Cuckoo

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Abstract
Drawing from the imag(in)ing of passing time as a cuckoo's repetitive passing through a threshold, this article emphasises the active role of repetition in modulating spatio-temporalities and fostering variations. It argues that the systematic organisation and classification of the milieu emerge from the human capacity to perceive and assign differences within the spatio-temporal continuum. This process is enabled by iterative interactions with environmental stimuli, whether immediate or mediated through technological means, serving as an active process of evaluation and unfolding of environmental affordances. In this context, repetition simultaneously serves two seemingly opposing functions: it creates patterns of return to previous encounters while also opening potential lines of flight away from established norms. Intelligence transduces repetition into change, as it evolves through feedback loops, that is, non-linear operations that integrate information across various time scales and through diverse physical mediations, both embodied and exosomatic. As such, intelligence is re-conceptualised not as a state but as a symbiotic, responsive, and anticipatory process that unfolds through failing and adapting to environmental changes.

Keywords
Habit, inhabit, space-clock, intelligence, intelligible, extended perception

As the clock strikes the hour, a small door opens and a bird springs forth while a series of cuckoo calls sounds, corresponding to the time. I've spent an unreasonable amount of time watching hours, minutes, and seconds shift from abstract measurements of an uncontrollable flow into sensory triggers. Even though these are moments of self-reflection more than an outward observation, the cuckoo clock still holds me fixated. I'm uncertain whether what captivates me most is the event itself or the unsettling thought of its relentless repetition, indifferent to my presence. Is it the fear of the present slipping away, never to return, or the dread of it endlessly repeating, over and over again? Both are tragedies, after all. Two seemingly opposing tragedies unfold before me at once, as each second signals both irrevocable change and the endless recurrence of time. The more I reflect on it, the clearer it becomes that repetition and change are inseparable, inextricably bound together. The clock embodies a dual function: it fixes, segments, and structures time, yet simultaneously offers moments of distortion and liberation; it opens thresholds, offering fleeting glimpses beyond its rigid framework. In this way, it becomes a medium for critically engaging with time as machinic, event-driven, localised, and sensitive to context. It becomes a mechanical analogue of temporal perception that expands and amplifies engagement with the environment beyond the here and now.

In this article I aim to unravel how moments of fluidity may arise from organising and classifying experiential

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flow, eventually forming it intelligible for repetitive encounters. More precisely, I intend to emphasise the schizoanalytic function of repetition in modulating spatio-temporalities and its active role in fostering variations.

One, two, skip a few

The brilliant imag(in)ing of passing time as a passing through a threshold emphasises the machinic, rather than numerical, physis of time. There is an irreducible materiality embedded in time, which makes it impossible to dissect into quantifiable, homogeneous units without losing its essence. Materiality doesn't reduce temporal cognition to physical interactions; instead, it opens up to virtual interactions, highlighting the multiplicity of underlying forces that arise between segments of time. These forces provide structural cohesion while allowing distortions and instabilities, eventually acting as a criticism from within. This observation underscores that human experiences of time are diverse due to cultural, social, and technological factors.[1] Henri Bergson captures this complexity through his concept of duration, which refers to the qualitative aspect of temporal experience, interwoven with the physical world and our relation to it. As he argues, duration is not a uniform progression of a measurable medium but 'a qualitative multiplicity within us, with no likeness to numbers', in a perpetual state of flux.[2] Thus, it is the differentiation that emerges within the flow of duration and signifies a change in the organisation of a system, or more vividly, it is the bird's passing through that door, that enables time. Time arises as a form of emergent awareness, which is impossible to impose externally, but can only arise from the system itself.

Therefore, there are multiple 'times', rather than one, due to the pluralisation of cultural and technical milieus.[3] That means that the clock cannot be reduced to a system (or instrument) for the regulation of human practices, but should rather be approached as a dynamic field of interactions and potentials, emphasising the affordances it provides and unlocks. The focus should shift from the technical object to its technicity as a mode of relation between human and world. For Gilbert Simondon, technicity is not confined to the physical form of an object but extends into the interactions and potentials it enables within an environment. [4] It operates in a reticular way, meaning it is involved in a network of events, actions and relationships within a structure.[5] Thus, the clock's technicity serves the shift from viewing time as a linear, uniform flow to understanding it as a variable contingent upon the system's intrinsic processes, dynamics and interconnections. In the case of the clock, the knowledge that emerges from within is nothing but a function that repeats itself, so as to coordinate the clock's operation. The cyclical repetition allows it to further relate as a cultural-technological construct and correlate as a formal system of communication.[6] It is precisely through repeated (inter)actions that our perception of time undergoes a transformation, which, in turn, alters its function in a perpetual feedback loop. The radical influence of clock-machinery on temporal perception, which necessitated further innovations is an exemplary paradigm to this mechanism. To elucidate further, the segmentation of time into discrete, quantifiable units promoted a shift from task-driven durations to time-regulated activities, transforming the perception of time from a communal to a personal experience associated with metrics of efficiency and punctuality. That leap catalysed the evolution of timekeeping devices from large communal installations to portable instruments worn on the wrist, thereby facilitating the internalisation of clock rhythms and its capitalisation by equating time with economic value. Hence, the constraint regime of an action, when repeated, enables entities to become more entangled and promotes the process of their becoming-ever-different.

Within this framework, the information that passes through the clock extends beyond its motricity; rather, it is through this movement that information is multiplied, tying together timekeeping and time passing.[7] Therefore, the clock not only fixes and standardises time but also, through its operation, amplifies our perception of the flow of time. It provides an arrangement of auditory and/or visual signs to serve as temporal guides for human activity, that is, a system for the classification and organisation of activity that mediates our engagement with the world's mobile and qualitative aspects. Similarly to design, it offers a structured arrangement of signs. Sanford Kwinter directly connects the emergence of the clock-machine with architecture.[8] He points out that in the European monasteries of the early Middle Ages, and in particular those of the Benedictine order, the monastic communities introduced a system of bells that rang periodically throughout the day, contributing to the discipline and regimentation of monastic life. The initial quantification of daily routines and bodily temporal activities (encompassing meals and sleeping schedules in addition to devotional practices) was reinscribed in a complex spatial organisation, including the monastery walls, the distribution of cells, common rooms, meditation yards and so on.[9] As Kwinter notes:

> The monastery, then, is nothing if not a prototype clock; yet the clock and the advent of homogeneous, mechanical-numerical time are rarely considered as more than incidental technical devices, and, even when they are recognized for the cataclysmic effect they have had on every aspect of Western culture they are certainly not commonly thought of as being the province of architects or architectural thought… If an independent

> clock mechanism was abstracted later from this empirical arrangement of elements (naturally monks figured prominently in the subsequent development and specialization of this new technology), it was only to affect the body/architecture continuum in an ever deeper and more generalized way.[10]

Drawing parallels between the clock and spatial organisational arrangements, reflect a common human capacity to perceive difference and assign difference to make it possible to navigate the spatiotemporal continuum. From this perspective, technical objects that regulate and guide individual and collective actions extend temporal and spatial perception by situating singular points within the ongoing process of becoming-ever-different. When abstracted from their immediate context, they further expand the human-world modes of interaction, by becoming nodes of mutation that actively reshape and challenge established temporal and spatial orders. This decontextualisation offers moments of liberation from dominant hierarchical structures by implying a transversal mode of interaction with its segments, ultimately opening up new possibilities of mutation.[11] After all, 'one flew east, one flew west, one flew over the cuckoo's nest', as perception itself gets differentiated.[12] In other words, there is not a single, unified experience but rather a multitude of doors of perception.[13] On a related note, Gregory Bateson claims: 'Perception operates only upon difference. All receipt of information is necessarily the receipt of news of difference, and all perception of difference is limited by threshold. … Knowledge at any given moment will be a function of the thresholds of our available means of perception.'[14]

Lewis Mumford in his work *Technics and Civilization* reflects on the origins of mechanical clocks, tying them to astronomical instruments and their evolution from celestial observations to timekeeping mechanisms.[15] The problem of origin is of less interest to this article, since it implies an effective causality understanding of how our world worlds (this contrasts with the article's problematisation, which aligns more with Kwinter's position that 'since movement can be caused and modified only by other movements, the problem of origin and initiation must either be reconfigured or pass away').[16] The interesting part, though, is that either as a transformation of astronomical apparatuses or of a spatial-organisational model, both perspectives point towards a boundary-making practice. Karen Barad argues that observing through apparatuses (like microscopes and telescopes) transcends the passive act of observation, as it is an active process of co-constitution, where identities and boundaries are continually reconfigured.[17] In a scientific context, boundaries create distinctions that shape observations, interpretations and explanations of phenomena, playing an active role in the production of knowledge. Taking that a step further and beyond scientific inquiry, Barad claims that there are not 'entities with inherent boundaries and properties but phenomena that acquire specific boundaries and properties through the open-ended dynamics of intra-activity'.[18] Therefore, boundaries are not inherent but acquired through iterative processes that reconfigure what is possible and what is not. Hence, perceiving and assigning differences is an emergent process of engagement within the milieu and the instrumentalisation of that process (navigation, coordination, synchronisation and so on) influences the production of knowledge itself.

Rolling like a ball

A close-up of a ticking clock, a man checking his wristwatch, a woman nervously glancing at a wall clock in an empty hallway – these scenes are fragments of Christian Marclay's twenty-four-hour video installation *The Clock* (2010).[19] Composed of thousands of film and television clips, the work is edited to align with 'real time' as viewers watch it. This continuous montage functions both as a timekeeping device and as an aggregation of visual references to time; a continuous flow of images and at the same time, an instrument of its own transformation. Evidently, there is something about temporal cognition that makes us unable to disassociate it from movement. For Kwinter 'time expresses itself by drawing matter into a process of becoming-ever-different, a transformation that may and ought to be seen as a type of movement – a flow of matter through time'.[20] This view is close to Bergson's concept of duration, linking our perception of the passage of time with change. Bergson posits that matter itself is an aggregate of images.[21]

For Simondon, movement, and more specifically motricity, precedes perception.[22] In his ontology of images, he develops a pluralistic account of images that act as groups of signals produced by the interaction of an organism with its environment. Simondon conceptualises the image not as a static, visual representation, but rather as a dynamic emergence within the interconnected milieu, avoiding any anthropocentric bias. This emergence involves a transductive, loop-process which includes the motor-image, the perception-image, the mental image and the invention-image. Each phase enables the modulation of relationships among humans, nonhumans, and their shared environment, thereby dissolving any hierarchical distinctions. As A. M. Oliveira and F. R. Palazuaelos note, 'the image is thus understood as a transient, intermediate processual reality between individual individuations and milieus existing within an evolutive technological multiplicity'.[23]

The initial images in this transductive cycle are primarily motor, operating as autokinetic systems that are not yet

finalised.[24] Thus, they have no other content than movement itself and are linked to 'the most simple behaviors through which the living take possession of the milieu and proceed to the first identification of the (living or non-living) objects they encounter'.[25] Simondon's concept of motor-image should not be associated with the deterministic view of motricity of classical physics, as it excludes intuitiveness, intentionality and other non-forceful forces from the equation.[26] The motor-image is rooted in immediate bodily experiences and interactions forced by intuition, an élan vital that acts as a non-forceful force and prompts organisms to form joint systems. The motor-image could be understood as an instance of an event's unfolding which involves forces, intensities and their potentialities into an intuitive becoming. As such, it incorporates a flow of forces between actual and virtual participants. Simondon's perspective emphasises the movement-oriented nature of our perception which involves a constant negotiation of differences – between experience and novelty, between the actual and the virtual, between the perceiver and the perceived.

Kwinter connects movement and change with the emergence of novelty that arises as a coherent flow of matter through time. He views transformation and invention as inseparable quality-producing processes actualised through (and by) time.[27] In his words: 'all change is change over time; no novelty appears without becoming, and no becoming without novelty.'[28] Similarly, for Simondon, invention involves a transformation process, a building upon existing knowledge, experiences and mental constructs.[29] Accordingly, invention arises through a nuanced modulation of pre-existing engagement – a form of knowledge that evolves in parallel, yet distinctly, both inside and outside of the system at once. It is the active exercise of existing knowledge that produces further knowledge by reconfiguring what is possible and what is not, in different socio-techno-environmental settings. The mechanism of invention is thus a dynamic iteration, a perpetual cycle of exposure to information leading to exposure to yet more information. This process is not a linear input-output operation, as it requires different levels of integration of information on various time scales and through different physical mediations.

Once bitten, twice shy

There is a sense of anticipation while waiting for the clock to strike, as if the observer is somehow responsible for signalling it to act before it does. Simondon claims that for a stimulus to trigger a response, a level of organisation is needed as a basis for the interpretation of environmental signals. Essentially, our ability to understand and react to the world around us begins with movement, which primes us for sensory perception: 'to say that motricity precedes sensoriality amounts to affirming that the stimulus-response schema is not absolutely primary, that it refers to a situation, or a present relation between organism and the milieu that has already been prepared by an activity of the organism during its growth.'[30] He continues:

> The perceptual-motor relation is already act two in the drama where two protagonists – organism and milieu – exist, each as a primordial source of novelty and chance. It is the encounter of these two novelties that generates the perceptual relation: to the bundle of signals – an exogenous novelty – corresponds the local activity of an endogenous anticipation coming from the organism, the first form of the a priori image whose content is essentially motor.[31]

Cognitive engagement is a process of identification and classification of a pattern of interactions. For Simondon, perceptual experience is directed by innate forms or patterns that play the role of triggering stimuli.[32] When a motor-image is perceived, it gets organised and classified as a model or a pattern of a greatest generality to which the set of incident signals may be connected.[33] It is in primary perception when incoming sensory data are matched with existing perception images, offering an immediate identification and reaction. A perception of the secondary type goes beyond merely recognising sensory input as matching a pre-perceived pattern. Instead, it presupposes a recognition of the differences between sensing and cognitive images as meaningful variations in the state of the phenomenon. In that sense, an image is already a system of the compossibility of states.[34] Accordingly, an intra-perceptual pattern is a kind of knowledge abstracted from the phenomenon, which acts both as a condition for change and as an emergent property of the interactions within a system that bonds things together.

Raymond Ruyer's concept of absolute survey emphasises the ability to perceive a multitude of heterogeneous elements simultaneously, integrating them into a cohesive understanding without losing their distinctness.[35] That is, the cognitive capacity to perceive the wholeness of individual elements remains even as they are woven into the collective understanding. Gregory Bateson in *Mind and Nature* argues that there is a 'pattern that connects'.[36] He rejects the idea of patterns as rigid affairs and argues that the right way to begin to think about the pattern that connects is 'to think of it as primarily (whatever that means) a dance of interacting parts and only secondarily pegged down by various sorts of physical limits and by those limits which organisms characteristically impose'.[37] Put differently, he suggests that the essence of connectivity is found in the dynamic relationships between elements,

and is primarily defined by their interactions. A pattern is a dynamic configuration that organises and differentiates while being subject to differentiation itself. Patterns, in their repetition or regularity, reveal more than a form; they reveal behavioural tendencies and underlying processes. Consequently, they offer an understanding of what it is that is being repeated. Recognising a pattern, in that sense, is perceiving a singularity within a system. The repetition of differentials stimulates the function of perceptual thresholds – critical points at which the variation in the system becomes significant enough to trigger a conscious reaction – providing a regularity within irregularity. In simpler terms, as differentials occur repeatedly within a system or environment, they reach a level or intensity where they become noticeable or meaningful, allowing patterns of change to be recognised and anticipated.

Anticipatory mechanisms are based on past interactions and serve to prepare the organism for future encounters. Hence, repetition enhances anticipation, which comes with a speculation that a pattern of change, a relational schema will repeat itself. This enhanced form of anticipation is not merely a passive expectation but an active, informed conjecture that emerges from a systematic organisation and classification of the environment. It could be understood as an augmented anticipation, an anticipation coming with a kind of knowledge, that is, an organised awareness due to previous experience, which in turn enables the emergence of newness, of further knowledge. Thus, the organisation of a system opens up to further differentiation and increased complexification through feedback loops where past interactions influence future behaviours, leading to the evolution of the organism-milieu relation. As Simondon notes: 'an anticipation cannot be merely an initiative; it is an organised initiative, with a structure, a consistency with respect to itself, a form.'[38] As the organism and its environment become more differentiated, through systemic organisation and classification, the potential for more complex interactions grows. This complexity is not merely additive; it involves the emergence of new patterns of interaction, new forms of anticipation by the organism, and new configurations of the milieu. Patterns may be changed or broken by repetition or by anything that will force a new perception of it, and these changes can never be predicted with absolute certainty.[39] Ultimately, change, whether anticipated or not, contains novelty, leaving us somehow unsettled, as it marks a departure from the familiar.

Afterpartie

Gilles Deleuze and Félix Guattari suggest that both living organisms and machines can be seen as 'molar aggregates'. This concept transcends the traditional binary opposition between vitalism and mechanism, framing both organic and mechanistic entities as compositions of smaller units within a complex system of interconnectedness. The interconnection between the parts allows for direct communication and interpenetration between the micro (molecular phenomena) and the macro (singularities of the living).[40] Thus, Deleuze and Guattari emphasise that the relationship between wholes and parts is non-linear and under continual negotiation. Rather than a mere summation of individual components, the whole is a novel and coherent system with its own properties and dynamics that emerges from interactions across various scales. This view underscores the intrinsic relationship between parts and wholes, indicating that the aggregate is characterised by an emergent property that maintains the distinctness of its components while bringing them together in a meaningful unity.

In exploring the concept of coherence within a system, a critical question arises: How can one multiplicity be distinguished from another in the absence of a criterion of distinction? Ruyer's concept of unitary domain and Leibniz's concept of the monad both address the need for a criterion that allows for the emergence of unity from multiplicities, rather than the reverse. This criterion underscores the idea that unity or any form of unification is not the foundation but rather a derivative or emergent property of multiplicities, which only ever appears as subtracted from them.[41] The pattern that connects emerges as a result of the system's dynamics and the interactions between its parts and the environment. Creation, therefore, unfolds as a process of subtraction, a selective retention from chaos, delineating a domain of limitation, conservation, or survey.

In this framework, systems are not fixed entities oscillating between order and disorder. Instead, they exist within a continuum of 'not not order', where various degrees of structure interact, giving rise to an ever-changing spectrum of organisational states. The ongoing negotiation between coherence and transformation advocates for understanding unity and order not as endpoints but as emergent properties that arise from the intricate interplay of forces, patterns and processes. Indeed, no one could know if a party is going to be good in advance, one could only speculate; or as stated in a more sophisticated way by Alfred North Whitehead: there is no continuity of becoming but only a becoming of continuity – continuity is never given in advance.[42] From a different context but following the same line of thought, Alan Turing in *The Chemical Basis in Morphogenesis* argues that life emerges through organisation, which is essentially a transition from one pattern to another rather than from homogeneity to a pattern.[43] The dynamic transition between patterns implies that the mechanisms underlying morphogenesis are not

predetermined, but are influenced by environmental cues, genetic regulation, and the spatial distribution of morphogens. This aligns with the idea that biological systems exhibit a high degree of plasticity and responsiveness to internal and external signals, allowing for the generation of diverse forms and patterns in response to changing conditions. Systems evolve through a nuanced gradation of orderliness that is the result of an ongoing process of negotiation of which connections are viable or sustainable enough to remain. Hence, every pattern that connects simultaneously disconnects.

Alicia Juarrero in *Context Changes Everything: How Constraints Create Coherence* uses the concept of enabling constraints to explain how coherence arises within a system.[44] Enabling constraints are dynamic factors that facilitate interactions, propelling systems to exhibit emergent properties that lead to novel behaviours, patterns, and the formation of coherence and organisation.[45] For instance, our understanding of space is intricately determined by the constraints that define possible relationships and arrangements within it (here, there, inside, out, up and down), leading to conditional probabilities in interactions and behaviours.[46] The addition of temporal constraints to spatial constraints increases complexity and multiplies the potential for novelty.[47] This implies that the formation of a new emergent coherent whole is enabled by a process of decoherence that happens simultaneously. In quantum physics, decoherence refers to the process by which a quantum system loses its quantum properties, such as superposition and entanglement, as it interacts with its environment. When a quantum system interacts in a thermodynamically irreversible way, the system seems to transition from a quantum to a classical state.[48] For design, decoherence could be understood as a dynamic process that fosters systems' reorganisation through rearrangements in their field of interaction. If unity is only subtracted from within, and is not imposable, novelty could only arise through the breaking down of existing states of order, so as to negotiate novel ones. From this perspective, design is systemic change and to design is to disrupt, enabling a system's unity to be re-negotiated. Then, we architects break unity, simply because we cannot impose it.

Do the thinging

Let me initiate this paragraph with a linguistic break: it's worth mentioning the potential etymological connection between the words think and thing, although it might stem from speculative reasoning (or maybe that makes it even more noteworthy!). Samuel Taylor Coleridge, driven by J. H. Tooke's assertation that the word 'think' derives from 'thing', took the etymology a step further and proposed that 'thing' signifies not just an object but an act of setting something apart, suggesting a fundamental cognitive process of differentiation. This conceptual leap underscores a deeper philosophical inquiry into the nature of thought itself, where 'to think' is to engage in the act of thingifying, meaning sensing, and perceiving.[49] The etymological connection, if it exists, of the words think and thing is less important here than the idea that a thought is already an act of division. To think, or for Coleridge, to thingify is to engage with the environment, meaning to sense, to organise, and to classify the incoming data.

For James J. Gibson to perceive is to understand the action potential within the environment. He uses the concept of affordance, which is a neologism from the verb afford, to describe what the environment offers, what it provides or furnishes.[50] Perception, in this view, is not passive reception but an active, exploratory process that reveals the potentialities embedded in one's surroundings. This direct engagement entails a constant differentiation, that is, a process of extracting information from the 'stimulus flux' and transforming them into meaningful bundles of signals that inform action (registering value).[51] Discrimination or division in perception – to sort, filter, organise and select between various aspects of the environment – enables individuals to make informed decisions based on the specific features and patterns they perceive within the milieu. Gibson argues that the theory of affordances offers a way out of the clear-cut categorisation of objects that is insufficient to describe the spectrum of capacities and features they carry. In his words: 'to perceive an affordance is not to classify an object.'[52] It is true that to perceive what an object affords, it does not have to be labelled first. However, the classes of objects that present a family resemblance enable us to perceive the common affordances within a niche, meaning the action-potentials that are shared within a specific environmental context. An objective schema essentially enables a dual engagement, an immediate-individual and a mediated-collective understanding of how objects can be interacted with. This communal aspect of affordances underscores that while the physical environment offers the same potential affordances to all its occupants, the actualisation of these affordances is mediated by shared frameworks of understanding and interaction that extend our sensitivity beyond individual sensory input. Except from physical affordances that emerge from human activity, there are also abstract, culturally and socially constructed affordances that emerge from collective human activity.

In this conceptual framework, intelligence is context-dependent, grounded in the ability to recognise and act upon (expand) affordances within the confines of an organism's ecological niche. Intelligent conduct is in

essence conduct towards making the environment more intelligible, and making something intelligible means to reduce the possibility of misperceiving its affordances. It is a step towards the expansion of an organism's niche which remains always in the making, and in that making, an organism not only adapts to and interacts with the environment but also actively transforms it, introducing new patterns of interaction and enabling the emergence of novel affordances. Thus, to question what intelligence is is to question how we change what affords us in order to make our surroundings more available, or in ecological terms, more intelligible.[53] To make something intelligible is essentially to make ourselves capable of revisiting it, thereby extending its effect across temporal and spatial constraints. Such an extension implicates an iterative dynamic where the known can be re-encountered, re-assessed, and potentially transformed. It is a process of prolonging the influence or relevance of an action or an action-potential by creating opportunities for its meaning or function to evolve through ever-continuous interaction.

Expanding this argument, the process of making something intelligible is not an end in itself, but the beginning of a new cycle of engagement with and within an entity. Through repetition, a revisitation of multiple scales is enabled, each instance providing an opportunity to evaluate the meaning of the connection, on the foundation of new contexts, insights, or understandings that have been acquired since the last encounter. Hence, repetition is an evaluation in itself. Either happening intuitively or intentionally, something is repeated when considered valuable enough to be repeated. Iterative processes involve a continual reconfiguration of possibilities and exclusions enabling us to negotiate what is valuable enough to continue relating with.[54] Their dynamic and non-deterministic nature offers a way of looking into classes of variables and functions that enable a form of sloppy programming entailing speculation.[55] As such, it involves making educated guesses or leaps, engaging in a perpetual negotiation with new possibilities emerging as others are excluded. In other words, intelligence becomes intelligent as it learns through failing and adapts. Feedback loops happening on various time scales and through different physical mediums, either embodied as the brain, or exosomatic as the clock, expand the ways we interact with our surroundings and consequently what is afforded by our surroundings. In doing so, the feedback amplifies the potential lines of escape from established norms and structures, opening up novel experiences and conducts. Repetition, in this sense, seems to form both the cuckoo's nest and the schizoanalytic method that identifies and multiplies the lines of flying away from it.

Novelty in wonderless land

Simondon posits that animals (and by extension, humans) are most capable of engaging in complex psychological activities, including those involving the inventive imagination, within their own territories. A territory is an area that an animal has organised and made familiar through its perceptions and activities.[56] This organisation makes the territory conducive to higher cognitive functions, because the animal has already classified and integrated the various elements of the environment. The animal's ability to perceive, integrate information, and act within its environment is directly related to the size and organisation of its territory.[57] In familiar settings where the environment is already structured in a way that aligns with the organism's cognitive and perceptual capacities, engaging in creative problem-solving and deploying the inventive imagination is more effective. Simondon suggests that when an organism's environment is highly organised, there is less need for the organism to engage in extensive preliminary filtering or sorting of sensory inputs according to basic categories. An organised environment allows for quicker recognition and classification of objects and situations, freeing cognitive resources for more complex 'psychical' (or psychological) activities.[58] This is because the classification or understanding of objects within such an environment becomes straightforward, reducing ambiguity and the cognitive load associated with identifying and responding to stimuli. As Simondon puts it:

> The more the milieu is organized, the less it is necessary to conduct a preliminary sifting of signals according to the primary categories; after a cursory categorical scouting, the field is freed up for psychical activity because the class of the object is no longer in doubt. … The consequence, specifically, is that resolving problems involving the inventive imagination humans deploy (detours, instruments) succeeds much better when an animal is in its territory than when it is in a situation where it could not organize its milieu.[59]

Therefore, in unexplored territories, where a living being is in a constant state of alertness and vigilance less novelty arises, in comparison with an organised and classified milieu that enables the organism to engage with its surroundings in a more nuanced approach.

Further developing the three modes of processing a motor-movement briefly mentioned above, Simondon relates them to the milieu's level of organisation.[60] In the primary mode, the individual's interaction with the environment is immediate and unreflective. This stage is characterised by direct engagement with the surroundings, where the environment serves as a field for action without a mediated or conceptualised understanding. As

individuals progress to the secondary or psychic mode, their relationship with the environment undergoes a significant transformation. The milieu becomes organised, processed through a psychic mode of perception. In this mode, there is a shift from dealing with situations to interacting with objects. The environment is not just a field for immediate interaction but a collection of objects that can be distinguished, categorised, and manipulated according to their perceived functions and affordances. In the last, the logical mode, the interaction with the environment reaches the highest level of abstraction. Objects previously identified in the psychic mode become parts within a network of relations. The individual perceives and engages with the surroundings through formal or logical structures, understanding that objects can signify beyond their materiality. This mode implies a significant cognitive leap: the environment is conceptualised through systems of relations, allowing for symbolic thought and abstract models of understanding to emerge.

Consequently, the systematic organisation and classification of the milieu serve as a catalyst for the emergence of intelligent conduct. Iterative interactions with environmental stimuli expand the range of organisational and classification possibilities. This perspective defines home as a domain where novelty with regard to vital categories is inherently restricted, and where habitual interactions take place, stimulating creative problem-solving and intelligent behaviours.

Live inhabit

The word habit is commonly used to refer to a regular practice repeated over time. In Latin, it literally means ‘holding a particular condition’, highlighting that habituation encompasses a constant process of resolving the disparate tensions between different orders of magnitude to effectively restore the continuity of activity.[61] Habits could be conceptualised as opened paths within a multitude of potential behaviours delineating ways of acting that are both established and subject to further exploration. They pertain to relationships already negotiated and still under negotiation. Through this lens, habituation should be understood as an active, dynamic process, that is, an ongoing negotiation between the organism and its surroundings. This perspective on habituation emphasises its adaptive and anticipatory nature. It underscores that habits serve not just as shortcuts for routine actions but as essential strategies for balancing and integrating across different scales of experience and action. In doing so, habits facilitate a sustained engagement between the organism and the milieu, while re-evaluating whether the established patterns of interaction remain beneficial and are worth maintaining. Additionally, the formation of habitual responses to environmental stimuli presupposes an organised and classified environment. Organisation and classification allow for the identification and repetition of specific behaviours in response to certain stimuli. In the context of this article, spatiotemporal constraints are behavioural constraints that delineate the possible from the impossible, thereby fostering the emergence of coherent behavioural patterns. Through repetition, these organised and classified relations enhance relationality by reinforcing context classification.

In *Steps to an Ecology of Mind,* Gregory Bateson explores the formation of habits as emerging from continuous interactions with environmental stimuli. He delves into the processes involved in habit formation, emphasising the role of positive and negative reinforcements in shaping and maintaining behavioural patterns.[62] This mechanism driving the formation of habits positions them not merely as repetitive actions but as deeply rooted in the organism’s interaction with its environment and its inherent drive towards adaptation and learning. For Bateson, habits are not solely the result of direct experience but are influenced by various forms of learning and interaction within a socio-technological context. Habitual responses stem from a complex patterning that is not fixed but evolves through feedback loops. By superposing and interconnecting many feedback loops, Bateson asserts that organisms not only solve specific problems but also develop generalised strategies for addressing classes of problems.[63] Habits are effectively formed and function within the realm of propositions that possess a general or repetitive nature, embodying truths that recur over time or across situations. Positioned between total stability and total instability, habits serve as a foundation for efficient functioning, simultaneously facilitating growth, adaptation and the emergence of new possibilities.

The discourse on ecological and behavioural adaptation expands further through the contributions of Gibson and Simondon. Gibson argues that the natural environment offers many ways of life, with different species developing distinct modes of existence. Furthermore, he emphasises that a niche refers more to how an animal lives than to where it lives.[64] In a similar point, Simondon identifies species distinction as emanating not solely from physical form but through behavioural schemas. [65] Both statements highlight that species are characterised by their activities and the ways they are carried out. Bateson expands on this by suggesting that the self is an aggregate of habitual perceptual and adaptive actions augmented by immanent states of action. However, although the formation of habits through repeated environmental interactions, and their assessment across diverse contexts, facilitates adaptation, it also signifies a reluctance to deviate from known

paths. The genesis of change is thus intricately connected to these dual forces of resistance to alteration and the adaptive imperative to engage with new realities. Within a biological analogue, the formation of a scar, where the body's resistance to change precipitates the creation of new tissue, mirrors how behavioural patterns stabilise yet allow for the emergence of novelty through adaptation. The emergence of novel behaviours is linked to the resistance to modifying established behavioural patterns, suggesting that novelty can emerge from ongoing efforts to maintain systemic stability. Novelty, in this sense, comes out of nuanced alterations to established relations within the milieu; it is an epigenetic function.

Shifting the focus from *where* we live to *how* we live emphasises that to inhabit is to actively and rhythmically engage with the environment. Home is definitely a territory with less novelty regarding vital categories. As such, it offers a perceptual (and physical) organisation and classification of the milieu that enhances the development of habitual ways of responding to stimuli. From this angle, the home could be reconceptualised as an apparatus for the making of habits, a territory where acts of habituation, or towards making the environment more intelligible, take place. Home in its essence emerges as a value-rich locus where the spectrum between differentials expands, creating pathways for novel interactions. This perspective advocates for an ontology of space as a multitude of activity species (bedrooming, kitchening and so on), instead of a set of species of spaces.[66] Each room stands as a field of negotiation, a mediator between the known and the unknown, enabling intelligent conduct that stems from established behavioural morphologies. Home's dynamic and non-deterministic nature allows a form of sloppy programming, meaning that the process of habituation evolves through trial, error, and adjustment. It could be posited that architecture is essentially about designing faulty laboratories, that is, constrained spaces that enable experimentation, actively participating in the way an individual perceives and interacts with their environment.

Bateson connects habit formation with an 'economy of consciousness', a process through which actions become automated, freeing up cognitive resources for novel challenges.[67] This automation of habitual actions occurs as the cognitive processes extend beyond the physical confines of a body, engaging with and augmented by its immediate environment. The home in this context transforms into an instrument of perception, acting as a dynamic cognitive extension that amplifies our abilities to perceive and interact with that environment.[68] This perspective is further enriched by Andy Clark and David Chalmers's discussion of the extended mind, which posits that cognitive processes do not solely reside within the brain but extend into the external environment through a system of feedback loops and interactions. They write:

> The human organism is linked with an external entity in a two-way interaction, creating a coupled system that can be seen as a cognitive system in its own right. All the components in the system play an active causal role, and they jointly govern behaviour. If we remove the external component the system's behavioural competence will drop, just as it would if we removed part of its brain.[69]

Aligned with the above, Stamatia Portanova argues that clocks also extend our perception: 'They are the temporal extensions of the mind that enable a timeless order of time to appear through an objectified scheme (such as the scheme of seconds, minutes, and hours).'[70] Both homes and clocks are dynamic cognitive extensions, enhancing our capacity to perceive and engage with the environment by segmenting, organising, and classifying the experiential flow through the repeated functions they afford.

If you are happy and you know it, clap your hands

Intelligent conduct emerges in environments that are systematically organised and classified; where the formation of spatial, temporal, and behavioural patterns enables the revisiting of past experiences (or knowledge). Such an approach requires re-evaluating intelligence beyond cognitive processes or conscious decision-making, and recognising it as an intrinsic process of the living world. (Embryogenesis epitomises this form of intelligence, involving highly organised, intricate sequences of repetitive events that transform a fertilised egg into a complex organism.) The segmentation of experiential flow serves as an impetus towards the expansion of an individual's physical and cognitive capacities, and the making of the milieu more (and more) intelligible. In the context of this article, to make something intelligible means to create pathways for returning to it, thus allowing continued engagement. The ability to return and re-engage establishes a 'timeless order of time', extending one's sense of self across the spatio-temporal continuum.[71]

Hence, intelligence acts as an active opposition to time's irreversibility. That explains the intrinsic relationship between intelligence and knowledge, as knowledge serves as the medium through which we revisit our known experiences and anticipate our unknown future. Nevertheless, intelligence should not be absorbed by knowledge, since informed conduct is not always intelligent. We could argue that knowledge *is* history, while intelligence *has* history. In other words, knowledge enables the revisiting of past experiences, while intelligence expands our perceptive mechanisms for multiplying experiences. This view frames

intelligence as both reflective (learning from previous interactions) and expansive (seeking new interactions). Therefore, intelligence should not be seen as a fixed property but rather as an emergent process that is fundamentally symbiotic, responsive and anticipatory.

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1. Stamatia Portanova, *Who's Time is It? Asocial Robots, Syncolonialism, and Artificial Chronological Intelligence* (London: Sternberg Press, 2021), 67.
2. Henri Bergson, *Time and Free Will: An essay on the Immediate Data of Consciousness*, trans. F. L. Pogson (London: George Allen & Unwin LTD, 1910), 226–27.
3. Portanova, *Who's Time is It,* 67.
4. Gilbert Simondon, *On the Mode of Existence of Technical Objects*, trans. Cecile Malaspina and John Rogove (Minneapolis: Univocal, 2017), 176.
5. Stavros Kousoulas, *Architectural Technicities: A Foray into Larval Space* (New York: Routledge, 2023), 60–61.
6. In *A Thousand Plateaus,* Deleuze and Guattari introduce the concept of the machinic as a function that can repeat itself, emphasising its dynamic and iterative nature within various systems and contexts. The notion of the machinic function repeating itself is linked to the idea of the refrain, where certain patterns or functions cycle back and reappear in different forms. This concept suggests that machinic processes are not linear or one-time occurrences but can exhibit repetitive and cyclical qualities. Just as a refrain in music recurs throughout a composition, the machinic function can manifest in different ways, cycling back and reappearing in various contexts and forms. Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1980), 349.
7. The term 'motricity' is used by Simondon to describe spontaneous motor activity, suggesting that movement is primary and precedes the structured reception of sensory signals from the environment. As such, perception emerges as a progressive organisation and transformation of motor anticipations. Gilbert Simondon, *Imagination and Invention*, trans. Joe Hughes and Christophe Wall-Romana (Minneapolis: Minnesota University Press, 2022).
8. Sanford Kwinter, *Architectures of Time: Toward a Theory of the Event in Modernist Culture* (Cambridge, MA: MIT Press, 2033), 17.
9. Ibid.
10. Ibid.
11. Félix Guattari, *Psychoanalysis and Transversality: Texts and Interviews 1955–1971*, trans. Ames Hodges (Los Angeles: Semiotext(e), 2015).
12. I refer here to the popular novel by Ken Kesey, *One Flew Over the Cuckoo's Nest* (New York: Viking Press, 1962).
13. I refer here to Aldous Huxley, *The Doors of Perception* (London: Chatto & Windus, 1954).
14. Gregory Bateson, *Mind and Nature: A Necessary Unity* (New York: E. P. Dutton, 1979), 29.
15. Lewis Mumford, *Technics and Civilization* (London: Routledge & Kegan Paul, 1934), 16.
16. Kwinter, *Architectures of Time*, 12.
17. Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham, NC: Duke University Press, 2007), 151–52.
18. Ibid., 172. Intra-activity, as discussed in the context of agential realism, refers to the dynamic and reciprocal interactions between entities that are mutually constitutive. Instead of viewing entities as independent and separate objects, intra-activity emphasises the entangled relationships and co-constitutive processes through which entities come into being and shape one another.
19. For more information about the installation, see https://www.tate.org.uk/whats-on/tate-modern/christian-marclay-clock.
20. Kwinter, *Architectures of Time*, 4–5.
21. Bergson, *Matter and Memory*, trans. Nancy Margaret Paul and W. Scott Palmer (London: Allen and Unwin, 1911), vii.
22. Simondon, *Imagination and Invention,* 29.
23. Andreia Machado Oliveira and Felix Rebolledo Palazuelos, 'Simondon's Concept of the Image: At the Junction of the Technological and the Animal', in *Proceedings of the 22nd International Symposium on Electronic Art*, ISEA2016 (Hong Kong, 2016), 103.
24. Simondon, *Imagination and Invention,* 29.
25. Ibid., xxvi.
26. See Chapter 1 in Alicia Juarrero, *Context Changes Everything: How Constraints Create Coherence* (MIT Press, 2023), 3–20.
27. Kwinter, *Architectures of Time,* 5.
28. Ibid.
29. Simondon, *Imagination and Invention,* 30.
30. Ibid., 29.
31. Ibid., 30.
32. Ibid., 55.
33. Ibid., 74.
34. Ibid.
35. Raymond Ruyer introduced the concept of absolute survey suggesting perception as an indivisible domain of linkages, thereby

revealing the immediate self-coherence within the perceptual field. Jérôme Rosanvallon, 'What Surveys Itself? Ruyerian Neofinalism and DeleuzoGuattarian Immanentism', *Journal of the CIPH 99*, no. 1 (2021): 71, 79.

36. Bateson, *Mind and Nature, 17.*
37. Ibid., 13.
38. Simondon, *Imagination and Invention, 31.*
39. Bateson, *Mind and Nature*, 29.
40. Gilles Deleuze and Félix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia*, trans. Robert Hurley, Mark Seem and Helen R. Lane (Minneapolis: University of Minnesota Press, 1983), 339–40.
41. Rosanvallon, 'What Surveys Itself?', 78–79.
42. Steven Shaviro, 'Deleuze's Encounter with Whitehead', no date, available at http://www.shaviro.com/Othertexts/DeleuzeWhitehead.pdf.
43. A. M. Turing, 'The Chemical Basis of Morphogenesis', *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 237, no. 641 (August 1952): 71–72.
44. Juarrero, *Context Changes Everything*, 27.
45. Ibid.
46. Ibid., 41.
47. Ibid., 42.
48. Maximilian Schlosshauer, 'Quantum Decoherence' *Physics Reports* 831 (November 2019): 1–57.
49. H. J. Jackson, 'Coleridge, Etymology and Etymologic', *Journal of the History of Ideas* 44, no. 1 (1983): 85. Coleridge was a poet, literary critic and philosopher associated with the Romantic movement in England. He had a special interest in etymology, and he often delved into the connections between language, thought, and perception in a playful manner.
50. James J. Gibson, *The Ecological Approach to Visual Perception* (New Jersey: Lawrence Erlbaum Associates, 1986), 127. For a book-length theoretical work discussing the concepts of J. J. Gibson and ecological psychology, see Andrej Radman, *Gibsonism: Ecologies of Architecture* (doctoral thesis, TU Delft, 2012), http://resolver.tudelft.nl/uuid:4035de29-3b68-4dfa-b0fb-668bf69d54b5.
51. Gibson writes: 'The activity of orienting and that of exploring and selecting – the commonsense faculty of attending – is seen to be one that extracts the external information from the stimulus flux while registering the change as subjective feeling. This feedback system also, of course, controls the performatory activity of the body, the executive systems of behavior proper as distinguished from perception, but that aspect of proprioception lies outside the scope of this book.' James J. Gibson. *The Senses Considered as Perceptual Systems* (Boston: Houghton Mifflin, 1966), 320.
52. Gibson, *The Ecological Approach to Visual Perception*, 134.
53. Gibson questions why humans have altered the shapes and substances of their environment. As he asserts, 'it is to change what the environment affords them, to make more available what benefits them and less pressing what injures them.' Ibid., 130.
54. Barad, *Meeting the Universe Halfway*, 177.
55. Juarrero uses the concept of sloppy programming in an interview on the API Resilience podcast, available at https://pronovix.com/api-resilience/complex-systems-remember-their-past-conversation-prof-alicia-juarrero-part-1.
56. Simondon, *Imagination and Invention,* 78.
57. Ibid., 63.
58. Ibid., 63–64.
59. Ibid.
60. Ibid., 41–42.
61. This concept of resolving tensions between different orders of magnitude in Simondon's philosophy pertains to the dynamic processes of individuation and the transformation of potentials into actualised forms within complex systems. Disparate tensions exist at various levels or scales within a system, representing different orders of magnitude. Through the dynamic process of individuation, these tensions are resolved and transformed into a coherent form. Simondon, *Individuation*, xxii.
62. Gregory Bateson, *Steps to an Ecology of Mind* (New York: Ballantine Books, 1978), 241.
63. Ibid., 279.
64. Ibid., 128.
65. Simondon, *Imagination and Invention,* 31.
66. I refer here to Georges Perec, *Species of Spaces and Other Pieces*, trans. John Sturrock (London: Penguin Books, 1997).
67. Bateson, *Steps to an Ecology of Mind*, 151.
68. Merleau-Ponty in *Phenomenology of Perception* uses the example of the cane to emphasise that instruments can extend our bodily boundaries and fundamentally alter our engagement with the world as extensions of our sensory perception: 'Habit does not consist in interpreting the pressure of the cane on the hand, the signs of certain positions of the cane, and then these positions as signs of an external object – for the habit relieves us of this very task … the cane is no longer an object that the blind man would perceive, it has become an instrument with which he perceives.' Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (London: Routledge, 2002), 176.
69. Andy Clark and David Chalmers, 'The Extended Mind', *Analysis* 58, no. 1 (January 1998): 8–9.
70. Portanova, *Who's Time is It?,* 20.
71. Ibid., 28.

Biography

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