Yuk Hui's Axio-Cosmology of the Unknown: Genesis and the Inhuman

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In *Recursivity and Contingency*, Yuk Hui prompts a rigorous historical and philosophical analysis of today's algorithmic culture. As evidenced by high-speed AI trading, predictive processing algorithms, elastic graph-bunching biometrics, Hebbian machine learning and thermographic drone warfare, we are privy to an epochal technological transition. As these technologies, stilted on inductive learning, demonstrate, we no longer occupy the moment of the 'storage-and-retrieval' static database but are increasingly engaged with technologies that are involved in the 'manipulable arrangement' (p204) of the indeterminable. It is, in fact, extricating the indeterminable or the Inhuman – and its cosmic anti-capitalist imperative that concerns the core of Hui's project of technodiversity.

Schelling's conception of freedom as the improbable, or absolute contingency, is also fundamental. Hui's first two chapters trace recursivity as it develops throughout the project of German Idealism; Hui eruditely demonstrates how Kant's *Critique of Judgment* is the first philosophical work to made the organism explicit and paradigmatic as, for Kant, mechanical laws are not sufficient to explain contingency and the teleology of nature. Where Fichte reduces the real to the Ideal, Schelling's description of nature as a self-organising system is concerned with deriving the Ideal from the real. In Schelling's philosophy of identity, nature is neither something in us nor outside of us but, instead, it actively abolishes subject-object dualism. Schelling's system proffers recursivity as a 'self-contained whole' (p55). This marks the philosophical crux of *organicism* as a foundation for thinking of an open system through meta-scalar self-organisation, anticipating biological models such as Ilya Prigogine's dissipative system and Francisco Varela and Humberto Maturana's autopoiesis. Schelling's philosophy of nature also informs Hui's *organismic* conception of spatiality, where each organism is understood as both 'self-contained' but, also, always 'influenced by other organisms, so such an 'internal finality' affirms a structural 'external finality' (p163). Qua Schelling, Hui destabilises the conception of our world as a closed and static material system.

If Schelling's *Naturphilosophie* is a precursor to biological organicism, Hegel's logic anticipates the machinic organicism of cybernetics – second order cybernetics to be specific. For Hegel, nature is an 'object of observing reason

from the outset' (p91), whereas for Schelling nature is pre-consciously sensed and detected prior to becoming an object of reflection. Unlike Schelling's emphasis on external force's giving form to the nature's production, Hegel's departure from preformation towards immanent negativity re-introduces contingency into the system of nature. We can map this onto second-order cybernetics quite neatly as, for Hegel, there are two forms of recursion: 1) chaotic nature 2) the logical category (of being).

It is far too common to see the hackneyed use of cybernetics in philosophy of technology and media theory without specificity, thus Hui's work provides much-needed precision. Where first-order cybernetics (associated with Wiener, McCulloch, Shannon, Ashby) concerned positive feedback within a closed single system, in second-order cybernetics (Foerster, Luhmann, Maturana, Varela, Glaserfield), the synthetic determination of auto-organisation and homeostasis is broadened to include the structural domain of environment and machine. Where first-order cybernetics is concerned with perception, second order cybernetics is concerned with observation (meta-order and sub-systems). However, despite second-order cybernetics moves beyond the opposition between mechanism and vitalism, Hui also illuminates how today's elastic technologies prompt a new epistemological relationship with their environment, whereby '[t]o adopt is to affirm what accidently arrived and integrate it into the whole' (p. 204). Thus, there is a third moment that we currently occupy and which converges upon the synchronised 'accomplishment of a global axis of time' (p34) via recursive modelling that is open to contingency.

Much like Bernard Stiegler, Hui considers Deleuze's 'control society' as a critical rift from biopolitics, where re-integrative modulation displaces the spatio-temporal terms of Foucauldian power. We can also find concrete examples of synchronised contingency in the recursive algorithms informing Google and other Big Data mechanisms, with algorithms integrating 'all the data of its user, updating them and parsing them into useful information' (p218) through recursive subsumption, or hominisation. Consequently, recursion's probabilistic orientation is given form by contingency, which Hui defines as the 'least probable or improbable' (p211). As Hui demonstrates, recursion is meta-systemically dependent on contingency, or the epistemic realm of the 'Unknown'.

Consider how Deleuze's 'control society' transpires through ubiquitous surveillance, facial recognition, data collection, and social credit. Consequently, recursive machines integrate individuals as constituents of computation, rendering them as *dividuals* to be retrofitted from projective datafication. In turn, 'recursion functions like a soul, which comes back to itself in order to know itself, while in every moment of reaching out it encounter contingencies' (p238). By reintroducing the *organismic* into the circuit of general organology, Hui's project uniquely offers a way to undermine the mechanistic rendering of preconceived finality.

Via Simondon's work on complexity and non-linear cognition, Hui advances a fundamental means of differentiation from the Cartesian schema of cognition. Whereas the Cartesian model presupposes linear causal relations and the formal transportation of information from introductory premises towards a conclusion – or a static anchoring point – the model of feedback introduces an altogether unique temporal structure. This is no longer a linear form but that of a spiral, whereby the *telos* is not 'a static point but a constant self-regulatory process' (p238), necessitating active adaptation and homeostasis. From smart cities to the Internet of Things, the *organismic* totality of our technological systems are defined along recursivity, where digital automation delegates knowledge production. Planetary computation is not solely schematic but a faculty of anticipatory reintegration – consider metadata collection on user information as a generative task, with an ever-burgeoning dynamic list of input-content.

One dominant theory of technology, which begins with Ernst Kapp, seeks to demonstrate technics as the projection of organs (e.g. the hook as a projection of the hand). This project is continued with Arnold Gehlen and Alfred Espinas (and is modified by Marshall McLuhan, for whom technologies extend the central nervous system) and further complicated by André Leroi-Gourhan. Leroi-Gourhan theorised that, in addition to the liberation of organs, artefactual objects are the exteriorisation of memory. Leroi-Gourhan's thesis is most valuable for Hui, as it not only demonstrates the becoming-organic of the inorganic, but also how 'technology is complicit with an episteme that is fundamentally cosmological and irreducible to universal values' (p265-266). Rather than determined directionality and temporalisation, it is this element of the irreducible that is key for Hui and proves most inventive for cosmotechnics' political project.

Hui also provides for a rigorous understanding of 'general organology', a term that readers of Stiegler will recognise. Hui's description of organology is remarkably thorough: Hui begins with Kant's reflective judgment, which establishes the unification of the laws of nature with the judging subject, the suppositional condition of transcendental reality. Hui illuminates the recursive relation between the whole and the reflective judgment through the subjective speculative process of reason. This 'speculative whole' is critical to Kant's central methodology and directly influenced Georges Canguilhem, who coined the term 'general organology'. Reading Kant as a philosopher of technology, Canguilhem conceives of intelligence as the act of 'geometrising matter' that recursively constructs its artifactual scaffolding, stilted on 'duration and extension' (p160). Additionally, is through Bergson's work on integrative evolution that Canguilhem's 'general organology' becomes that which infinitises the finite and reintegrates the inorganic into an organized whole – the organic is irreducible to the mechanical, which is merely a particular instantiation of the organic.

Hui also determines an altogether novel query concerning the planetary

scale of technology and furthers Stiegler's system through a discussion of 'tertiary protension'. While 'primary retention' refers to sensorial experience and 'secondary retention' refers to memory, 'tertiary retention' indexes media mnemonics; influenced by Husserl's phenomenological work on time-consciousness, Stiegler and Hui both are interested in retention and protention, where the latter describes anticipation. Hui's work on the improbable, or contingency, reconstitutes the temporal structure of digital technology by showing how machines are preemptive, where 'preemption' describes the delegation of decision-making to algorithms (p215). Protention is also distinctly related to Hui's work on the indeterminate, or the Unknown, as it forms a bricolage between logic and axio-cosmologies.

Perhaps the epochal speculative question of our day concerns the eschatological logic of transhumanism, which portends the earth as a technological superorganism. This perspective conceives of the universalisation of planetary hominisation vis-a-vis predictive technologies, whereby the convergence begins with individuals, but, through the spread of data-organisation and the vicious circle of positive feedback, supersedes all notions of self-dependent contingency. In turn, we are confronted with a 'noosphere' wielding neuro-inferential technological completion.

Steeped in Gilbert Simondon's work on individuation and universal cybernetics (which Simondon termed the 'allagmatic'), Hui approaches technical reality not only as a product of rationalist thinking but from the vantage of historicity and locality. However, it is Hui's work on the inhuman and the indeterminable as an operative 'irreducible other' that challenges the philosophical underpinnings of posthumanist and transhumanist discourse. For Hui's cosmotechnics, the critical fulcrum of intentionality and aesthetic sensibility offers us a model that deviates from the accelerationist modes of technophobic and technophilic determinism. Just as Marcel Mauss' 'gift economy' has haunted the project of capitalism, Hui upholds that an aesthetic engagement with technics deviates from 'absolutisation', destabilising the functionalist-utilitarian conception of singularity and the monolithic noosphere. As Hui remarks, '[w]e are not calling for a return of humanism against the inhumanism of the system, but rather trying to conceive the inhuman as a possibility that transcends the system' (p263).

One of Hui's most prudent comparisons is differentiating the 'positive inhuman' from Meillassoux's 'inhuman'. For Meillassoux, the 'inhuman' is articulated through reiteration as the potential of infinitude, as exemplified by mathematical practice. For Meillassoux, the kenotype is pure identity and indexes that which is outside of the field of sensible repetition. Hui brilliantly demonstrates how Meillassoux's reiteration – the ontology of empty signs – in fact affirms computationalism. Hui's conception of the inhuman attempts to *transcend* systematisation, rather than reaffirm it – instead of rejecting sensibility, or intuition, Hui's idealist conception of the 'positive inhuman' provides us with an (political) epistemology of pluralism indexed

via sensibility. Hui's *Recursivity and Contingency* reads Simondon through Heidegger, rendering a political challenge to develop geopolitics based on technodiversity that is in conflict with its totalising power. As Hui states, technopolitics implies logic, epistemology and an episteme, providing us with a critical philosophy of cosmic indeterminacy to challenge transhumanist and posthumanist totalisation.

The question of indetermination is central to Hui's work. Accompanying the inscription of infinitude within the finite, indetermination prompts an aesthetic sensibility that reconciles necessity and contingency within 'human freedom' (p236). The inhuman or, more specifically, the 'positive inhuman' is borrowed from Lyotard and is the organological concept that rejects the reduction of thinking to techno-algorithmic determination without resorting to rejecting technology altogether. Hui directs us towards Ludwig Wittgenstein and Gödel's work on logic, where we, similarly, can see the inhuman as a rejection of positivism. Much like the practice of 'leaving […] blank margins in Chinese and Japanese calligraphy and painting' the inhuman is the emptiness which 'completes the fullness; the empty […] already inscribed' (p. 256).

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