Hybrid Animism: The Sensing Surfaces of Planetary Computation

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Abstract: This article proposes to examine animism through the perspective provided by a notion of immanent matter drawn on process philosophy (Spinoza, Deleuze and Guattari), and quantum physics (Bohm, Rovelli). It then deploys this perspective to illuminate how planetary computation - the impact of digital media technologies on a planetary scale - is rewiring the cognitive, affective, perceptual capacities of the human. The article puts forward the notion of *hybrid* animism, as a speculative and imaginative philosophical fiction ('philoso-fiction') to grasp planetary computation as a sensorial pan- affective event, and to account for the hybrid techno-digital ecologies humans already inhabit, characterised by ongoing modulation, sensorial intensification and pervasive distribution of computational matter across a plethora of screens, surfaces and surroundings. The value of this proposition, the article explains, is to eschew dominant techno-deterministic narratives: not only techno-euphoria and techno-dystopia, but also the notion of technology as enchantment, with its in-built mystification. By deploying the philoso-fiction of hybrid animism and the un- mediated intuitive sensorial grasp it fosters, planetary computation can begin to be immediately perceived as the expression of new modes of co-habitation and co- evolution of the human and the nonhuman. Finally, the article brings together the nonhuman mutating surfaces of digital matter with cephalopods' skins to vividly and speculatively illustrate hybrid animism as a thought experiment of sorts.

Keywords
Hybrid animism, planetary computation, immanent matter, Spinoza.

All things, although in diverse grades, are animate.[1]

Not every organism has a brain, and not all life is organic, but everywhere there are forces that constitute microbrains, or an inorganic life of things. [2]

INTRODUCTION

Much has been written about animism in recent years. A growing and eclectic literature addresses the 'animistic turn' at the intersection of anthropology[3] and archaeology,[4] highlighting animism as the blind spot of modernity,[5]

1. Spinoza, II P13 S, *Ethics*, London, Everyman, 1993.

2. Gilles Deleuze and Félix Guattari, *What is Philosophy?* London, New York, Verso 1994, p213.

3. Alf Hornborg, 'Animism, Fetishism and Objectivism as Strategies for Knowing (or Not Knowing) the World', *Ethnos. Journal of Anthropology*, 71,1, 2006, pp22-32; Tim Ingold, 'Rethinking the Animate, Re-Animating Thought', *Ethnos*, 71,1, 2006, pp9-20.

4. Martin Holbraad, 'Ontology, Ethnography, Archaeology: an Afterword on the Ontography of Things', *Cambridge Archeological Journal*, Special Section Animating Archaeology: Of Subjects, Objects and Alternative Ontologies, 19, 3, 2009, pp431-441.

5. Bruno Latour, 'An Attempt at a 'Compositionist Manifesto',' *New Literary History,* 41, 3, Baltimore, John Hopkins University Press, 2010, pp471-490.

6. Isabelle Stengers,

and as a deep-seated conceptual framework that needs reclaiming.[6] It is on animism that a new relational ontology is predicated,[7] one that would underpin those 'respectful relationships with other persons' eloquently described by Graham Harvey (2005) for whom animists are 'people who recognise that the world is full of persons, only some of whom are human, and that life is always lived in relationship with others'.[8]

A range of reconceptualisations of animism – variously inspired by perspectivism, relational epistemology, multinaturalism – have questioned the boundaries between the human and the nonhuman, the animate and the inanimate, the social and the material world. In a radical revision of its own positivist legacy, contemporary anthropology has taken animism not only as the ultimate disruptor of taxonomies, especially as far as the ontological distinction between the living and the non-living is concerned, but also a conceptual framework affording the co-existence of a multitude of entities that can be very different as far as the notion of life they express is concerned. Thus, animism has been refashioned as a vehicle that expresses radically different ontologies, where the plural 'ontologies' acknowledges the polyphonic, polymorphic and assembled character intrinsic in the making and unmaking of multiple worlds. Not only do these perspectives trouble the original Eurocentric positivist framing of animism as an un-enlightened, un-developed, primitive epistemology. What is more, they shine a light on, and widen, the fracture inherent to the whole modern disenchantment project whose drive to separate (and create hierarchical taxonomies out of) subject and object has scaffolded the epistemic violence of modernity. This is also why it can be said that animism has never really gone away. On the contrary, witnessing how humans keep on relating to (and talking with) inanimate objects – especially our digital companions, smartphones and voice-activated assistants like Siri and Echo – plenty of evidence indicates that an animist sensibility is still permeating human behaviour. This is less a nostalgic legacy of pre-modern attributes, and more an instinctive, affective, aesthetic, relational *un-mediated* response to the world (of things, of the other-than-human, of invisible forces), which is producing sense-making modes that bypass the dualism rational/ irrational, culture/nature, modern/nonmodern.

Animism has become a mirror upon which a plethora of notions concerning the human and the nonhuman are projected (and reflected by), a sort of optical device through which to observe the way in which modernity has conceptualised, implemented, and transgressed boundaries functional to its self-identity. Beyond the rhetoric of the lens, however, with its postulate of seer and seen, animism may be taken as the signpost for fluctuating significations: a yielding, perhaps slippery, and yet remarkably *thick* notion affording novel, wide-ranging and surprising conceptual agglutinations.[9]

Indeed, as it has been suggested, animism is an archipelago of multifaceted figurations that keep on morphing to afford a variety of positions and perspectives on how the world can be sensed.[10] Animism's conceptual

'Reclaiming Animism', e-flux, 36, 2012.

7. Nurit Bird-David, 'Animism' Revisited: Personhood, Environment and Relational Epistemology', *Current Anthropology*, 40, Special Issue. 'Culture. A Second Chance?', Chicago, The University of Chicago Press, 1999, pp67-91.

8. Graham Harvey, *Animism. Respecting the Living World,* London, Hurst & Company, 2005, pxi. Marilyn Strathern, *The Gender of the Gift*, Berkeley, University of California Press, 1988.

9. Historian Ken Alder describes things as 'thick' when their complicated enmeshing of materiality and meanings turn them into partial negotiations. Ken Alder, 'Introduction. Focus: Thick Things,' *Isis,* 98, 2007, pp80-83.

10. Philippe Descola, 'Beyond Nature and Culture. The Traffic of Souls', *HAU: Journal of Ethnographic Theory*, 2, 1, 2012, pp473-500.

'plasticity' is even more significant (not to mention timely) because it furnishes us with ways of troubling the kind of relationships we humans entertain with the other-than-human, thus offering a way of interpreting modes of sensing, perceiving and experiencing the planet as a whole undivided *oikos*. Taken in this way animism has a huge untapped potential: it can make us question worn out structures of thoughts, illuminate ways to reconsider them and offer significant practical and ethical avenues for experimenting with new modes of existence. In short, influenced by new materialism, agency theory and radical anthropology, contemporary animism insists on problematising the boundaries between the social world of the human (the animate) and the material world of the nonhuman (the inanimate), thus prompting a rethinking of the onto-epistemological distinction between the living and the non-living. It is precisely this problematising that will be considered herewith with the purpose of reassessing human interaction with the increasing animation and 'sentience' of techno-digital objects.

ANIMISM AND PLANETARY COMPUTATION

The present article is the fifth instalment of a decade-long project through which I have explored different aspects of animism – the ineffable power of relics, animism's relations to object theory and design, animism as a speculative fiction to re-imagine human-machine interaction as ecologies between the human and the nonhuman, and algorithm-driven techno-animism. Building on this wide-ranging inquiry, my intention with this article is to consider another facet of animism and mobilise it for the investigation of current techno-digital media ecologies. Specifically, I would like to suggest that to examine animism through the perspective provided by a radical notion of matter as production, immanence and sensibility is a perspective particularly suited to the analysis of the condition known as 'planetary computation'. Planetary computation can be broadly defined as the impact of digital media technologies on a planetary scale.[11] It is characterised by the pervasiveness of digital technologies and infrastructures. What marks planetary computation as a distinctive experience is the shift from mediation to *immediation*, whereby information is increasingly sensed and perceived affectively and aesthetically rather than 'understood'. This process produces types of sense-making where signification is no longer located in objects but emerges from communicating systems and agents operating as a general hum beyond or below human perception, a mutation that is effectively rewiring our human cognitive abilities and capacities to understand, to feel, and to perceive. The expression 'planetary computation' should not be however misinterpreted as signifying just the quantifiable access to digital services all over the world. Even though to date almost 60 per cent of the global population is online, and corporate giants such as Facebook can boast over 2.7 billion monthly active users, the 'planetary' in planetary computation concerns the inescapable extractivist

11. Mark B. N. Hansen, *Feed-Forward: On the Future of Twenty-First-Century Media*, Chicago and London, The University of Chicago Press, 2015; Erich Horl, Nelly, Y. Pinkrah and Lotte Warnsholdt (eds), *Critique and the Digital,* Zurich, Diaphanes, 2021.

nature of computation, which is harvesting resources that are both human (time, attention, labour) and nonhuman (rare minerals, natural reserves), thus accelerating social inequality and ecocide on a global scale. This is the sense in which computation is now unavoidably planetary.[12]

From this standpoint the article asks: Could animism be used as a diffractor to inform a reading of our encounter with technicity that can account for and underscore the currents of 'animistic sensibility' already present in our dealing with the digital – without necessarily resorting to anthropomorphisation, naive animation or cute playfulness? Can we craft a version of animism as a novel form of animistic storytelling fit for the planetary computation experience to frame and grasp the sense-making processes already emerging from how techno-digital machines are redesigning what counts as human? Given animism's plastic conceptual potential, and its capacity to harbour and nourish at once the material, the spiritual, the intuitive, the ineffable, the invisible, framing this proposal as a techno-digital animistic storytelling, in ways that are both speculative and imaginative, may afford the theoretical flexibility that the circumstances dictated by planetary computation seem to require.

12. Matteo Pasquinelli and Vladan Joler, 'The Nooscope Manifested: Artificial Intelligence as Instrument of Knowledge Extractivism', AI and Society, 2020.

ANIMISM AND IMMANENT MATTER

The version of animism I champion here would offer a way of knowing and making sense of planetary computation through the philosophical framework of immanent matter. This is not to discount other versions of animism. Simply put, it is an attempt to articulate the animacy of things by focusing on what Gilles Deleuze and Félix Guattari, among others, have described as the apersonal, nonorganic, material flows prior to any differentiation and individuation.[13] Moreover, it also pick up on Guattari's lifelong interest in animism, especially Japanese, as a strategy able to instigate different paths of subjectification.[14] By paying undivided attention to matter, the hope is to reframe animistically how computation is experienced, and to intensify the animistic sensibility already present in computation's impact on, and entanglement with, the human-nonhuman sensorium.

The radical materialist legacy I draw upon tells us that every encounter among differently material entities is always the encounter of different affective horizons (Spinoza). It hints to matter's capacity to sense and proposes that sensibility is a general property of matter. It also reminds us that every time an encounter takes place there is an element of unpredictability. I take the irruption of contingency and chance as constitutive of materiality. It is this material indeterminacy, both aleatory and sensuous, that calls for a kind of pre-reflective, pre-subjective, animistic sensibility, capable to grasp potential, and to disclose 'the things and elements that surround us not as inert objects but as expressive subjects, entities, powers, potencies'.[15]

An idea common to the various reconceptualisations of animism seen

13. Gilles Deleuze and Félix Guattari, *A Thousand Plateaus. Capitalism and Schizophrenia,* London, The Athlone Press, 1988; Gilles Deleuze and Félix Guattari, *What is Philosophy?* London, New York, Verso, 1994.

14. Angela Melitopoulos and Maurizio Lazzarato, 'Machinic Animism', *Deleuze Studies,* 6,2, 2012, pp240-249.

15. David Abram, *The Spell of the Sensuous,* New York, Random House, 1996, p130.

earlier is that animism can be used as a sort of 'epistemological picklock' to disrupt established binary ontologies on the ground of a radical relationality. Could this manoeuvre be pushed even further to take animism as a disruptor not only of relationality but of *rationality* itself with its enshrined primacy of human cognition, personhood and human exceptionalism? This would be necessary if we want to nourish a reflection on the impact of planetary computation on the human that questions, for instance, the mythmaking and techno-deterministic discourses circulating around artificial intelligence (AI).[16]

I would like to suggest that diffracting animism through radical materialism can offer insights to rethink the encounter between the human and the nonhumanity of techno-digital machines. To do so, I propose an animistic 'philoso-fiction' as a way nurturing imagination in how knowledge is made. Moreover, I propose to locate this 'philoso-fiction' in a dialogue with a constellation of voices across process philosophy and critical technology studies (and quantum physics too), thus strategically positioned at the crossover of ideas and figures of thought around matter, computation, and the manifold animation of the human and nonhuman world.

16. Kate Crawford, *Atlas of AI. Power, Politics, and the Planetary Costs of Artificial Intelligence*, New Haven and London, Yale University Press, 2021.

HYBRID ANIMISM: A PHILOSO-FICTION

It is because of this crossover of ideas and perspectives that I call this approach *hybrid* animism. The notion of the 'hybrid' points to three distinct objectives. First, hybrid stands for the willingness to capture the animistic sensibility already existing in our relationship with inanimate things, and specifically with techno-digital objects - here is where Japanese techno-animism, with its merging of technological innovation and spiritual practice, plays an important role. Then, it stands for the attempt to describe the carbon-silicon animacies, the synthetic alliances and hybridised forms circulating in the unfolding of computational (computed and computing) matter – here is where we find Spinoza's immanent matter. Finally, hybrid stands for the intention to signal the value of a transdisciplinary perspective that reads animism diffractively across process philosophies and the critical analysis of computation, and hinges on this reading to formulate a nondistinct onto-epistemology: a (new) way of making knowledge for a (new) way of being in this world.

Rather than assuming animism as an all-encompassing horizontal ontology - a notion that risks disregarding and flattening divergence – hybrid animism wishes to express the a-symmetrical co-habitation and co-evolution of the human with the nonhumanity of increasingly sentient machines in a planetary milieu characterised by growing distributed sensing capacities. Put differently, hybrid animism should be taken as a productive way of reading our current relationships to techno-digital objects and their increasing, material and contested computational autonomy. What hybrid animism may offer, then, is a speculation that is decoupled from both techno-euphoria

with its blind utopias, and equally from techno-dystopia with its corollary of machines threatening to take over the human. The recasting of animism as *hybrid* should therefore be taken as a speculative and imaginative device that allows for the interrogation of, and building on, existing perspectives on animism, in particular techno-animism.

From this standpoint, the article asks: Can a notion of animism formulated as hybrid be taken as a figure of thought and as a storytelling device that not only helps us bypassing the widespread and convenient narratives of techno-euphoria and techno-dystopia, but that also may help us thinking about machines and their animacy without falling for the other prevailing discourse – namely, the discourse that frames technology as enchantment? While the well-known argument that links technology and enchantment is certainly a useful framework to examine human-technology relationship, especially in terms of cultural history and social anthropology,[17] it is however no longer fully adequate to grasp an ecosystem populated by responsive techno-digital objects, whose agency, now largely undetectable by human cognition, can be easily misinterpreted through the discourse of enchantment and wonder. My proposal is to recast our relationship with this digital ecosystem not only animistically (as it is, at least partially and in practice, already so), but as hybrid too. This hybrid animist perspective maintains a strong emphasis on the material flows within computation precisely because it wants to recalibrate enchantment, and to offer a shift from technology as an increasingly mysterious black-box incommensurable to human comprehension (which encourages unaccountability), to a wider quantum cosmology of world-building relations of which techno-digital objects are only one aspect.

17. Gell 1992; Alfred Gell, 'The Technology of Enchantment and the Enchantment of Technology,' in J. Coote and A. Shelton (eds) *Anthropology, Art and Aesthetics*, Oxford, Clarendon (1992), 40–66.

WHY HYBRID?

While the trope of the hybrid is indisputably well-rehearsed across several disciplinary fields, it seems to me that it still has a lot to give, especially in times of troubling re-polarisations. As the image of diverse components coming together, the hybrid signifies the capacity of boundary-blurring processes to generate something else/new. It must be stressed that to invoke the hybrid concerns more about the process than the final product. Thus, it makes more sense to talk about *hybridisations*, that is, processes that are fundamentally uneven because they are not concerned with reconciling things that are different, or with trying to make them fit. Instead, hybridisations have to do with the transition from (more) heterogeneity to (more) homogeneity, and vice versa. Put differently, rather than focusing on what is brought together, in the hybrid, attention must be paid to *what is left out*. Not only is this essential to grasp existing power structures, but also as a reminder that hybrid does not mean ultimate fusion, but rather the cohabitation of divergences, with no need, attempt or desire to recompose them or erase them in a totality.[18] In this sense, the process of becoming hybrid signals a circuit of (fluid)

18. Isabelle Stengers, 'Comparison As A Matter Of Concern,' *Common Knowledge* 25, 1, 3, 2019, pp176-191.

19. Fiamma Montezemolo, 'Tijuana: Hybridity and Beyond: A Conversation with Néstor García Canclini,' *Third Text*, 23, 6, 2009, pp733-750.

20. Philipp Wolfgang Stockhammer (ed), *Conceptualizing Cultural Hybridization: A Transdisciplinary*

exchange more than a space of shared (yet fixed) positions,[19] thus becoming a spacious concept that literally opens up room for dissent, friction and even disharmony. Equally important is to note that the hybrid is not stacked against an alleged idea of purity.[20] On the contrary, there is no, and never has been, any purity.[21] This idea is particularly useful as a way of reimagining the human-machine encounter, where the hybrid has a formidable legacy, from Donna Haraway's cyborg (1991), to Mary Shelley's *Frankenstein* (1818) and even earlier to eighteenth century automata.[22] An eloquent metaphor for how changes instigated by technological innovations have continuously redesigned the sense of self in relation to, and often in opposition to, machines, the hybrid is a figure of thought that provokes discussion about the behaviours, expectations and narratives around boundaries – between flesh and metal, organic and inorganic, animate and inanimate - and ultimately ontological questions about the living and the non-living.

TECHNO-ANIMISM

It is well documented that animistic responses tend to emerge when technologies connecting objects become simultaneously smarter, more pervasive, yet more invisible. For instance, cultural critic Erik Davis, one of the first to popularise the notion of techno or digital animism, writes that a degree of animism is 'a psychologically appropriate and imaginatively pragmatic response to the peculiar qualities of the information jungle. We associate intelligence with what reads and writes, and nowadays everything electronic reads and writes'.[23] While for Davis however, cosmic paranoia is the logical outcome of attempting to explain the invisible (and thus ominous) agency of devices in our hyper-mediated world, this response should be seen as only one of the possible implications of techno-animism. As the revaluation (and re-interpretation) of animism continues, techno-animism stands out as the conceptual framework that can aid an imaginative sense-making of the human-digital milieu.

The expression techno-animism describes the distinct Japanese mix of technological innovation and spiritual practices where an animistic sensibility pervades the realm of hi-tech.[24] Techno-animism disturbs convenient (but unsatisfactory) divisions between modern/non-modern, western/non-western that circulate also in recent accounts of 'new' animism. The Japanese uniqueness is expressed by a context where the human, the technological, the natural and the spiritual appear to be mingling, with no trace of the typical western anxieties about machines posing an existential threat to humanity, for example in the relationship with highly socialised service robots and pet robots, like AIBO the dog. In the Japanese context inanimate objects participate to a unified cosmology together with divinities, natural elements, rocks, plants, humans and animals, in a dynamic, vital and immanent ecology where visible and invisible forces intermingle, shapeshift and are accorded

Approach, Los Angeles, Springer, 2011.

21. Peter Galison, 'Trading with the Enemy,' in Michael E. Gorman (ed), *Trading Zones and Interactional Expertise: Creating New Kinds of Collaboration*, Cambridge, Mass., MIT Press,2010, pp25-52.

22. Betti Marenko, 'Filled with Wonder. The Enchanting Android from Cams to Algorithms,' in Leslie Atzmon and Prasad Boradkar (eds) *Encountering Things. Design and Theories of Things*, London, Bloomsbury, 2017, pp19-34.

23. Erik Davis, *Techgnosis: Myth, Magic, and Mysticism in the Age of Information*, New York, Harmony Books, 1998, p225. See also Rane Willerslev, 'Taking Animism Seriously, but Perhaps Not Too Seriously?', *Religion and Society: Advances in Research*, 4, 2013, pp41-57. Anne Allison, *Millennial Monsters. Japanese Toys and the Global Imagination,* Berkeley and Los Angeles, University of California Press, 2006.

24. Casper Bruun Jensen and Anders Block, 'Techno-animism in Japan: Shinto Cosmograms, Actor-network Theory, and the Enabling Powers of Non-human Agencies', *Theory, Culture & Society*, 30, 2, 2013, pp84-115.

degrees of livelihood. While this perspective is instrumental in sidestepping western dominant discourses around techno-dystopia or techno-euphoria, its significance lies especially in how it opens up ways of embracing the untapped existential ontology (and poetic) of techno-digital objects. In other words, it stresses the emergent animation of devices which have become human companions. Aside from troubling the conventional view of animism as non-western indigenous epistemology and bypassing the nature-culture opposition (not to mention highlighting the fallacy of positing animism as the non-dualistic 'other' of western dualism), techno-animism holds significant potential in the search for alternative ways of experiencing technology. It does so by stressing the continuities, permutations and permeability across human and nonhuman domains by way of a sensorial and affective apprehension of hybrids that doesn't fall for wide-eyed enchantment and yet does not dispense with pan-affective awe. Techno-animism offers a suggestive perspective to read the encounter with technology in ways that are highly attuned to the embodied materiality of carbon-silicon hybrids, and their affective and aesthetic dimension. What if these hybrids were experienced as part of pan-affective cosmogony?

BEYOND TECHNOLOGY AS ENCHANTMENT

Today our digital encounters, mostly mediated by ubiquitous black screens, are constructed around flows of data appearing instantaneously on them, and largely perceived as immaterial, invisible and immediate – all characteristics that in the past would have been explained by magic.[25] The idea that the more technology becomes invisible and embedded in the very fabric ofthe everyday, the more it tends to be explained as magic, is very familiar, however it is not always helpful.[26] On the contrary, it can quickly become a source of mystification. An example is the 'cloud' – the visual trope linking computational prowess to intangibility and remoteness. The cloud seduces with its most enchanting and unaccountable image of technology as what seems to (magically) deliver the world at our fingertips. Its optics hide the very material, tangible, predatory reality of digital infrastructures and the social relations of their production; the human cost of the extractivist model supporting the digital, its environmental impact (e.g. cables across oceans floors and data server farms); conceals digital governance (e.g. privacy, control, algorithmic surveillance). Ultimately this kind of enchantment rhetoric contributes to trivialise the true impact of surveillance capitalism. Moreover, the dominant narrative of technology as enchantment, which compares deep learning to a magical technique, or alchemy, and frames algorithms as elements of everyday techno-magic,[27] helps maintaining a cloak of impenetrability as to how technologies actually work, exploiting the genuine difficulty in grasping machine operations that run in the background, unseen, unheard, unknown and incommensurable to human scale.[28] Given a scenario

25. Thomas L. Hankins and Robert J. Silverman, *Instruments and the Imagination*, Princeton New Jersey, Princeton University Press, 1995.

26. Mark Weiser, 'The Computer for the Twenty-First Century,' *Scientific American*, 265, 3, 1991, pp95-104.

27. Ed Finn, *What Algorithms Want. Imagination in the Age of Computing*, Cambridge, Massachusetts and London, England, MIT Press, 2017.

28. Kate Crawford and Alexander Campolo, 'Enchanted Determinism: Power Without Responsibility in Artificial Intelligence,' *Engaging Science, Technology, and Society*, 6, 2020, pp1-19. Beatrice M. Fazi, 'Beyond Human: Deep Learning, Explainability and Representation,' *Theory, Culture & Society*, (published online), November 2020, pp1-23

where artificial machines quietly shape reality, operate largely unregistered by human perception and appear to perform inscrutable forms of nonhuman 'intelligence' (for instance, by anticipating our every possible choices), hybrid animism could offer an alternative framework to grasp experientially and imaginatively this 'sentience' in a way that does not need to needlessly or disingenuously enhance wonder, incomprehension or disenfranchisement.

To better understand this, I suggest a journey into matter and its animation. After all the key element of microchips is silicon, a crystal which, after oxygen, is the most common element on earth. The world of planetary computation, until not long ago described as 'immaterial', hinges precariously on tiny crystals found mainly in common beach sand.

SPINOZA REVOLUTION

The hybrid animism I am sketching throughout draws on a notion of matter as the unformed, unorganised, unstratified flow made of the quantic particles and intensities described by philosophers (Deleuze and Guattari 1988, Barad 2007) and physicists alike (Bohm 2002, Rovelli 2021).[29] This legacy sees matter as radically immanent, possessing the capacity to self-regulate and to persist autonomously in its own existence. It can be argued that immanent matter is animism's strongest ally – especially if by animism we take a cosmology where the universe is capable of self-organisation.[30] Immanent matter is antithetical to the western-Cartesian's view according to which matter is fundamentally passive and inert. It is far from positions that have viewed matter as shaped by either human conventions (constructivism) or by a transcendent ideal (essentialism), notions that construct and mystify the relationships between human and things as natural rather than social, and as given rather than emergent, as well as disavowing the forces circulating throughout things. On the contrary, the immanent matter that I invoke here and that underpins the notion of hybrid animism, is made of flows of energetic and non-organic intensities. As the next section briefly outlines, here is where quantum theory's equation of matter and energy enters in our constellation of ideas, reverberating through Spinoza's proposition that matter and consciousness are coexistent, are expression of the same substance and unfold in confluence, with (degrees of) sentience always inherent to material organisation.

With his signature phrases *Deus Sive Natura* and *natura causa sui*, expressing the idea that nature is its own cause, perfectly distributed and that there is nothing outside it, Spinoza reintroduces in modern thought the notion of nature as a self-generating force, and not as something to observe, admire, control, or fear. This idea is so revolutionary to be the reason of Spinoza's excommunication from Amsterdam Jewish community in 1656. It is so revolutionary because it demands a shift in how the physical world is conceptualised. By stating that everything that exists is a modification ofthe same substance, a self-generating production with no beginning or end,[31]

29. Karen Barad, *Meeting the Universe Half-way: Quantum Physics and the Entanglement of Matter and Meaning*, Durham, Duke University Press, 2007. David Bohm, *Wholeness and the Implicate Order*, London and New York, Routledge, 2002. Gilles Deleuze and Félix Guattari, *A Thousand Plateaus. Capitalism and Schizophrenia,* London, The Athlone Press, 1988.

30. Arianne Conty, 'Panpsychism: A Response to the Anthropocene Age', *The Journal of Speculative Philosophy*, 35,1, 2021, pp27-49.

Spinoza tells us that *we* are *nature* and that *nature* is *ourselves*. He unlocks a new way of seeing reality, the cosmos, life itself. As architect Gokham Kodalak puts it, 'Spinoza's philosophy overlaps becoming one of the many with becoming many of the one'.[32] A single ocean, and a thousand waves. A continuum of infinite potentials and unique manifestations. Rejecting any transcendence, any idealism, any hierarchy in favour of pure immanence, Spinoza's conception is pan-affective: each modality has equal capacity of being alive, and being capable of modification, that is to affect and being affected according to different degrees of speeds and slowness. His famous assertion that 'all things, although in diverse grades, are animate'[33] tells us in no ambiguous terms that the animation of *all* things exists and occurs by degrees.[34] In other words, while equal does not mean the same, a certain form of awareness is present everywhere and in everything.[35] From this standpoint, whatever it is that animates things, it is not agency, intentionality, nor innate property. It is rather a self-generating stream of intensities traversing matter and producing a multiplicity of encounters, collisions and combinations. It is this flow of matter-energy that keeps on engendering the world.

THE INCANDESCENT MATTER OF REALITY

This is where process philosophy meets quantum theory. As quantum physicist and philosopher David Bohm reminds us: what is, *is* the process of becoming itself. Not only is everything changing. Everything is flux.[36] Physicist Carlo Rovelli evocatively writes of the 'incandescent matter of reality' where 'the properties of any entity are nothing other than the way in which that entity influences others'.[37] While classic physic believed in elementary particles constituting the microstructure of matter and therefore constituting the fabric of reality, it is now evident that even these elementary particles are not the ultimate substance. What we call reality is a vast web of interacting entities (of which we humans are but a part) and which manifest themselves solely through their interactions. Reality is made of shifting relations rather than fixed objects. The solidity of the world is simply the combined result of our macroscopic vision and of the limitations of our understanding (Bergson 1998).[38] We humans constantly create abstractions to grasp the world: anything we describe as event, object, entity, as mind or matter, is an abstraction from 'the unknown and undefinable totality of flowing movement' (*Implicate Order*, p62). Western thought, in particular, seems unable to think dynamically and to hold together two aspects of the same logic, for instance, that stasis *is* dynamic, matter *is* form, structure *is* process, permanence *is* change, movement *is* stability, theory *is* practice. Unable to grasp reality as a continuity of immanent, dynamic and fluctuating arrangements, western thought remains stuck in the familiar terrains of thinking-through-fragmenting. As philosopher and sinologist François Jullien observes this fault line is inherent to how western philosophy has always placed more value on the hypothetical (rather than

31. Warren Montag and Ted Stolze (eds), *The New Spinoza*, Minneapolis and London, University of Minnesota Press, 1997.

32. Kodalak Gokham, 'Spinoza and Architecture: The Air of the Future'. *Log* 49,2020, pp123-145. As Kodalak puts it, 'Spinoza's philosophy overlaps becoming one of the many with becoming many of the one' (p125).

33. Spinoza, Etica II P13 S Baruch Spinoza, *Ethics*, London, Everyman, 1993.

34. Alfred N. Whitehead, *Science and The Modern World*. Cambridge, Cambridge University Press,2011, p69.

35. See 'quantum potential' (also called 'quantum choice') in neurons. Arianne Conty, 'Panpsychism: A Response to the Anthropocene Age', *The Journal of Speculative Philosophy*, 35,1, 2021, pp27-49, P31.

36. David Bohm, *Wholeness and the Implicate Order*, London and New York, Routledge, 2002. (Hereafter *Implicate Order*)

37. Carlo Rovelli, *Helgoland*, London, Allen Lane, 2021, pp42, 69.

38. Henri Bergson, *Creative Evolution*, London, Dover, 1998.

the emergent), on the transcendental (rather than the immanent), on identity (rather than interdependence), on duality (rather than non-duality), especially expressing a fixation with notions of telos, finality, and causality.[39] Quantum theory's collapse of the distinction between particle and wave makes the distinction between observer and observed meaningless. The drive to externally observe and analyse the world by subdividing it in autonomous parts also recedes. The emphasis can shift on undivided wholeness. At risk of oversimplifying, what quantum theory describes is how things – all things – influence each other and exists solely in their interaction.[40]

If we now use these insights around 'quantic immanence' to nurture our notion of hybrid animism as a speculative fiction to 'imagine an otherwise', we can attempt to rethink those abstractions – 'nature,' 'matter,' 'reality'– no longer in oppositional terms ('matter' vs. 'form,' 'potentiality' vs. 'actuality,' 'essence' vs. 'accident'), but instead as continuous flow: 'the inherent animating energy that ceaselessly circulating bestows consistency on reality' as Jullien puts it (*Propensity of Thing,* p92). Then, hybrid animism becomes a speculative, imaginative mode of journeying into this incandescent entanglement we call reality, a device to re-imagine the world (or better, the multiple worlds we inhabit) that cuts through arbitrary dualities and that reinstates the sensorial experience of the undivided wholeness in all its vibrancy.[41] The question at this point would concern matters of practice and experimentation: How can such hybrid capacity to sense animistically be cultivated? How can we nurture ways to apprehend the world as given, as incandescent phantasmagoria?[42] More to the point: How to deploy this hybrid animistic sensibility to have an animistic experience of computational media ecologies?

A THOUGHT EXPERIMENT

This section attempts a thought experiment. It projects the hybrid animism described so far upon the specific context of digital sensing - the embedding of sensor mechanisms at multiple levels (architectural, urban, embodied) where our very own human corporealities are extended into the technical innervations of planetary computation. This thought experiment positions hybrid animism as the vehicle for a skin-based mode of apprehension of the human-nonhuman digital milieu, almost as a sort of *epidermal technology* that feeds on the recursive, reflexive, highly responsive, data-rich ecologies where humans and machines, surfaces and screens intermingle in ways that are neither finite nor discrete but constituting highly recursive hybrid techno-assemblages. To suggest a way in which this surface-based hybrid animistic apprehension could be imagined, and to intensify the vividness of such speculation, this section engineers the (speculative) encounter between two kinds of non-humanities: the surfaces of digital sensing and the skins of cephalopods. Following the hybrid mode presented throughout, the purpose of this encounter is to illustrate the imaginative ways in which a hybrid

39. Francois Jullien, *The Propensity of Things. Toward a History of Efficacy in China,* New York, Zone Books, 1995. (Hereafter *Propensity of Things*).

40. This notion is also found in the texts of the *Tantra* tradition. See Daniel Odier, *Yoga Spandakarika. The Sacred Texts at the Origins of Tantra*, Rochester, Vermont, Inner Tradition, 2004.

41. See *Log* n.51, 2021, special section 'Excursions in the Ecosphere' in particular the two articles: Gokhan Kodalak, 'Lines, Tornadoes and David Foster Wallace', pp173-181; Sanford Kwinter and Bruce Mau, 'Design is Not For Us: A Simple Desultory Philippic', pp155-176.

42. Daniel Odier, *Yoga Spandakarika. The Sacred Texts at the Origins of Tantra*, Rochester, Vermont, Inner Tradition, 2004.

animistic storytelling may be enacted and sensed.

Let's start by using hybrid animism to read the new modes of nonhuman intelligence that are emerging across sensor-driven computational entities. As mentioned earlier, planetary computation's regime of *immediation* means that humans are being rewired in their cognitive, embodied, affective and sensorial capacities, becoming more and more integral part of hybrid techno-assemblages. In these new synthetic hybrids, humans are cohabiting with (and are re-made through) digital infrastructures, ambient computation, wireless technologies, communication networks, distributed protocols, techno-digital objects, embedded sensors. These techno-assemblages are no longer mere externalities. As design and media theorist Benjamin Bratton points out these modes constitute already a sort of *proto-sentience,* a sensing that is mutually evolving between human and nonhumans. These assemblages have become *us*, in a milieu of organic, nonorganic, human, nonhuman, carbon, silicon, atoms, bits, which is creating an 'incipient machinic sensate world', [43] a world which is both *sensing* and *sentient*. A world, then, which is the ideal terrain for experimenting with a hybrid animist philoso-fiction.

Take for instance the way in which geography and location turn into phenomenological experience through the saturation of cityscapes and urban surfaces with geospatial media, concerning at once 'the physical positioning of mobile communication devices and the large-scale computational analytics of data emanating from such micro-processor-based tools'.[44] Satellite-based geospatial mapping collapses space and time into a spatio-temporal data envelope that *seems* to acquire autonomous liveliness, thus teasing a novel epistemic apprehension that questions the centrality of human cognition. While mobility was once predicated upon the physicality of a street network navigated through similar physical means, it now signifies metadata, web infrastructures and a very different type of network, which remains unseen until it beckons from our screens in data visualisations modulated in real time. The extent to which a position/location is caught by specific and ever-modulating addresses means that we (users) exist as a varying event of surveillance and data capture.

Reading these techno-assemblages through a hybrid animist perspective means to emphasise the material hybridity of their composition while highlighting the unexpected sensuousness circulating in how we experience them. By imagining computation as an assemblage of sensing surfaces modulated in real-time, we come to see how these hybrids are distributed across ecologies where peaks of affective and aesthetic apprehension condense in surfaces of encounters - some of which are visible and tangible e.g. the ubiquitous touch screens, black mirrors of our daily habitus, some persistently unseen, embedded as they are in the wireless space of radio propagation we inhabit.[45]

It is across these surfaces that the shimmering shoals of bits and atoms

43. Benjamin Bratton, The City Wears Us. Notes on the Scope of Distributed Sensing and Sensation. *Glass Bead Journal*, 2019; Benjamin Bratton, 'Geographies of Sensitive Matter: on Artificial Intelligence at Urban Scale', in Mariano Gomez Luque and Ghazal Jafari (eds) *New Geographies 09: Posthuman*. Harvard University Graduate School of Design and Actar, 2017, pp28-34.

44. Wolfgang Ernst, 'Tracing Tempor(e)alities in the Age of Media Mobility', *Media Theory*. Special Issue: Geospatial Memory, 2, 1, 2018, pp164-180, p165.

45. Chirag Rabari and Michael Storper, 'The Digital Skin of Cities: Urban Theory and Research in the Age of the Sensored and Metered City, Ubiquitous Computing and Big Data', *Cambridge Journal of Regions, Economy and Society*, 8,1, 2014, pp27-42.

keep on flowing as a stream of synthetic intensities traversing (unconscious, inorganic, sentient, animated) matter. Expressing mood-capturing operations that remains below-awareness, these surfaces are both barely registered and so hypnotically enthralling precisely because our senses perceive them as alive.

If everything 'senses', then we need ways of imagining this sentience. Donna Haraway reminds us that the figurations and images we use to think with (especially as new thoughts are concerned) do matter.[46] Hybrid animism is one such figuration, attempting to be receptive of modes of sentience that are equally hybrids – the physical-digital, semiotic-material-computational, data-flesh, carbon-silicon techno-assemblages humans are already part of. Put differently, it is a way of attuning our senses to the synthesis of the sensible, and its sensorial and sensing stream. In planetary computation the boundaries between the act of sensing and the sensed matter are increasingly blurred. By approaching this blurring through an equally blurred, hybrid sensitivity we have a new way to understand how mediation turns into immediation. As we skim the surfaces of our devices, we no longer are agents swiping and scrolling. We become 'swiped' and 'scrolled' ourselves, carried by the indifferent surge of the nonhuman techno-digital tide. The skin of the world senses us, our embodied, innerved movements, even those that we are not even thinking of performing, yet.

A legitimate question may emerge here: Isn't this hybrid animism perspective at risk of bestowing too much 'intelligence' to computation? I would suggest that this question should be turned around. Instead we should ask: Why is computation reach still so narrowly (i.e. humanly) defined? As Bratton argues, the legacy of hominid exceptionalism means that we still define intelligence on the ground of 'our experience of our own sapience rather than as an emergent capacity of any matter ordered just so (including what is called AI)'.[47] In other words, isn't perhaps time to revise how the intelligence in 'artificial intelligence' is thought of? Can we begin to disregard the narrow confines of human benchmarking and investigate instead the nonhuman sentience which is already manifest in the incandescent matter that makes the world?

CHROMATOPHORES AND PROTO-SENTIENT SURFACES

To continue our thought experiment, I now invite you to imagine these new nonhuman artificial intelligences as the patterned chromatophores washing rhythmically (and cunningly) across proto-sentient surfaces.

If I turn to cephalopods (cuttlefish and octopus) to do so, it is because they offer an extraordinarily suggestive source of inspiration for speculative exercises into nonhuman perception.[48] To start with, cephalopods are specialists in distributed control systems.[49] In some types of octopuses (e.g. the common *Octopus Vulgaris*) over two thirds of their neurons are located in the tentacles so that there are fewer neurons in the brain than in the

46. Donna Haraway, *Simians, Cyborgs, and Women. The Reinvention of Nature*, London, Free Association Books, 1991.

47. Benjamin Bratton, 'Further Trace Effects of the Post-Anthropocene', *AD Architectural Design*, 89, 1, Special Issue: Machine Landscapes: Architectures of the Post-Anthropocene, 2019, pp14-21.

48. Vilém Flusser (with Bec Louis), *Vampyroteuthis Infernalis. A Treatise, with a Report by the Institut Scientifique de Recherche Paranaturaliste,* Minneapolis and London, University of Minnesota Press, 2012. Eva Hayward, 'OctoEyes,' *Frontiers in Communication*, 3,50, 2019.

49. Peter Godfrey-Smith, *Other Minds. The Octopus and the Evolution of Intelligent Life,* London, William Collins, 2016.

peripheral nervous system. Each tentacle is therefore an autonomous information processing agent that can act and problem-solve independently. For instance, while the octopus is busy checking a cave a tentacle can be engaged with prodding a shellfish. This is why the octopus is said to have two brains. Its decentralised neural system is such an efficient (nonhuman) distributed information processing apparatus that it is studied in the search of a new perspective on neural architecture and of distributed, embodied, adaptive cognition in the field of Artificial Intelligence in ways that are not necessarily human-centred.[50] Most relevant to our discussion of surfaces and animistic apprehension, cephalopods inspire because of their amazing camouflaging skill. They can modify in a flash their appearance, inclusive of surface pattern, texture and coloration, in response to environmental stimuli. Their chromatophore organs, which are the primary elements of pigmentation, deliver a hyper-fast response following an eye-directed visual stimulus. At around two-thirds of a second the change happens virtually immediately: the octopus 'disappears' before the eyes of the observer. Its skin, under direct control of muscle activity, is continuously refreshed by blood, and when muscles contract, the membrane that surrounds the chromatophore cells expands and stretches flat, thus exposing dark pigments; when muscles relax, the membrane contracts, the pigments gather together and disappear from view so that lighter pigments become visible.[51] What is especially captivating about this camouflage system is that it is still poorly understood. It seems that the octopus possesses independent mechanisms of control of its skin pigmentation, based only on how the skin 'perceives' environmental illumination. This suggests that the chromatophores can be activated by light independently from the central nervous system. A molecular mechanism of light photo-transduction between the eye and the skin takes place, following a direct connection between the chromatophore lobes (located in the brain) and the chromatophores located all over the body.[52] The process can be explained by considering the eye-skin coordination as a machinic assemblage that tricks the observer's visual and cognitive pattern-recognition system. Octopus camouflaging becomes a sort of non-representational anti-language, the expressive unfolding of surfaces where the skin is no longer barrier of identification, but a technology of immediate, affective, aesthetic, sensorial and empathic communication. Skin surfaces traversed by high-speed tidal washes of re-colouring, re-texturing and re-patterning terminally blur the boundaries between organism and environment.

50. Murray Shanahan, 'Conscious Exotica, '*Aeon,* 2016. Retrieved from https://aeon.co/essays/beyond-humans-what-other-kinds-of-minds-might-be-out-there

51. Liz Bomford, *Camouflage and Color*, New York, Dorset Press, 1992.

52. Ryuta Nakajima, Shuichi Shigeno, Letizia Zullo, Fabio De Sio and Markus R. Schmidt, 'Cephalopods Between Science, Art, and Engineering: A Contemporary Synthesis', *Science and Environmental Communication*, 3, 20, 2018, pp1-16.

CONCLUSION

The digital milieu of planetary computation is made of undifferentiated surfaces, theatre of sudden condensations and changes of state, of a thickening, releasing, contracting and intensification of experience. Here we find the morphing adaptation afforded by ubiquitous connectivity where

physical surfaces tune into a re-programming that is also a re-engineering of subjectivities. Space changes in real time. Architecture becomes information.[53] These surfaces are interfaces alive with the intensities that traverse them, pulsating with possibilities of connection, encounter, osmotic interaction, mimetic appreciation and bodily innervations.[54] To navigate this ecology where perceptions and sensations surge and recede in tune with imagination and speculation, means to cultivate an hybrid animistic sensibility to sense the connection, or 'the 'onto-existential' *nondistinction* between us and it, between inner (sentient) and outer (sensed) landscapes' [which] is both primordial to each of us and rediscoverable'.[55] It is wise then to heed Sanford Kwinter's advice to cultivate an 'attitude of sensing energy, sensing potential, sensing in a vast and simply apparent void, what the ancient Chinese geomancers, ink wash painters and military strategists referred to as 'shi' – the inbuilt propensity of any situation, position or configuration to develop (to stream in a specific direction and in a certain way'.[56] Sensing potential means to intuitively, immediately, affectively both *sense* and *sense-make.* It means to follow the propensity of things.[57] It means to enter the stream of the animation of all things, experience its incandescence, its phantasmagoria, be part of the pan-affective cosmogony that makes us into hybrid animists already, whether we choose it or not.

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53. Sanford Kwinter, 'Neuroecology: Notes Toward a Synthesis', in Warren Neidich (ed) *The Psychopathologies of Cognitive Capitalism: Part Two*, Berlin, Archive Books, 2017; Sanford Kwinter, *Requiem For the City at the End of the Millennium*, Barcelona and New York, Actar, 2010.

54. Michael Taussig, *The Nervous System,* New York and London, Routledge, 1992.

55. Sanford Kwinter and Bruce Mau, 'Design is Not For Us: A Simple Desultory Philippic', *Log*, 51, (2021), 155-176.p167.

56. Sanford Kwinter, 'High Altitude, Low Opening (H.A.L.O.)', *Aerocene*, 2016. https://aerocene.org/newspaper-kwinter/

57. Francois Jullien, *Treatise on Efficacy. Between Western and Chinese Thinking*, Honolulu, University of Hawai'I Press, 2004.