Language: The Non-Trivial Machine

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Abstract

Conventionally understood as the interface between us (humans) and the 'out there', this article proposes that there is an urgent need to write philosophy of language from a perspective which can account for the new ontologies of language being promoted by its increasingly non-human, digital, disembodied applications and 'realities'. The work starts with a question: what *is* language when it is no longer made by humans, but by a machine? Employing Heinz von Foerster's distinction between 'Non-Trivial' and 'Trivial', Machines, which describes machinic processes involving agency and those which do not, this practice and theory based research explores that question.

Introduction

Most philosophies of language still take as a given that language is a human-made artefact (speech/writing), albeit at different levels of 'proximity' to the human subject: speech being closer than writing, and writing being closer than printing or typing. By this argument, speech is more closely related to the human than typing, and in turn permits more human agency. With the typewriter's tendency towards automation and standardisation in mind, Nietzsche, who turned towards using a Malling Hansen Writing Ball (invented in 1867), has been described by Friedrich Kittler as the "first mechanized philosopher".[1] Nietzsche noted, while using the Malling Hansen: "The writing ball is a thing like me: made of iron yet easily twisted on our journeys"[2] and observed that "Our writing tools are also working on our thoughts"[3] Beyerlen later comments on the act of typing:"[A]fter one briefly presses down on a key, the typewriter creates in the proper position on the paper a complete letter, which is not only untouched by the writer's hand but also located in a place entirely apart from where the hands work."[4] This is a more general tendency of technology: to distance the subject from its object via various degrees of technological mediation (fig.1). And yet, despite its mechanized characteristic, we cannot say that the writings of Nietzsche possess less *agency* in their typed form, only that the relationship between his thought and its transcription is rendered slightly more distant due to the new technology of the typewriter.

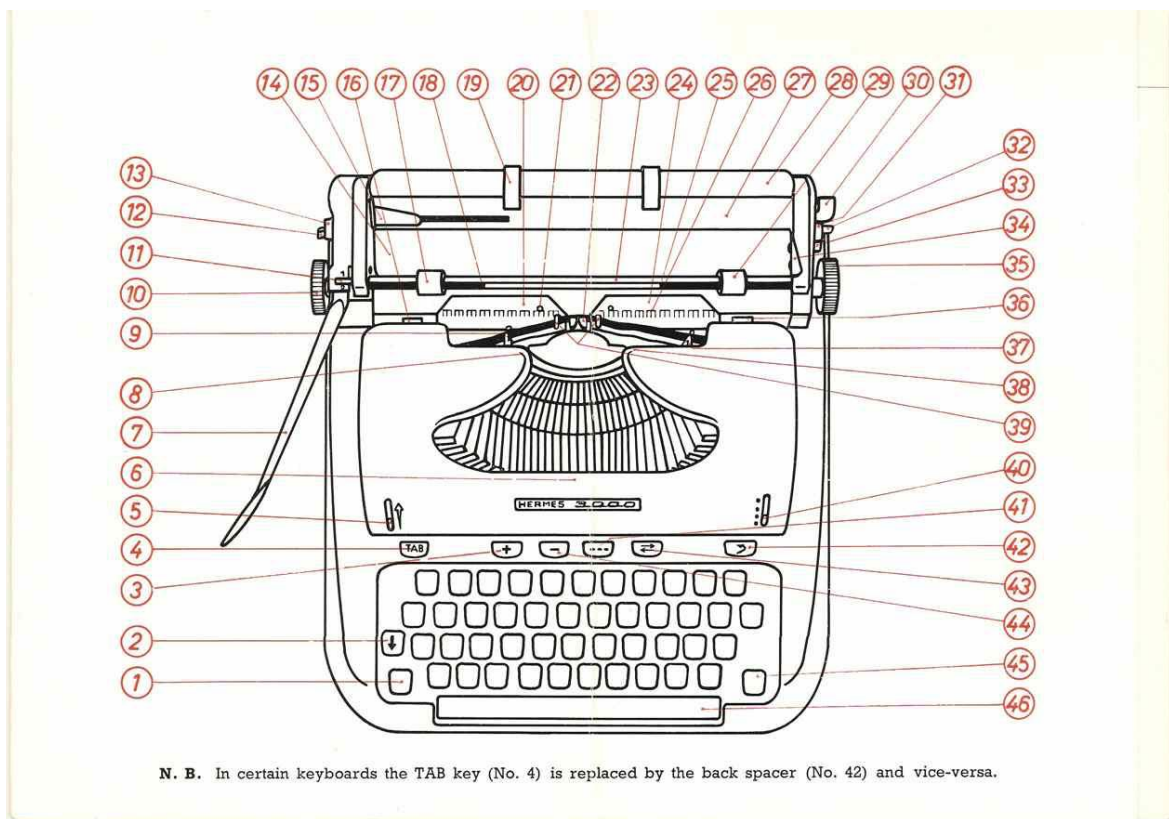N. B. In certain keyboards the TAB key (No. 4) is replaced by the back spacer (No. 42) and vice-versa.

Figure 1. Instruction manual for the Hermes 3000 typewriter.

Despite these distinctions, which in this case take the form of noting the distance between speech and writing, or writing and typing, human-made language is largely taken to be analogue, material, and definitional within philosophy. Language is made by rational human agents, not machines. It is definitional to the degree that humans possess language, whereas animals do not, and this is what is taken as one of the defining characteristics of the 'human'. Therefore, when philosophers speak of language, and its human-made form, it's with a full sense of languages' significance, culturally, intellectually, and historically. To reinforce this point, in the film 'Threads' (1984)[5], the bleakest description of the effects of nuclear war and its aftermath concludes that in the imagined post-apocalyptic future, language breaks down to such an extent that the threads which tie human to human and constitute primary social and ethical contracts are broken. The linguistic threads are also unravelled, and (after some time), language is reduced to single word, brute force descriptions of fact, directed entirely towards survival. The story provides a stark reminder of the significance of language within a culture, and its role in uplifting humans from a state of mere survival, to the formation of social, political and legal bonds, along with literature, creativity and (most importantly within the narrative of the film), the capacity for human empathy.

This concern over the changing conditions of language is not new. Writing itself is a technology, which took what the Romans called 'Verba Volant' (the spoken word flies), and relegated it to a mere 'Scripta Manent' (the written word as something dead, lifeless). Plato feared that language would alter our relationship to the human act of memory.[6] However, I wish to suggest here, that such questions about language and agency and language and the social, while not new, are being dramatically amplified by the new technological contexts within which language exists, and that the emergence of non-human languages (which mimic human language or, more precisely, non-human agents whose material substrate for producing such language is code) requires us to radically rethink the philosophical assumption that language is a human made phenomena, and moreover to consider *why* that matters (fig. 2).

Figure 2. 000111111, by Aude Rouaux, 2016 (video: 15.42 minutes). Words are vocally performed, in binary code.

Language is rapidly changing, and migrating to machine-driven forms, which are increasingly detached from human modes of articulation and yet which possess great power to shape human actions and affect human identity as articulated through language. Artificial intelligence, artificial languages, speech/text recognition systems and other forms of mechanization, are changing the ways in which language relates to the human, and therefore, arguably changing what it means to *be* human. To consider these matters, In order to consider these matters I will here apply Heinz von Foerster's distinction between Trivial and Non-Trivial Machines to language, revisit Deleuzes' notion of 'The Event' (especially as it pertains to language), and consider Heidegger's reformulation of one of the classical law of thought, known as The Principle of Identity. Here he poses identity, not as a matter of direct equivalence between two things (A=A), but as a relation *between* them, located in the 'is', not what lies on either side (A *is* A). This will be relevant to the mimetic qualities of non-human languages and the possibilities of seeing what lies between human and non-human language.

To conclude, I will suggest that we might think of the relationship between human and non-human language as less a question of seeking equivalence between human and non-human language (currently based on mimicry) and more one of seeking a new relation (somewhere in between the two). I will briefly outline some practice-based experiments, which aim to explore this space, and which are in progress. The collaborative publishing and language research project 'one' (provisionally titled: ontological non-human editions), will seek to evaluate the potential for this in-between space of human/non-human languages and to break the dichotomy between the two.

The Trivial Machine vs. The Non-Trivial Machine

Within the context of mid-20th century writing on cybernetics, Heinz von Foerster proposed the notion of the 'Non-Trivial Machine'[7], referring to it as possessing the "well-defined properties of an abstract entity", and in so doing, posed a machine as not necessarily something with 'wheels and cogs'. Instead, a machine is "how a certain state is transformed into a different state".[8] Alan Turing previously described a machine as a set of rules and laws.[9] By these definitions a machine could be something immaterial, every bit as much as something physical, opening the way for code-as-machine. The important aspect of a 'Non-Trivial Machine', for von Foerster, is that its "input-output

169

relationship is not invariant, but is determined by the machine's previous output."[10] In other words, its previous steps determine its present reactions and so it is reactive, variant, and dynamic. In contrast, a 'Trivial Machine' would be one in which the input creates an invariant output. This kind of machine is inherently stable, and produces no fluctuations or errors: it's predictable. As such, by definition, a 'Non-Trivial Machine' would be one in which the output cannot be predicted from its input, constituting a machine which has agency, and autonomy. We might call these attributes 'intelligence', creativity, and the human propensity for unpredictability. Based on von Foerster's distinction, it seem clear that we are presently still operating in the realm of the 'Trivial Machine' with respect to non-human languages, including those produced by automated voice assistants or IBM's flagship debating technology 'Project Debater', since its operations lack agency and true linguistic contingency: they only mimic such effects, if ever more convincingly. Even 'Debater', which claims to engage in true discussion/argument with a human interlocutor, uses the power of its almost unlimited access to databases of information, thereafter constructing its arguments using a (vocal) linguistic interface which has been 'trained' in the art of classical rhetoric and persuasive debating techniques.[11]
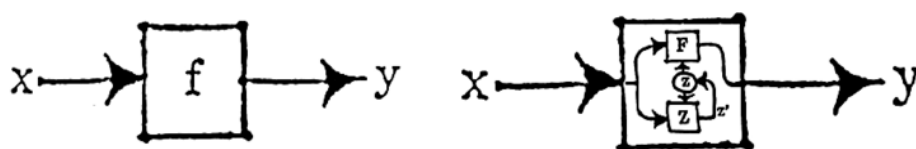

Figure 1. Heinz von Foerster's own drawings of his trivial (left) and non-trivial machines (right). On the left, the input-output relation is invariant. On the right, the input-output is variant and therefore unpredictable, since it's non-linear. The internal logic changes with every operator. In other words, in the trivial machine scenario, you won't get peppermint or condoms if you put a coin in chewing gum machine, but you might in a non-trivial machine (von Foerster and Poerkson, 1999, p.57).

We might therefore make an initial observation: human beings are (borrowing this definition), 'Non-Trivial Machines' by definition, because the input humans receive does not (always) result in a predetermined output. Their (immaterial) thought processes could be seen to correspond to von Foerster's notion of an abstract entity with well-defined properties. Absent of wheels and cogs, these processes are nonetheless real. Returning to our present subject: language, such processes are materialised through the interface of language, and these abstract cognitive process are evidenced in sounds and marks.

It follows that if humans are unpredictable: they interpret, subvert, alter and take ownership of language at the point of input, creating new forms, and bringing their subjectivity (including their identity/agency, along with the materiality and 'event' of language in time and space), into play. However, as a caveat, at the same time, what they produce is based on their previous interactions with language, and understanding of the rules, as well as those linguistic elements with which they are familiar (everyone shares and utilizes the same letterforms within a specific language). This is a paradox: language is both a site of intense non-trivial production (non-predictable input=output), but at the same time it works with pre-existing elements (predictable input), and to that extent it could (arguably), be called 'trivial' (input = output, predictable within those given limits). This is because, for example, we don't suddenly create new symbols within the existing chain of 26 letters in the Roman alphabet but accept that restriction of the linguistic/symbolic 'machine'. We don't normally rewrite the grammar and syntax, unless we are experimenting with form. Nonetheless, what we do with this input, despite its pre-given nature, is intrinsically unpredictable. As humans we generate the new, from the given.

These are not trivial questions. As we embark upon the full employment of artificial

language[s] as the interface between ourselves and machines, Siri, Amazon Echo, Watson, Chat-bots, to name just a few, we see that the trivial (input = output) model of AI is potentially moving closer to a non-trivial form of language. When Amazon Alexa starts creating poetry, connected to an autonomous thought process, we will be in the presence of the linguistic singularity, and we will know this because of the forms of language being used, and the ways in which the input/output conditions are changed. Alan Turing famously used written language as the basis of his test for the presence of machine intelligence: The Turing Test. However, the use of language on the part of the non-human writer within the test was 'trivial', for the purposes of this definition.

To summarise, the distinction offered by Heinz von Foerster states that in a 'trivial' machine, input and output can be predicted (reliable/mechanical). In 'non-trivial' machines the output is unpredictable and involves risk (unreliable/creative). However, I want to propose that, however distant, these distinctions are now under threat by the potential for an autonomous machine (AI), to exist on the non-trivial output side of the equation. The 'trivial machine' is fast becoming closer to being 'non-trivial', and this requires us to critique and reassess what language *is* and what we value in it. This requires a method of critiquing such language, leading to a further distinction posed by von Foerster: that between allo-observation and auto-observation. The method we apply to critiquing language relies on this distinction, which I will briefly summarize in the section to follow.

Allo/Auto-Observation of Language

As noted, language as the interface between ourselves and robots or 'intelligent assistants' such as Amazon echo (or other forms of artificial voice assistants), is still relatively trivial. We don't expect Watson or Siri to produce utterances or fragments of writing, which are autonomous (not input=output). Language produced by human beings on the other hand, is radically non-trivial. I cannot anticipate with any degree of reliability, what you will say next. Literature and poetry are unequivocally non-trivial, tethered to the human subject with its essential autonomy, but the trivial-machine will only demonstrate intelligence, when it starts speaking and writing to us, or other machines, non-trivially. This moves beyond the limits of Turing's test, which identified the presence of intelligence on a language-based demonstration. [V]on Foerster offers us a useful method of working through some of the complexities of this terrain, with another distinction, one which has been employed extensively by creative practitioners working with language, whether implicitly or explicitly.

"[V]on Foerster suggests that the non-trivial machine should change itself as a result of *auto*-observation: currently it does so as a result of *allo*-observation".[12]

Allo means different/other: a form of observation which comes from the outside of the subject under scrutiny, in the present example, language. Auto-observation would imply that the observation comes from within the subject: in this case, using language to examine language. The creative properties of material language would be used as a form/medium of investigation, and not give way to the hierarchy of imposing an explanatory meta language (which is a language which explains another language). Any use of a meta language poses problems, because it's difficult to critique language from 'a view from nowhere', and claim any degree of objectivity. Meta languages (arguably) fall foul of a contradiction: claiming to stand outside the subject, language is both the subject and the medium of any meta language.

In contrast, auto-observation would imply that the observation comes from *within* the subject (immanently), using language itself to examine language (without calling upon anything outside that language, to do the explaining). In this method the paradox/contradiction of language being both subject and medium paradox is embraced by exploring language from *within* language. The creative properties of material language are thus posed as a form, method, and means of investigation. The proposed creative works described at the end of this paper, do not revert to a meta language which would

'explain' such language. The work will proceed based on 'auto-observational' interventions, not 'allo-observational' techniques. In this way (as von Foerster suggests), the non-trivial machine should undergo *change*. Rather than describing a static state of affairs in language, using language to do so (again, in a meta language), the work will take a form of language (human/non-human or in-between), and immersively interrogate its primary conditions, from *within* that language as a creative medium.

In the next section I would also like to pose a further method, one of looking 'sideways' at language and of relieving it of its representational function, challenging the basic assumption that *identity* forms the ground of language, and that meaning, and therefore 'truth' can be established on the basis of what it refers to (put simply: what it represents/points to, beyond itself). In place of mimesis (taken here to mean representation), thinkers such as Deleuze and Guattari, and also Derrida suggest that an alternative 'logic of representation'[13] is possible, one where an 'a-signifying, a-syntactic material'[14] forms the ground for a discretely different grammar. This in turn brings forth other forms of understanding, or: "an essentially heterogeneous reality"[15] Deleuze and Guattari explain how: "A method of the Rhizome type [on the contrary], can analyse language only by decentering it onto other dimensions and other registers", suggesting that language can only be scrutinized sideways, tangentially, without looking directly at the object itself. This may seem contradictory to the notion of an auto-observational method of interrogating language from within language. However, these might also be seen as complementary methods, since each asks us to relieve language of its straightforward representational function and look at it afresh. There are two further considerations of the trivial/non-trivial machine analogy which I would like to introduce with respect to non-human/human language: identity and the event. For this I will attempt to simplify some fairly complex philosophical remarks by both Heidegger and Deleuze.

Language and Identity/The Event

The Principle of Identity is also known as the Law of Identity. In its simplest form it states that A=A. This can be seen in the following examples:

"A rose is a rose is a rose is a rose"— Gertrude Stein, from the poem 'Sacred Emily', 1913.

"The number 1 is self-identical" — Gottlob Frege, *The Foundations of Mathematics*, 1884.

The first primitive truth of reason is stated as a self-referring form of identity: "Everything is what it is"— Gottfried Leibniz, *Nouv. Ess.* IV, 2, § i.

Challenging this classic law of thought known as The Principle of Identity, which takes as a given that A=A, Heidegger, in his lectures from 1957, wants to rethink the principle of identity as one of relation (with the emphasis on the relation), rather than one in which the terms being related take precedence. A=A therefore becomes A *is* A, where the 'is' takes precedence over the identities of the individual A's. This represents a move away from metaphysics, which always casts the same as a self-unity. Heidegger states that, in its place, "The event of appropriation… should now serve as the key term in the service of thinking."[16]

The 'event of appropriation' is a singularity [an event] which delivers over beings into Being. Whereas metaphysics asserts that identity *presupposes* Being (Being is subservient to identity: identity is its ground[ing]). In the event as posed, identity is recast as the relationship between the *together* in terms of the *belonging*, and not in favour of the terms being related. Perdurance is the term Heidegger uses for the simultaneous withholding and closure of the space between the terms; one which is forever in a state of oscillation between them.

In Heidegger's conception of the event of appropriation, language itself provides the tools for this type of thought, since through its "self-suspended structure", language holds everything in a fragile, delicate, susceptible framework, one which is infinitely collapsible at any point.

The event of appropriation is thus to be found, and is founded, in language; in that "self-vibrating realm" where we dwell. Heidegger states it in this way: "The doctrine of Metaphysics represents identity as a fundamental characteristic of Being."[17] To 'Be' is to be identified. He wants to challenge this.

In Heidegger's new formulation, the essential quality of identity is to be found within the event of appropriation (in the "self-vibration realm"). Where Metaphysics presupposes that Being is the ground of beings, and forms its identity; gives it its characteristics, the 'spring' away from identity as posed by the concrete relation A=A, constitutes a leap into the relative 'abyss' of the event of appropriation, where stable identity gives way to a less familiar way of thinking and being. However, this abyss is not a place of loss or confusion, but the space of a more originary relation of identity, one which retains difference, and where the vibration, or oscillation between beings and Being is retained, and Heidegger thinks this is place of true Being. Thinking is also transformed by this movement, and the "essential origin of identity" is retained through that which joins and separates them, simultaneously (he calls this simultaneous process of opening and closing, perdurance).

As Nietzsche also reminds us, this is a game of speed and intensity; one which denies a stable/causal ground for meaning, and we can apply this observation directly to language as well as his subject of logic: "Causality eludes us; to suppose a direct causal link between thoughts, as logic does–that is the consequence of the crudest and clumsiest observation. Between two thoughts, all kinds of affects play their game: but their motions are too fast, therefore we fail to recognize them, we deny them."[18] Much of what happens in logic (and by extension, other forms of language) takes place, Nietzsche claims, beyond the radar screen, since the non-metaphysical, affective attributes of language, including speed and intensity, are denied. To claim that causality is a simple relation (as logic does), is too simplistic a position. Not everything can be (nor should be) stated unambiguously, and thought should strain against its own limits, in search of conceptual integrity.[19] It's this space of encounter with the non-causal affects of language which intrigues and informs the present work, since it requires us to think of language (human and non-human) as something which operates on a far more complex 'plane' than that of straightforward representation. If we are to move beyond mimesis and mere mimicry of human language, then we need to move beyond simple notions of identity and recognize the complexity of language.

The speed and intensity at which such effects operates within language reminds us of Walter Benjamin's claim that thought necessarily involves the discontinuous presentation of 'fragments of thoughts'[20], set in an interruptive relationship of infinite detours. Coherence is to be found in the 'flashes' and gaps between perceptible knowledge; not in the coherent sequencing of ideas, or in the relatively uncomplicated collision of ideas and their presentation. Dissolution and dissonance, rather than denotation; polyphony, rather than homophony; elision, rather than elucidation, bring meaning [truth] into view. Ideas precede presentation, but are only to be sought in the interstices, the oblique, the constellatory. Benjamin explains the constellation as the place where: "[I]deas are not represented in themselves, but solely and exclusively in an arrangement of concrete elements in the concept: as the configuration of these elements… Ideas are to objects as constellations are to stars."[21]

Finally, Goethe, in his *Scientific Studies* points to a second and fundamental difficulty with correspondence theories of truth, grounded in identity: "How difficult it is… to refrain from replacing the thing with its sign, to keep the object alive before us instead of killing it with the word."[22] I will briefly turn to come comments on the notion of the 'event' in language,

The Event

Michel Foucault, in *Theatrum Philosophicum*, shows how Gilles Deleuze rejects, for thinking, the model of the circle, with its promise of closure, centre and certainty, in

favour of 'fibrils and bifurcations', which open out onto extended and unanticipated series, and defy principles of organization. In Foucault's own words:

'As Deleuze has said to me, however… there is no heart, there is no centering, only decenterings, series, from one to another, with the limp of a presence and an absence of an excess, of a deficiency'[23]

Similarly, Nietzsche directly confronts the concept of a 'ground'[24], upon which to base a philosophy, offering instead, a deconstruction, or critique of the tradition. Thinking against 'the reason and fetish of the totality'[25], he seeks to dismantle the 'universal' account, replacing it with a series of fragmentary, unstable perspectives on truth, knowledge, and subjectivity: "For Nietzsche, the world consists of an absolute parallax, infinite points of view determined and defined by, and within, a fragmented poetic fabrication"[26]. In other words: shifting objects and observers, coupled with shifting positions, produces shifting meaning, and it is through the fragmentary, aphoristic style of his writing that Nietzsche articulates this unstable plurality. The correspondence between Nietzsche and Deleuze's approach is clear. Similarly, as previously seen, Walter Benjamin proposes that "meaning hangs loosely, as departure, tangentially, like a royal robe with ample folds"[27] and that in language: "Fragments of a vessel which are to be glued together... need not to be like another... as fragments of a greater language."[28] Each view language itself as a productive site of philosophical critique, and question its ability to provide singular, unambiguous and final meaning (based on a stable identity).[29]

For Deleuze, there is 'something else' operating in language, but this 'something' (the event), is not describable by simple observation; it is not able to be represented, but nonetheless makes expression possible. In *The Logic of Sense* Deleuze attempts to show how the 'event' 'haunts' language. The 'event', which is synonymous with the unspoken, and incorporeal; the unrepresentable, nonetheless makes language possible, subsisting in language as its primary means of expression; partaking in the moment of expression and being both indistinguishable from it, and entirely different from it, at the same time:

"The expression, which differs in nature from the representation, acts no less as that which is enveloped (or not) inside the representation… Representation must encompass an expression which it does not represent, but without which it would not be 'comprehensive', and would have truth only by chance or from outside."[30]

Representation is problematic for Deleuze, since it is extrinsic by nature, operating on the basis of resemblance, or mimesis; exclusively externalized (fixed, static, immobilised and invariant). However, the 'something' (the event) which consistently escapes this manner of representation is a matter internal to the expression (enveloped, or subsisting within it), providing its fully 'comprehensive' character while remaining enigmatically inexpressible. Representation on this account is always abstract and empty, incomplete and unfulfilled. As with those non-human language which seek to mimic the human forms, such representations are always empty of the fullness supplied by the 'event', since, according to Deleuze, without the event, representation would remain 'lifeless and senseless'. In short: for Deleuze, the 'extra-representative' exceeds the functional, while the tension between the representable and the non-representable is that which makes possible the fullest form of representation:

"Representation envelops the event in another nature, it envelops it at its borders, it stretches until this point, and it brings about this lining or hem. This is the operation which defines living usage, to the extent that representation, when it does not reach this point, remains only a dead letter confronting that which it represents, and stupid in its representiveness".[31]

Differently stated, Deleuze proposes an expression which is both internal and invisible to language, but nonetheless intrinsic and crucial to meaning; something unrepresentable but irreducible and essential. This refers us back to von Foerster's notion of the Non-

Trivial in language. Whilst language continues to be merely replicated in non-human systems, it is this 'event' which is missing, and which denies the fullness of language. It's found in the poem, the performance of language, and the relationship between the agency of the thinking human subject and the language being performed. It's also found in the tension between linguistic utterances (speech/writing) made by human beings and those made by machines, which (at the time of writing), lack agency and comprehension: we might think od this as the 'eventness' of language as produced by human beings, one which requires Heidegger's 'oscillation', in place of static identity. Thought in this way, human language retains instability and event-ness or presence in ways which non-human languages lack. Reliant in mimicry and without agency, they nonetheless remind us of what is missing in such languages, and what language is for human beings: irreducible evidence of the human propensity for creation, the non-identical and the unpredictable.

Deleuze criticizes the structuralist proposal of language as a system of signifiers, one which presupposes a referent (the world), upon which meaning is imposed or found. His difficulty is that in structuralism, language is seen as transcendent, it stands to re-present the world as given to us, through a system of signs (which transcend that reality: a meta language, as discussed previously). It constructs and represents some 'outside' world, while being independent from that world. Deleuze wants to suggest instead, that signs run throughout life, in forms such as genetic codes, biological processes, and computer actions; that there are only events, not stable meanings. "it is the myth of representation that separates man from an inert and passive world that he then brings to language".[32] Instead, he wants to say that:

'Words are genuine intensities within certain aesthetic systems'. Once communication between diverse, or heterogeneous series is established, all kinds of consequences follow. "Something 'passes' between the borders, events explode, phenomena flash, like thunder and lightening. Spatio-temporal dynamisms fill the system, expressing simultaneously the resonance of the coupled series and the amplitude of the forced movement which exceeds them".[33]

Deleuze objects to the structuralist programme on the basis that that before signs are *extensive*, or representational, they are first of all *intensive*. This is amplified and demonstrated by the various ways in which artists, designers, poets, have explored and exploited the intensive nature of language, and in doing so, have pointed to an alternative 'truth' of language: one which embraces paradox, diversity, and a-logicality. For Deleuze, this affective, intensive dimension of language is its primary 'event'; rhythmic, creative, infinitely productive, or non-trivial. Instead of doubling a pre-given world, language *produces* it. Nonsense literature, such as Lewis Carroll's 'Snark', in his poem *The Hunting of the Snark*, and 'The Jabberwocky' from *Through the Looking Glass*, in which no referents exist, shows how language still has a sense, despite its lack of concrete referent, and reveals how language is 'active creation', rather than 'reactive representation'.[34] Moreover, sense is not reducible to the singular meanings of a language, it is what allows a language to be meaningful, it is not attachable to each instance of language, but is a method of thinking about or approaching things, in which we see language's power to transform itself via the proliferation of meanings, and intensive affects (events).

Representational painting or literature points beyond itself to an external world (secondarity); it is essentially 'about' something other than itself. It is referential. Conceptual art, including art about the *act* of making art, or about the surface of the work, is self-referring. In the same respect, non-representational language directs attention towards itself; towards languages' sensory, affective qualities, and this 'concrete visual order of signifiers' takes precedence in any semiotic account of it. Drawing attention to language as an event, as an image of itself, from within itself, based on auto-observation, reveals a phenomenon with its own characteristics and immanent qualities. We learn something about language's limits and possibilities; its inherent instability, as well as its productivity, when contemplating its non-referential character as a pure event. This is the auto-observation of the 'Non-Trivial Machine', as posed by von Foerster.

Conclusion

Philosophy cannot as yet account for the emergence of non-human language since it commences from the assumption that language is produced by human beings. This paper has offered insights into the theoretical ground for a new body of creative work, which emerges from a close investigation of the 'new' conditions of a language which is rapidly migrating to machines. Advances in AI technologies use increasingly sophisticated replications of human language as their interfaces. Much has been produced creatively (and written) about AI. However, little detailed attention is being paid to such 'machinic' language, as the key means by which we will come to accept AI. This prompts a revisitation of the significance, value, and purpose of language for humans, alongside exploring the potential for hybrid/emergent forms of human/machine language to emerge. The creative method will be to work with the cybernetic theory outlined in the mid-20thC by Heinz Von Foerster, for whom 'Trivial Machines' are those in which the input and output are predictable, while 'Non-Trivial Machines' are highly unpredictable. It's clear that although significant advances have been made within Natural Language Processing, Voice Recognition, etc., that we are still very much in the 'Trivial' zone in terms of machine-replicated language: input equals output. However, humans are by definition 'Non-Trivial Machines' in terms of how they use/inhabit language, which is highly autonomous, unpredictable, and creative. Rethinking the relationship between language and identity and posing language as an event, allows us to loosen the ties between language and its role in representation: it places the emphasis *elsewhere*. If we rethink how we presently configure such languages, to be less concerned with replicating human language (spoken/written) and more on such creative potential, then we might be able to see a new role for non-human language as a creative force, closing the gap between these trivial and non-trivial machines and creating a hybrid, collaborative somewhere between these two polar opposites.

The Non-Trivial [Language] Machines

In response to these questions, a series of workshops and projects under the provisional tiles listed below are under development. Participants will include technology experts, artists, writers, philosophers, poets and 'other' If you are interested in being involved in any of these experiments, please contact sheena.calvert@btinternet.com.

The focus within the creative works will be on exploring autonomy and imitation as the fundamental basis of the human/machine duality. What happens when that duality is less clear-cut? What creative potential can be tapped into, within the collision (and collusion) between humans and machines, across the interface[s] of language? We will create trivial/non-trivial machines (based on language), to both explore this potential, and expose its limits.

1. Chaosmos, or Materia Prima (What *is* Language?)

'Chaosmos' is James Joyce's term for the way in which order comes from chaos (comprised of the raw materials of the universe), but not before it has moved to the limits of comprehension; prior to it becoming (in this case), language/literature/art. Chaosmos might be thought of as a 'composed chaos (but something neither foreseen nor preconceived)', which emerges out of a temporary alignment of images/sensations/ actions. In this initial experiment, the emphasis will be on working within an intentional form of linguistic chaos; a 'Materia Prima' (the primary materials of language), which precedes meaning. Random fragments of not-yet-language will be the medium, in writing, sound and drawing. The resulting work will be unknown; forged on the chaos of randomness and the randomness of chaos. This experiment is intended to draw attention to how language is arbitrary, and yet constructs a world for us. However, before we get to meaningful marks/sounds and/or conventional codes (human or otherwise), there is nothing but 'wandering'.

2. Materia Secunda/Enactment (What is Code?)

Within alchemy, 'Materia Secunda' is the second phase of the emergence of meaning. It takes the raw materials of language (the Material Prima) and produces meaning from agreed codes, creating coherent patterns and systems. In this experiment, the participants will examine *codes*, with a view to seeing how they are inherently artificial, even before they become aligned with the digital, and afterward, the machine. Codes (numerical or otherwise) are a conceit of the human intellect and yet they contain infinite potential to create meaningful utterance and gestures. Working with people from philosophy, and technology/science, this experiment will examine codes in detail and consider how 'to code' is 'to create'.

3. Imitation Game[s] (What is a Machine?)

To imitate is to mimic, to mimic is to replicate, to replicate is to repeat and to repeat does not imply creation, but simple adherence to the original (perhaps). We replicate language within AI systems, but we don't yet have the capacity to re-code its raw materials (imitative forms of language), to create new patterns, or to perform unexpected language games. AI is still a trivial machine at this point in time. However, advances in robotics, and automation mean that we are moving ever closer to the point where autonomous creation is possible, not just imitation; resulting in a Non-Trivial Machine. By the time of this last experiment, we expect that technological developments will have advanced to the degree that we can glimpse the potential for 'non-imitative' technologies of voice and language; ones nonetheless produced by algorithms.

4. one

'one' stands for (amongst other things): 'ontologies of non-human expression', and is a collaborative project, focusing in particular on both the limits and potential of non-human publishing. A group of designers, artists, theorists and educators Jack Clarke, Joshua Trees, Yvan Martinez, Robert Hetherington and Sheena Calvert formed this group in late 2019, in response to shared questions about the shifting relationship between humans, machines and published work (books, texts and 'other'). We started by revisiting the premise that to 'publish' is the act of making public, and, within that broad definition which we aim to refines as the research progresses, proposing to consider the implications of autonomy, agency, automation and algorithmic production, in published work produced by human and non-human agents. The intention is to interrupt our present understanding of how humans and machines both produce and disseminate such outputs. 'one' is at the same time a practice-based, and a theoretical project, involving writings, practice-based experiments and performative modes of dissemination. We are interested in the relationship between the reader and the read, and in asking the question: Is non-human publishing changing the relationship between the seen (the published) and the seeing subject (the 'reader')? Ultimately, what if only machines are reading? By examining the social relations that underpin such technologies, we hope to raise some important questions about the ways in which non-human publishing challenges the definition of that term, as well as revisiting the central role of language and published expression in human life.

The non-trivial machine distinction will create a space for one of the first experiments of this newly formed research group. By asking software to generate as many possible versions of the 'one' acronym/title, we can (playfully) see how and where machines are able to generate meaningful phrases. However, this will also be trivial, since the input is simply the store of possible words, in random combination, without an acknowledgment of languages' social context. We will publish this list as a first act of non-human publishing.

Notes

[1] Friedrich Kittler, *Gramophone, Film, Typewriter* (California, Stanford, 1999)

[2] Friedrich Nietzsche, letter of March 17, 1882, in idem 1975–84, pt.3, 1: 180.

[3] Friedrich Nietzsche, letter toward the end of February, in F. Nietzsche *Briefwechsel: Kritische Gesamtausgabe*, G. Colli and M. Montinari (eds), Berlin, 1975 – 84, pt. 3, 1: 172.

[4] Angelo Beyerlen, the royal stenographer of Wiirttemberg, quoted in Herbertz, 1909, 559.

[5] Film: *Threads*, September 23rd, (BBC, 1984).

[6] Plato, *Phaedrus*, 370 B.C. Socrates (recounting a dialogue between Thueth and Thamos), questions the role of written language in supporting memory, and claims it will damage that facility in humans. 'letters' "… will create forgetfulness in the learners' souls…"

[7] Heinz von Foerster. *Understanding Understanding: Essays on Cybernetics and Cognition* (New York: Springer, 2003).

[8] Heinz von Foerster (2003).

[9] For Alan Turing, a 'machine' could be a set of set of rules and laws, i.e., mathematical/procedural, hence: a 'Turing Machine'. Cf: Turing, A.M. (1936). 'On Computable Numbers, with an Application to the Entscheidungsproblem'. Proceedings of the London Mathematical Society. 2 (published 1937). 42: 230–265. Also, 1948, 'Intelligent Machinery'. Reprinted in *Cybernetics: Key Papers*, Ed. C.R. Evans and A.D.J. Robertson. (Baltimore, University Park Press, 1968). p. 31.

[10] Heinz von Foerster (2003).

[11] For more information on Project Debater, see: https:// artificial-intelligence/project-debater/www.research.ibm.com/

[12] Heinz von Foerster (2003).

[13] Jacques Derrida, *Points… Interviews, 1974-1994,* Ed. Elizabeth Weber (California: Stanford, 1995), p.75.

[14] Deleuze, *Cinema 2: The Time-Image* (University of Minnesota, 1984), pp 43-44

[15] Deleuze and Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (University of Minnesota Press, 1987). D + G preface their remarks about heterogeneity with: "A semiotic chain is like a tuber agglomerating very diverse acts, not only linguistic, but also perceptive, mimetic, gestural, and cognitive: there is no language in itself, nor are there any linguistic universals, only a throng of dialects, patois, slangs, and specialized languages. There is no ideal speaker-listener, any more than there is a homogeneous linguistic community". p.7

[16] Martin Heidegger, *Identity and Difference*, (Chicago University Press, 2002), p. 36.

[17] Ibid. p. 38.

[18] Friedrich Nietzsche, *Will to Power*, Translated by W. A. Kaufmann and R. J. Hollingdale, (Vintage Books, 1967), p. 477.

[19] Theodor Adorno, *Negative Dialectics, The Disenchantment of the Concept* (Routledge, 1990). Adorno states: "Initially, such concepts as that of "being" at the start of Hegel's Logic emphatically mean non-conceptualities; as Lask put it, they "mean beyond themselves." Dissatisfaction with their own conceptuality is part of their meaning, though the inclusion of non-conceptuality in their meaning makes it tendentially their equal and thus keeps them trapped within themselves". p12.

[20] See: *Walter Benjamin, Selected Writings*, Volumes 1/2/3, edited by H. Eiland and M. W. Jennings (Harvard University Press, 2006).

[21] Walter Benjamin, the 'Epistemo-Critical Prologue' to *Ursprung des deutschen Trauerspiels* (1928), translated as *The Origin of German Tragic Drama* (1977).

[22] Johann Goethe, *Scientific Studies, The Collected Works,* ed. D. Miller (Princeton University Press, 1995).

[23] Michel Foucault: *Aesthetics, Method and Epistemology.* Edited by J. D. Faubion, and Translated by R. Hurley and others. (New York: The New Press, 1998).

[24] G. B. Madison, *Coping with Nietzsche's Legacy: Rorty, Derrida, Gadamer, The Politics of Postmodernity*, Essays in Applied Hermeneutics (2001), p.1

[25] Terry Eagleton, Awakening from modernity. *Times Literary Supplement*, 20th February (1987).

[26] Stephen Barker, *Nietzsche/Derrida, Blanchot/Beckett:Fragmentary Progressions of the Unnamable (*California, 1995).

[27] Walter Benjamin, 'The Task of the Translator', in *Illuminations*, trans. Harry Zohn, (London, Fontana, 1992), pp. 70-82.

[28] Ibid.

[29] In the *Genealogy of Morals* (1887), Nietzsche throws out a strident challenge that even those philosophers of the 'modern' era, who grounded understanding in science and mathematics are shadowed by the same pursuit: "They are far from being Free Spirits: for they still have faith in truth. Quoted in G. B. Madison, *Coping with Nietzsche's Legacy in* Philosophy Today 36 (1):3- 19 (1992). p.1

[30] Gilles Deleuze, *The Logic of Sense,* Twentieth series (1969) *Logique du sens* (Paris: Minuit); tr. as *The Logic of Sense*, by M. Lester with C. Stivale (New York: Columbia University Press, 1990). p.145.

[31] Gilles Deleuze, *The Logic of Sense*, p. 146.

[32] Claire Colebrook, *Deleuze,* Routledge Critical Thinkers series (Routledge, 2002). p. 108.

[33] Gilles Deleuze, *Difference and Repetition.* Translated by P. Patton. (London: The Athlone Press, 1994). p.118.

[34] Claire Colebrook, *Deleuze,* Routledge Critical Thinkers Series (Routledge, 2002).

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