thought)."[60] In other words, data continues to have agency regardless of where it is in the world – there is no ontological separation between data and its originary contexts.

In the era of AI, the originary context of data is not always derived from human sources. Synthetic data, such as those produced through algorithms and the like, appears to problematise the determination of relative context. However, since whakapapa privileges the relationships between entities rather than the entities themselves, then any data that has *any* relationship to te ao Māori can be considered from a Māori perspective. As Karaitiana Taiuru puts it: "Any synthetic data that is created by an individual Māori person or collective, uses any amount of Māori Data, whether anonymised or not, is still considered to be Māori Data as it has a genealogical connection to Māori Data or a Māori person."[61]

Whilst the collective term "machine intelligence"[62] can be used to encompass AI, big data, ubiquitous computing, the Internet of Things and other internet-enabled computing practices, then what intelligence is needs some attention. IT as a domain has tended to consider intelligence as informed by neuroscience and its positivist/realist assertions of how the human brain functions. For instance, the term 'neural networks' is used to describe the Deep Learning of AI and refers to how multiple series of comparative 'loops' of information operate, in order to ascertain new knowledge experience against what is already known. Knowledge in this context is understood to be quantitative, performing logical operations on non-static numerical values in order to organise and predict. These "generalised back-propagation algorithm[s], with many hidden layers, for training neural networks"[63] take for granted that data stands in for things in the world. In other words, AI doesn't just subscribe to Cartesian and Kantian epistemological frameworks that assume a division between human rational thinking and materiality, it actively automates them. Following Barad, this automation of knowledge production is a materially discursive practice, because the agency of the apparatus itself must be acknowledged as co-constituting the phenomena that emerges. The back-propagation algorithms, culturally specific claims that data stands in for what it represents, binary operations, neuroscientific assertions about how the brain works, electrical and material substrates, practices of surveillance capitalism, etc., are all implicated and entangled with one another, through their relationships.

It is useful to consider how the internal debates of neuroscience have historically informed Deep Learning, particularly its essential dependency on mathematical operations. Long-running arguments that contributed to the development of AI centre on whether or not speech is the primary way that humans think, as informed by the same cultural–historical trajectories that computing itself emerges from. One of the goals of AI is language prediction – inclusive of sounds, images and text – with arguments about the relative efficacy of competing syntactical or probabilistic claims. Despite early support, syntactical approaches proved difficult to implement because the 'rules' of grammar proved to be notoriously inconsistent.[64] Consequently, probabilistic approaches are now the dominant methodology employed by machine learning. Whether rules-based or probability-based, both approaches take for granted Eurocentric realist claims that causality and logic are the only possible ways to gain objective truth. The key issue for AI that uses billions of parametric nodes is one of correlation versus causation, where probabilistic approaches cannot intrinsically understand the meanings of language in any causal contextual sense.[65]

When big tech owners such as Elon Musk and Bill Gates themselves start to question the safety of their own AI,[66] to what extent can the universalist claims that data operates independently from its relational contexts be understood as a new type of colonialism? Whilst adhering to these claims provides the logical prerequisites for the mathematical operations of digitality, they depend on rationalist assertions that objectivity is possible through recourse to a priori truths, which are themselves dependent on human exceptionalism to cognise them. When machine intelligence replaces human cognition, then thinking itself is jettisoned in favour of process. The underlying goals of this model therefore require closer examination and it is useful to consider the links between machine intelligence and the influence of the realist behavioural psychology of Planck, Meyer and Skinner. Machine intelligence's emphasis on probabilistic prediction now becomes evident, for these three believed that societal harmony could only be achieved through relinquishing the unpredictable through behavioural modification.[67]

These sentiments are echoed by the influential director of MIT's Human Dynamics Lab, Alex Pentland, when he identifies "the need for "new predicative theories of human decision making" as well as "incentive mechanism design," an idea that is comparable to Skinner's "schedules of reinforcement."[68] Shoshana Zuboff argues that the utopian discourse of AI is underscored by a belief that behavioural psychology is not geared towards human emancipation, but rather towards "corporate objectives."[69] In order to map, organise and make predictions about humans or others, it becomes necessary to use a "physics-based representation of human behaviour"[70] in order to perform the requisite differential calculus. All becomes instrumentalised data in order to enable "the transformation of business models from 'guaranteed levels of performance' to 'guaranteed outcomes.'"[71]

Whilst concerns about cultural bias in AI are usually met by those working in the field with the claim that AI can be trained to detect such biases,[72] there's little acknowledgement that the practices of feedback weightings of statistical probabilities are themselves culturally freighted. Prediction of events using mathematical operations is not the same as observing relationally informed phenomena as it unfolds. Notwithstanding Zuboff's claims of surveillance capitalism, the goal of prediction needs to be considered from its specific culturally discursive frameworks, rather than assuming a one-size-fits-all model. For instance, when Microsoft CEO Satya Nadella says the goal of machine intelligence in the form of cloud computing is to "anticipate and pre-empt variations from the norm before they happen,"[73] then whose norm is he referring to?

That the predicative goals of AI centred on speech and human thinking have difficulty with understanding context is perhaps indicative of a cultural framework that is used to the authority that its universal claims have traditionally provided it. And yet, different cultural syntactical patterns or organisational grammars by which meaning is co-constructed do not operate in the same way across cultures, but rather "diversity can be found at almost every level of linguistic organization."[74] That AI methodologies can produce the appearance of language does not also mean that it understands the substance of it. As Māori data sovereignty expert Sonny Ngatai puts it: "Te reo [is] not just about stringing words together like a chatbot."[75] Statistical and probabilistic approaches to machine learning are not, for instance, particularly adept at metaphor or poetic contexts. Given that much of te reo Māori relates meaning through poetic or metaphorical modes, it seems unlikely that AI will be able to produce much more than surface-level kōrero (conversation).

What this all calls into question, in terms of understanding sound and language as being foundational across cultural frameworks, is what could the word 'syntax' encompass beyond its Eurocentric linguistic origins? Can a more relational, eco-centric understanding of the world be fostered through abandoning syntax which re-inscribes a culturally specific ontological violence of human exceptionalism, bound to positivist norms of prediction? An example in English would be forsaking the prefix 'inter-' in favour of 'intra-,' which acknowledges nonhuman agencies whilst ditching atomistic binaries. Notwithstanding these questions, better awareness of cultural syntax and its role in shaping the preconditions of knowledge is likely to be of use to those post-humanists and new materialists attempting to depart from the linguistic turn. Perhaps a new definition of syntax could be informed by the vibrational energies of oro, which are interpenetrative, impartial to time, and where the patterns themselves create connections:

> Oro is the shaper of syntactic meaning-making. Without oro, syntax is meaningless as it is the very reverberation of life, death and in-between carried through into conversations, into waiata, into the poetry of whaikōrero or the brevity of the pao. Oro in instruments reflect the winds, the oceans, the birds and tangi of each animate and inanimate object; a beat, a pulse, a whisper, a touch to the skin. (Oxenham, pers. comm., 30 May 2023)

Ngā mihi nui ki a tātou.

**Dr Joe Citizen** (PhD, AUT). (ORCID ID: https://orcid.org/0000-0002-3805-1829) I am a collaborative, practice-led creative-arts researcher. I am mainly interested in speculative metaphysics located at the intercultural hyphen space and how this applies to identifying potential synergies and parallels between Māori and Pākehā ways of knowing and being. I am particularly interested in relational emergence, which I explore through the creation of immersive interactive installations, using sound, lighting and transcoded data from environmental sensors. My work is relevant to the fields of Māori–Pākehā relations, post-humanist and new materialist critique, aesthetics and contemporary digital theory. For further information, please contact me: Joe.Citizen@wintec.ac.nz

1. Māori Marsden and Te Ahukaramū Charles Royal, *The Woven Universe* (Otaki: Estate of Rev. Māori Marsden, 2003), 21. First pub. 1965.
2. Ranginui Walker, *Ngā Pepa a Ranginui: The Walker Papers* (Penguin: Auckland, 1996), 14.
3. Ibid., 14.
4. Marsden and Royal, *The Woven Universe*, 23.
5. Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham, NC, and London: Duke University Press, 2007), 234.
6. Charlotte Huddleston, *From Things Flow* (From Things Flow: Auckland, 2022), 7.
7. Anne Salmond, *Tears of Rangi: Experiments across Worlds* (Auckland University Press: Auckland, 2017), 35.
8. Te Kawehau Hoskins and Alison Jones, "Non-human Others and Kaupapa Maori Research," in *Critical Conversations in Kaupapa Māori*, eds Te Kawehau Hoskins and Alison Jones (Huia Publishers: Wellington, 2017), 49-64, at 52.
9. Brad Haseman, "A Manifesto for Performative Research," *Media International Australia, Incorporating Culture & Policy*, 118 (February 2006), 98-106.
10. Luke Moffat, "Putting Speculation and New Materialisms in Dialogue," *Palgrave Communications*, 5, Art. 11 (2019), https://doi.org/10.1057/s41599-019-0219-8.
11. Michelle Fine, "Working the Hyphen: Reinventing Self and Other in Qualitative Research," in *Handbook of Qualitative Research,* eds NK Denzin and YS Lincoln (Thousand Oaks, CA: Sage, 1994), 70-82, at 72.
12. Moffat, "Putting Speculation," 3.
13. Ibid., 3.
14. Rick Dolphijn and Iris van der Tuin, *New Materialism: Interviews and Cartographies* (Ann Arbor, MI: Open Universities Press, 2012), 72.
15. Kendall Clements and others, letter to the editor, *The Listener*, 30 (24-30 July 2021), 4.
16. Joe Citizen, "Navigating Knowledge Frameworks at the Intercultural Interface," *Junctures: The Journal for Thematic Dialogue*, 22 (2022), 2-3. https://doi.org/10.34074/junc.22029
17. Diane Menzies, Foreword, in *Kia Whakanuia te Whenua: People, Place, Landscape*, ed Carolyn Hill (Auckland: Mary Egan Publishing, 2021), 19.
18. Hoskins and Jones, "Non-human Others," 53.
19. Ruby Solly, "Hine Pū Te Hue: Wāhine of Taonga Pūoro," *The Pantograph Punch*, 22 February 2021, https://www.pantograph-punch.com/posts/hine-pu-te-hue (accessed 30 March 2023).
20. Richard Nunns, *Te Ara Puoro: A Journey into the World of Māori Music* (Nelson: Craig Potton Publishing, 2014), 61.
21. Ibid., 61.
22. Barad, *Meeting the Universe Halfway*, 76.
23. Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC, and London: Duke University Press, 2010), 119.
24. Barad, *Meeting the Universe Halfway*, 132.
25. Ibid., 133.
26. John Austin, *How to do Things with Words* (London: Oxford University Press, 1962), 6.
27. Alex Hughes, "ChatGPT: Everything you Need to Know about OpenAI's GPT-4 Tool," *BBC Science Focus,* 20 June 2023, https://www.sciencefocus.com/future-technology/gpt-3/ (accessed 23 March 2023)
28. Barad, *Meeting the Universe Halfway*, 335.
29. Ibid., 33.
30. Ibid., 33.
31. Hoskins and Jones, "Non-human Others," 54.
32. Georgina Stewart, *Māori Philosophy: Indigenous Thinking from Aotearoa* (London and New York: Bloomsbury Academic, 2021), 73.
33. Ibid., 85.
34. Carl Mika, *Indigenous Education and the Metaphysics of Presence: A Worlded Philosophy* (New York: Routledge, 2017), 127.
35. Ibid., 38.
36. Ibid., 19.
37. Ibid., 128.
38. Barad, *Meeting the Universe Halfway,* 33.
39. Ibid., 31.
40. Marsden and Royal, *The Woven Universe*.
41. Christopher Braddock, Introduction, in *Animism in Art and Performance*, ed. Christopher Braddock (Cham, Switzerland: Palgrave Macmillan, 2017), 7.
42. Elisabeth Eklund, "Memory and Enshrining Writing: Rethinking the Ethnocentrism Imbedded in Written vs. Oral Traditions," *Arizona Anthropologist,* 28 (2017), 76-87.
43. S Marc Cohen and CDC Reeve, "Aristotle's Metaphysics," in *Stanford Encyclopedia of Philosophy,* https://plato.stanford.edu/entries/aristotle-metaphysics/#ActuPote0 (accessed 1 June 2023).
44. Ibid.
45. Quentin Meillassoux, *After Finitude: An Essay on the Necessity of Contingency* (London and New York: Bloomsbury Academic, 2008), 25.
46. Dermot Moran, "Neoplatonism and Christianity in the West," in *The Routledge Handbook of Neoplatonism*, eds S Slaveva-Griffin & P Remes (London and New York: Routledge, 2014), 509.

47. Claude Shannon, "A Mathematical Theory of Communication," *The Bell System Technical Journal*, 27:3 (1948), 379-423.
48. Joe Citizen, "Tōia Mai: Speculating Art and Reality at the Hyphen in Aotearoa-New Zealand" (PhD exegesis, Auckland University of Technology, Auckland, 2019), 67.
49. Paul Tapsell and Christine Woods, "Social Entrepreneurship and Innovation: Self-organization in an Indigenous Context," *Entrepreneurship and Regional Development*, 22:6 (2010), 535-56, at 545. https://doi.org/10.1080/08985626.2010.488403
50. Marsden and Royal, *The Woven Universe*, 178.
51. Mika, 2017, 127.
52. Citizen, "Tōia Mai," 182.
53. Mika, *Indigenous Education*, 74.
54. David Wood, *Thinking Plant Animal Human: Encounters with Communities of Difference* (Minneapolis, MN, and London: University of Minnesota Press, 2020), 122.
55. Citizen, "Tōia Mai," 61.
56. Shannon, "A Mathematical Theory," 379.
57. Māui Hudson, Tiriana Anderson, Te Kuru Dewes, Pou Temara, Hemi Whaanga and Tom Roa, "He Matapihi ki te Mana Raraunga – Conceptualising Big Data through a Māori Lens," in *He Whare Hangarau Māori – Language, Culture & Technology*, eds H Whaanga, TTAG Keegan and M Apperley (Kirikiriroa/ Hamilton: Te Pua Wānanga ki te Ao / Faculty of Māori and Indigenous Studies/ Te Whare Wānanga o Waikato / University of Waikato, 2017), 64-73, at 66.
58. Paul Tapsell, "The Flight of Pareraututu: An Investigation of Taonga from a Tribal Perspective," *The Journal of the Polynesian Society*, 106:4 (1997), 323-74.
59. Karaitiana Taiuru, *Compendium of Māori Data Sovereignty VERSION 2*, 12 February 2022, https://www.taiuru.maori.nz/compendium-of-maori-data-sovereignty/#Indigenous_Data (accessed 24 August 2023).
60. Cassandra Barnett, "Te Tuna-Whiri: The Knot of Eels," in Braddock (ed.), *Animism in Art and Performance*, 23-44.
61. Karaitiana Taiuru, "Is Synthetic Data a Taonga?," 3 August 2023, https://www.taiuru.maori.nz/is-synthetic-data-a-taonga/ (accessed 24 August 2023).
62. Shoshana Zuboff, *The Age of Surveillance Capitalism* (London: Profile Books, 2019), 412.
63. Yorick Wilks, *Artificial Intelligence: Modern Magic or Dangerous Future?* (London: Icon Books, 2023), 120.
64. Ibid., 120.
65. Ibid., 78-88.
66. Alex Hern and Dan Milmo, "Everything You Wanted to Know about AI – But Were Afraid to Ask," *The Guardian*, 24 February 2023, https://www.theguardian.com/technology/2023/feb/24/ai-artificial-intelligence-chatbots-to-deepfakes (accessed 19 June 2023).
67. Zuboff, *Surveillance Capitalism*, 413.
68. Ibid., 428.
69. Ibid., 413.
70. Ibid., 412.
71. Ibid., 201.
72. *Anya Ventura, "Unfolding Intelligence," Arts at MIT, 12 May 2021,* https://arts.mit.edu/unfolding-intelligence/ (accessed 20 August 2023).
73. Zuboff, *Surveillance Capitalism*, 408.
74. Nicholas Evans and Stephen Levinson, "The Myth of Language Universals: Language Diversity and its Importance for Cognitive Science," *Behavioral and Brain Sciences*, 32 (2009), 429-92. https://doi:10.1017/S0140525X0999094X.
75. Libby Kirkby-McLeod, "How Will ChatGPT Impact te reo Māori? Data Sovereignty Experts Weigh in," *RNZ*, 13 June 2023, https://www.rnz.co.nz/news/te-manu-korihi/491925/how-will-chatgpt-impact-te-reo-maori-data-sovereignty-experts-weigh-in (accessed 19 June 2023).