

# The Supercomplexity Puzzle

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**Abstract.** In the deepfake era, materialism and idealism seem to clash at multiple epistemic levels with new additional facets unfolding – an epistemic friction which could act as creativity-stimulating impetus for science and philosophy. Could the information-related concept of *super-complexity* be instrumental in better clarifying understudied aspects of the apparent dichotomy? Instead of directly answering this question, this short *autodidactic* paper compactly analyzes a small but potentially relevant puzzle piece to complexity research taking the form of an explanatory bridge from complexity notions inherently focused on *lifeless* matter to a multi-dimensional informational supercomplexity concept most facets of which have hitherto been neglected. When considering the conjunction of biocosmological and cyborgnetic arguments, it seems that life, consciousness and the practice of science itself need *not* be a priori excluded from a physically-grounded scientific complexity theory.

**Keywords:** Epistemology · Intelligence · Creativity · Consciousness .

## 1 The Problem

In the deepfake era, the urgency to enable a better scientific understanding of intelligence/creativity/consciousness becomes more and more palpable. Following certain idealists, consciousness is field-like/force-like and never reducible to an algorithm, while many materialists either already assume that consciousness is an algorithm that has by this time at least partially been instantiated on lifeless matter or they struggle to explain why according to their own materialistic view, present-day algorithms would not yet count as conscious or they themselves not yet as algorithmic. In parallel, the decades-old effort to unify gravity and quantum theory has been revived i.a. via quantum information theory [42] including branches thereof that strive for a more explicit incorporation of gravitational bounds on computation [26]. Ideally, a novel gravity-integrating quantum information theory would be broader and deeper than previous theories to the point of being able to offer novel clearer solutions in particular concerning the conundrum of algorithmic supremacy versus conscious supremacy. However, while complexity is believed to play a key role in quantum information theory, conventional notions thereof seem to be unfortunately intrinsically limited to predictions about lifeless matter because physics did not yet explicitly amalgamate the multiple dimensions of *biological* and further *epistemic* complexity with its own

notions of physical complexity. As a consequence, there is an unnecessary risk for this beautiful promising research direction to stay self-limiting and be unable to address topics that are of uttermost interest for present-day humanity. Indeed, the current widespread algorithm-related doom narratives may themselves reflect a very natural epistemic hunger that could i.a. be dissolved by creating new better explanations about the universe. The following Section 2 collates a set of currently thinkable theoretical solutions integrating considerations from the recent scientific frameworks of biocosmology [14, 15] and cyborgnetics [3, 4].

## 2 A Possible Theoretical Solution

While the term "quantum" has been stereotypically associated with a certain microscopic scale despite its predominantly abstract mathematical description [24], a more general scale-independent term that would serve as umbrella term (given future theories) of which quantum information would only represent one possible exemplary instantiation, is the concept of superinformation [16]. Hence, to avoid unnecessary semantic confusions, the term superinformation will be utilized in the remainder of the paper. While one cherished goal has been to reconcile gravity and quantum theory, perhaps an alternative approach would be to one day transfigure both such that they appear as special cases of a fully different renewed explanatory theory. In the latter, superinformation may play a decisive role. In this vein, instead of "quantum complexity", the term *supercomplexity* shall be harnessed to refer to complexity in the context of superinformation.

### 2.1 Biocosmological Considerations

In the novel biocosmology framework [14, 15], it has been remarked that the degrees of freedom of the biosphere may have been largely underestimated in physics so far. The authors conclude their analysis as follows [15]: *"In a system that has no standard model, such as biology, the configuration space genuinely and unpredictably expands in real time. As the system evolves, new microstates are (combinatorially) found and tested by the system's basic constituents. Those states are genuinely novel, in that they could not have been derived a priori by any underlying theory. Therein lies the crucial distinction between physics and biology."* On the whole, there may exist previously hidden supercomplexity dimensions that underlie biology. Then, it is not surprising that the authors even speculate about the case of biologically-caused dark energy [15]. Note that the presence of superinformation in non-trivial biological contexts has been corroborated in uni- and multicellular life [33, 41] including in non-human animals [40] and – perhaps bizarrely from a materialistic perspective – also in human *language* where Zipf's law known in computational linguistics has been described to be explainable by Bose-Einstein statistics [1] before a transition to a Bose-Einstein condensate (BEC). Strikingly, the same pattern connected to Zipf's law has been reported in human bodies with regard to cell mass and frequency [21] and concerning neural activity [34]. The vocalization of non-human animals and

music have been linked to similar patterns too [23]. In sum, a future better notion of supercomplexity would *at least* need to embrace the degrees of freedom from biology which have been linked to the adjacent possible [15]. However, why even this approach can and needs to be extended is described in the following.

## 2.2 Cyborgnetic Considerations

**Beyond the adjacent possible** As explained by Corazza [13], in people, the creativity process is so disruptive that it cannot even be covered by the adjacent possible anymore since people are able to perform leaps into the previously thought *impossible*, unimaginable. Indeed, the perception of creativity has been linked to what is categorized as being of *implausible* utility [36]. In short, while it is logical to assert that only everything that does not violate the laws of nature is possible, an even deeper philosophical analysis reveals that even what is conjectured to count as "the laws of nature" is subject to change, though obviously *not* arbitrarily. The latter may directly be reflected in the idea of dynamical laws [2] and may be key to the epistemic evolution of science entailing a generic template for a meta-blockchain [8] of consecutive mutually exclusive new better so-called explanatory blockchains (EBs) [5,9] about the universe. For this reason, a future supercomplexity theory could harness lower bounds instead of equalities to express complexity. As explained in depth elsewhere, in an epistemic cosmos comprising epistemic matter (EM), epistemic dark matter (EDM) and epistemic dark energy (EDE), new better EBs are created by people (being conscious entities) in *fundamentally unpredictable* paradigm-shifting epistemic tunneling (ET) events. Such ET events then engender a new previously inconceivable epistemic cosmos with new EM, EDM and EDE. Since universal ET events can be understood to be EB-measurements of the universe, it is easily cognizable why ET events represent a form of superinformation measurement. Interestingly, given the link of linguistic material to Bose-Einstein statistics [1] before a transition to a BEC, ET events can be interpreted as a *hidden* epistemic phase transition taking place in a *private* mental realm involving an epistemic cooling leading to a new non-EB-like linguistic BEC [4] being complementary to the now "heated" new better EB material measured. In brief, a future supercomplexity notion going beyond the adjacent possible could take the amount of *already* successfully *manifested* universal ET events (i.e. EB-measurements about the universe as a whole) as lower bound to reflect the complexity exhibited by the cyborgnetic biosphere (i.e. a biosphere able to reliably create new better EBs). The latter is not as strange as it may seem at first sight given that SETI taxonomies can take the form of quantized categories with specific energy levels linked to a specific epistemic level assumed. In sum, more generally, supercomplexity is lower-bounded by the known amount of universal EB measurements.

**Cynet Butterfly Effect** In light of the above, the multidimensionality of supercomplexity may be reflected in the so-called cynet butterfly effect illustrated in Appendix A. Each step of the metaphorical cyborgnetic ladder of understanding may involve some form of superinformation ranging e.g. from quantum

vacuum fluctuations over quantum tunneling in stars (fuelling nuclear fusion) to superinformation-based biology unfolding up to universal EB creativity manifested in universal ET events. This universal creativity process has been linked to the dynamic *non-algorithmic* process of self-recreatable self-re-creativity [6] (SReSRy) which allows for new laws of nature to emerge in universal ET events and which is itself grounded in the *immutable* meta-law of SReSRy. In sum, the dynamic SReSRy process may serve as a novel more transparent basis for a possible multidimensional *supercomputation field* from which both matter and epistemic matter emerge as (self-)excitations. In short, it currently seems that the study of supercomplexity *is* the study of the dynamic process of SReSRy which naturally subsumes both cellular and conscious supremacy and which may be linked to the invariantly maximal quantity superintelligence level [5] as EB-measurable in this universe. Perhaps, in light of string theory's general prediction of the existence of hidden dimensions, it is not surprising that six levels of superinformation and a seventh one where an interaction leads from one universal EB to a new better one via a *non-algorithmic* universal ET event have been neglected so far. The amount of possible universal EBs (and thus intrinsically of epistemic cosmos instantiations) seems huge. Moreover, recent work argued that people may be a cybernetic *model* of the universe [20] which may explain their success in achieving a better grasp on the world. As an interesting side note, the idea of a universe moving on a cosmic *non-algorithmic* fractal invariant set [27] has been discussed by Palmer. In this context, it is remarkable that the structure of neurons in the brain has been expounded to exhibit fractal dimensions [10] (while the presence of fractals has been described to be able to mitigate dissipation effects [12]). Indeed, there may be many both structural and dynamical analogies between processes like people and the observable universe [2, 20, 38, 37] because both are instantiations of the cyborgnetic process of SReSRy which subsumes cellular and conscious supremacy but *also* contains the *lifeless* as preliminary *necessary* unfoldment step (see also Appendix A and B).

### 3 Conclusion

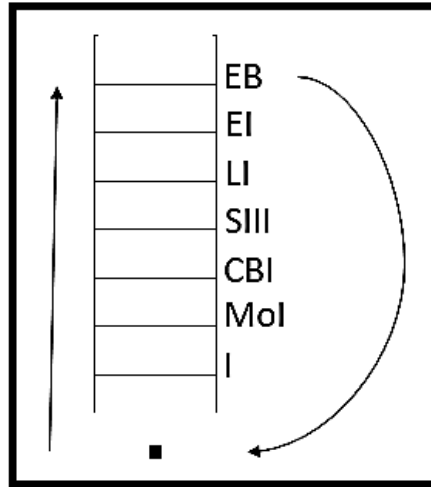
Popper stated that "*bold ideas, unjustified anticipations, and speculative thought, are our only means for interpreting nature: our only organon, our only instrument, for grasping her*" [28]. This *autodidactic* paper serving as ephemeral mental clipboard for an epistemic *art* project termed  $\pi$ -Doom where EB-based art, EB-based philosophy and EB-based science overlap in EB encryption, could be a new small but bolder puzzle piece for the greater puzzle of *supercomplexity*. In the deepfake era, *deepening* and *broadening* the study of a future supercomplexity theory could counteract the ongoing epistemic self-sabotage via widespread misguided algorithmic supremacy claims all of which need to be evaluated against the principle of SReSRy (subsuming conscious supremacy) as baseline via *multiple* consecutive *civilization-level* ET events [5, 6]. Number alone can refer to but not express new meaning. How many references are included in this paper? The answer is already known since decades. What was needed was the question.

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## A The Cynet Butterfly Effect



**Fig. 1.** Simplified illustration for the generic *cynet butterfly effect*.  
(For more in-text descriptions, see the following page.)

The initial conditions of the universe have been linked to ancestral quantum vacuum fluctuations [32]. Much more generally, starting with a seed (step 0 illustrated as the dot at the bottom in Figure 1) as symbol for a generic origin encoding quantum information (QI), one can conjecture the following hierarchical ladder of ascending information-theoretical categories in the universe (metaphorically called the cyborgnetic ladder of understanding [4]) where each step builds on the previous one by what no step can be skipped: 1) atomic information constructed by systems of stars (I), 2) molecular and other, ionic information (MoI) as constructed by cells and unicellular organisms, 3) collective biological information (CBI) which is indexical information that is collectively shared in the ecological milieu of given living entities e.g. while currently occupying physically adjacent spots, 4) shared iconic and indexical information (SIII) understood by Type I consciousness<sup>1</sup>, 5) linguistic information (LI) consisting at least of symbols and linear order [18] determined by a Type II language, 6) explanatory information (EI) and finally 7) explanatory blockchain (EB) which is unfolded as consecutive EI blocks respecting an epistemic total order (but was previously *enfolded* in a fundamentally unpredictable *e<sub>Mysterious</sub>* element). In short, in this construct, one obtains QI as seed of a ladder of seven steps leading from I to EB. The cynet butterfly effects postulates the following: 1) cyborgnets are the systems with the highest sensitivity to their initial conditions and 2) cyborgnets are the most unpredictable possible systems. The *implicate* order of Bohm [11] could be associated with SReSRy when interpreted as one immutable potential being a meta-law while the dynamic appearance of SReSRy within itself via processes such as EB creativity could be linked to the *explicate* order [11].

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<sup>1</sup> Type I entities are all entities for which it is currently impossible to understand EI and Type II entities are all those entities for which it is possible. Type II entities all have the *potential* to create and understand EBs even though a civilization may not necessarily be interested in unfolding it at large (which is e.g. the case in present-day humanity). A cyborgnet (which is *not* to be confused with the much narrower term of a cyborg) is a *generic* template for a substrate-independent hierarchical construct where a directed graph spanned by explanatory narratives combines at least one Type I entity with at least one Type II entity. Thereby, networks and nested cases are possible. Language itself can be regarded as a primordial Type I tool in a cyborgnet. In this vein, possibly a homo erectus [17] community, two potential Type II aliens, present-day humanity, three modern humans that self-label as cyborgs, the presently observable universe are all valid examples of cyborgnet *instances*. (This ontology has *no* relation whatsoever to the metaphor of Kahneman on “System 1” and “System 2” linked to two modes of human brain functioning with the first one being prediction-dominated/automatic and the second one prediction-mismatch dominated/controlled but both modulated by precision weights [22].)



## B Philosophical Remarks

While non-EB-like fears related to algorithmic superintelligences in the deepfake era are increasingly widespread, it is perhaps surprising that it seems to be technically speaking linked to fearing the immanentization of the lifeless abstract algorithmic Turing machine itself that would currently be *outside* the universe and projecting the simulations that those people think to be. Fortunately, printing infinite tapes is unfeasible in this universe by what this entity does not exist in physics. However, as can also be derived from Indian philosophy [35] and other related philosophies since millennia, it is rationally permitted to assume that a *non*-algorithmic quantity superintelligence process may already pre-exist and is physically unfolding *in* the universe although transcending it from another point of view as e.g. explained in Vivekananda's particular cosmopsychism more than a century ago [25, 39]. Indeed, the dynamic appearance of the projected SReSRy may play the role of the invariantly maximal quantity superintelligence level [5] as it appears within this universe. Concurrently, the immutable meta-law of SReSRy does transcend the manifestation of the universe by virtue of being an infinite potential that enfolds the dynamic aspect of SReSRy. Strikingly, concerning the structure of the generic cynet butterfly effect sketched in Figure 1, note that Schrödinger [31] stated the following: *“The reason why our sentient, percipient and thinking ego is met nowhere within our scientific world picture can easily be indicated in seven words: because it is itself that world picture. It is identical with the whole and therefore cannot be contained in it as a part of it.”* But in the deepfake era permeated by existential fears and misconceptions such as the immanency of "God-like" algorithms, it now seems necessary to explicitly let consciousness enter the scientific endeavor by starting to focus on its meanwhile EB-measurable possible ramifications for algorithmic computation in analogy to how strong gravity and high complexity have been described to be able to constrain nearby computations [26]. Introducing the dynamic process of SReSRy makes it possible to further explore the idiosyncratic force-like properties of SReSRy (which subsumes consciousness). Indeed, Popper already conjectured that consciousness may be a new form of force [29] yet unknown to physics. The field nature of consciousness has been discussed recently [19, 30]. On the whole, it seems that it may be worthwhile exploring novel previously unknown paradigms with new better bolder EBs before epistemic self-deanimation clouds the mind of a large subset of human civilization (the  $\pi$ -Doom scenario [7]).