Cosmic Evolutionary Philosophy and a
Dialectical Approach to Technological Singularity

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The philosophy of cosmic evolution provides a worldview for thinking about the human position and relationship to universal processual dynamics. This evolutionary process is conceptualized as a network of relations with a specific astrophysical singularity origin as the first cause in a progressive complexification of organization from sub-atomic particles to human civilization. Throughout this complexification of organization key events are identified as representing qualitative phase transitions where new relations form emergent integrated ordered wholes. The hypothesized/anticipated next stage of cosmic evolutionary imminence is often described by futurists as a technological singularity where complex organization generated by scientific knowledge in the form of artificial general intelligence and distributed digital networks create an integrated ordered whole beyond any previous known level of complexity. This paper does not challenge this hypothesis/anticipation but rather seeks to reframe the human position and relationship to such processes by approaching technological singularity from the internal subjective view of the conscious ideational landscape of human mind in-itself via the triadic logic of negative dialectics ((1) abstract, (2) transform, (3) concrete). Consequently, such a view focuses on the motion of embodied cognitive processes teleodynamically oriented towards ideal real attractor states. From this works the fundamental chaos, uncertainty, and unpredictability of the future is situated next to a structural analysis of the ordered intention, goal-directedness, and value-laden cognitive motion that we can observe on the abstract horizon of human becoming.

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1. Philosophy of Cosmic Evolution

Cognitive networks constructed by the modern scientific mind have made measurable progress in abstractly understanding the natural world through tools of empirical observation and the methods of reduction and fragmentation. In these efforts reduction refers to the practice of understanding nature by isolating particular observable phenomena in nature and empirically analyzing its constituent parts (e.g. particles, molecules, organisms, etc.) (Heylighen 2014, p. 30). The logic of reductionism has led to fragmentation of scientific analysis of nature into cognitive networks compartmentalized into fields and sub-fields and sub-sub-fields focusing on ever more specified parts within the wider whole (e.g. nature divided up into fields of physics, chemistry, biology, etc.) (Christian 2017). This dynamic process where tools of empirical observation become utilized through conceptual reduction and fragmentation is necessary for certain forms of understanding nature. For example, fields as diverse as M-theory in particle physics (Polchinski 1998), or artificial intelligence in cognitive science (Russell & Norvig 1995), or genetic engineering in biology (Carr & Church 2009), could not exist without the tools of empirical observation becoming channeled through methods of reduction and fragmentation.

However, there is an emerging intellectual desire and social necessity in the philosophy of science and the sciences of humanity to understand the historical dialectic consequences of scientific conceptual reduction and fragmentation in relation to nature and humanity as a totality due to a radically unpredictable, uncertain, and chaotic future horizon of becoming (Last 2017a). In the world before modern science humanity generally conceptualized itself as occupying a certain central position and relation to nature in totalizing metaphysics that emphasized the experiential 'here-and-now' (*hic et nunc*) of 'eternal being' (Parmenides) and/or 'eternal change' (Heraclitus) (Verelst 2004). In the world after modern science humanity's conceptual position and relation to nature as a whole has become repetitively transformed through 'de-centerings' that have challenged fundamental metaphysical presuppositions (Vidal 2014, p. 202). The main 'de-centerings' have involved our cosmic position in relationship to macroscopic and microscopic phenomena which challenged notions of our cosmic centrality, our living position in relationship to the evolution of organic forms which challenged notions of biological hierarchy,

and our cognitive-mental position in relationship to un/sub-conscious processes and material-neuronal processes which challenged notions of self-knowledge and spirit/soul substance (Weinert 2009).

These 'de-centerings' have resulted in a conceptual shattering of traditional mental-ideational homes in which humans certainly occupied a central role (Sloterdijk 2011, p. 20-1). Today the ordered and certain closed worlds of traditional metaphysics have been broken via doubt and criticism for the growing chaos and uncertainty of the open worlds of modern scientific rationalism (Koyré 1957). Furthermore, modern scientific rationalism now universally presents to our contemporary culture an even larger cosmic challenge of attempting to come to terms with the ontological consequences of the relentless force of scientific epistemology (Turchin 1977). To be specific the activity of scientific networks grounded in conceptual reduction and fragmentation can be logically extrapolated towards a futures horizon of a "technological singularity" where developments in artificial intelligence, genetic engineering, nanotechnology, and quantum computing (for example) will likely fundamentally change the nature of humanity and the world beyond our ability to comprehend dynamic process (Goertzel & Goertzel 2015). This may well represent yet another (and perhaps most alarming) 'de-centering' where humanity's fundamental psychic, social, and historical existence becomes subordinated from within by uncontrollable anthropogenic processes imminent to our nature (Ulam 1958; Good 1965; Vinge 1993). The general uncontrollability of anthropogenic processes may be the dominant feature of what is increasingly being recognized as the anthropocene (Zalasiewicz et al. 2008). Thus, perhaps the central question for 21st century philosophers today is whether or not we can once again make sense of totality in the aftermath of reductionist scientific de-centerings (Wark 2017). Are these networks preparing the ground for a post-human world? (Barrat 2013; Bostrom 2014) Or will these networks enable a higher level of human actualization? (Nicolelis 2011; Kaku 2015)

In order to approach such questions perhaps we should first consider utilizing the philosophical worldview of cosmic evolution because it has been most frequently deployed for

the tasks of both articulating notions of technological singularity (Kurzweil 2005, p. 28) and situating human development in a cosmic context (Stewart 2010). The cosmic evolutionary worldview attempts to build a philosophy that can approach an integrated holistic view of the human-world relation as opposed to the fragmented reductionist view (Heylighen 2011) (Fig 1). In contrast to the approaches of reduction and fragmentation which seek totality in the microscopic world of the fundamental constituents of matter (Smolin 2001), the cosmic evolutionary approach focuses on a holistic integration of phenomena in which the human-nature relation as totality is analyzed as connected from the beginning of known temporal processual dynamics to the present moment (Christian 2004; Spier 2015). In this view we cannot understand totality without explaining the evolution of all networked phenomena on all scales of reality (Spier 2005; Baker 2013). For example, instead of separating the world of physics which focuses on particle interactions and fields of force, and the world of chemistry which focuses on chemical interactions and auto-catalytic cycles, a holistic and integrated view focuses on understanding the shared dynamic processes that connect the world of physics and the world of chemistry in an emergent multi-level hierarchal interaction (Chaisson 2001; Smart 2008; Stewart 2014).

Figure 1: Reductionist versus Holistic Approaches
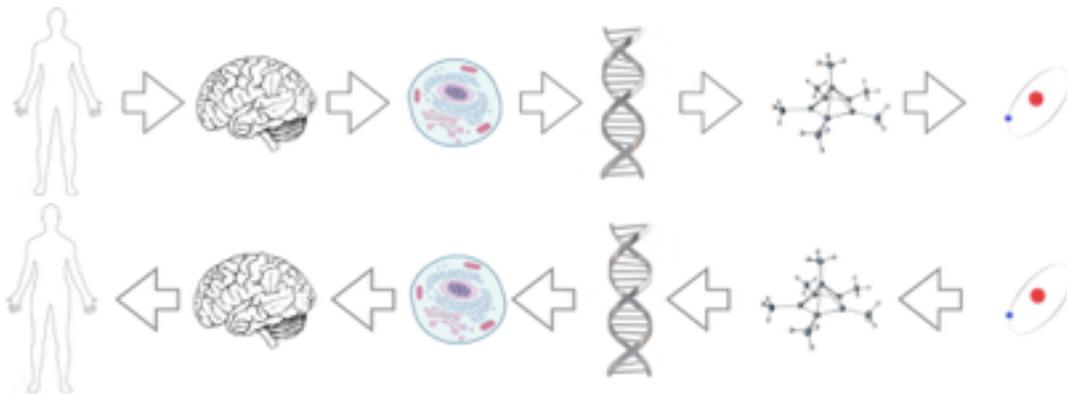
In the reductionist approach phenomena are separated and isolated into their component parts in order to understand the mechanisms unique to that level of reality. In contrast, in the holistic approach phenomena are connected and linked into networks or groups in order to understand the qualitative properties that emerge at higher levels of reality. From the reductionist approach higher level phenomena are reducible to lower level phenomena, and from the holistic approach higher level phenomena can only be understood on their own terms.

The cosmic evolutionary worldview may be useful to narrate and frame a holistic and integrated analysis capable of understanding the futures horizon of technological singularity

because human beings (and life and mind in general) can be meaningfully situated within the totality of cosmic processes of a multi-level hierarchal interaction instead of being de-centered by multiple perspectival shifts internal to reductionist and fragmented science (Vidal 2014, p. ix). For example, in the cosmic evolutionary worldview the astrophysical singularity origin of the universe which gave rise to matter-energy and spacetime is not simply an event that must be framed by quantum cosmology (Krauss 2012), but also an event that can be connected historically through dynamic processes of change that are also giving rise to global civilization in the 21st century (Last 2017a). These processes of change can then be conceptualized, not in terms of classical scientific distinctions between different fields of study (physics, chemistry, biology), or even in terms of classical philosophical distinctions between nature/materiality and culture/ideality, but instead in terms of a chain of rising complexity that generates qualitatively novel regimes of order (Aunger 2007a). These regimes of order can in turn be studied from the simple origin of fundamental sub-atomic particles mediated by the forces of nature to the modern world of complex cognitive and social interactions mediated by the forces of ideation (Table 1). The logical next step would be to understand the nature of the rise of complexity and the ordering consequences of its evolutionary developmental imminence as it relates to contemporary civilizational dynamics (Fig 2).

Table 1: Cosmic Evolution of Local Complexity

Levels of Complexity	Physical Order	Biological Order	Symbolic Order
Temporal	13.8 billion years B.P. - 4.0 billion years B.P.	4.0 billion years B.P. - 2.0 million years B.P.	2.0 million years B.P. - present
Relation	sub-atomic, atomic, molecular	cellular, organismal, societal	ideational, technological, civilizational
Evolution	developmental, generational	selection	real-time
Spatial	10^{-35}-10^{+25}	10^{-10}-10^{+5}	10^{+5}-10^{-35}

In our local universe complexity has increased from the origin to the present in three main cumulative hierarchical orders that have manifested different forms of relations, different forms of evolutionary modalities, and different forms of spatial scale distribution. In this frame the cosmic evolutionary frontier manifests as the symbolic order.

Figure 2: Big Historical View of Cosmic Evolution
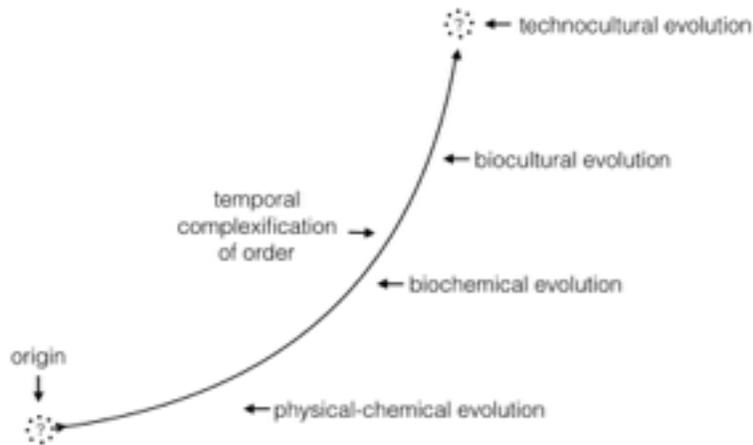
Throughout the history of universal evolution (change over time) phenomena have undergone qualitative transitions enabling the production of new possibility and new order that operate under different basic rules or logics of change. In this schema two basic mysteries connect the beginning (alpha) and end (omega) of cosmic change with the origin of all known matter-energy and spacetime, which occurred with an event known as the big bang in the dominant model of cosmic inflation; and with the fate of the most complex known process which gives the signal of a potential future qualitative transition towards new possibility and new order.

In order to approach this problem we must first clearly define what we mean by the term complexity. Complexity refers to phenomena that are fundamentally interconnected, enmeshed, and/or entangled in organizational networks of causality (Weaver 1948). The level of complex phenomena can be measured systematically by identifying the nature of the *distinctions* (meaningful differences) and *connections* (linked nodes) that define the organization of matter or ideation from the lowest levels of physical order (strings, quarks, neutrinos, etc.) to the highest levels of social ideational order (languages, cities, cultures, etc.) (Heylighen 2014, p. 55-7). Thus, the analytical use of complexity in the cosmic evolutionary worldview allows for the situation of a clear and unified narrative frame of relational phenomena on all scales or levels (e.g. Latour 2005; Rovelli & Vidotto 2015). Consequently, general researchers can use this frame to identify an increase or decrease in complexity when there is a change in the nature of the differentiated distinctions and integrated connections that produce and characterize the *qualities* and *intensities* of the systemic organization (DeLanda 2013, p. 59). For example, astronomers may be able to say that the universe underwent a qualitative complexity transition characterized by new integrated connections synthesizing new differentiated distinctions when heterogeneously distributed nebulous clouds of hydrogen and helium gas condensed under the

force of gravitational attraction to form the first stars (Chaisson 2005). From this process we can identify the emergence of new intensities (i.e. nuclear fusion merging and annihilating atomic nuclei) and new ordered qualities (i.e. stars curving the spacetime manifold into complex organizations (solar systems), locally radiating heat, and emitting streams of photons throughout the cosmos) (Carroll & Ostlie 2017). This remarkable quality of emergence is perhaps the most paradigmatic aspect of the power of cosmic evolution (Corning 2002).

The general trend in this complexity increase where emergent highly differentiated integrated ordered unities produce intensities and qualities acting as the foundation for the future progressive development of complexity reveals a distinct arrow of time (from past to future via the present). This arrow is revealed because the mechanisms utilized by phenomena to progressively order itself cannot be simulated in a reverse time sequence or flow (from the future to the past via the present) (Lineweaver et al. 2013). Thus, the arrow of time is identified by a asymmetrical work driven by energy flows (or lack of work/energy flows) of particular configurations of phenomena that are capable of overcoming the probabilistic statistical tendency of the universe towards greater levels of disorder (Zeh 1990). In other words, because there are more ways for phenomena to be disordered than ordered in our universe, in the absence of local work energy directed towards more ordered states phenomena will tend towards maximal disorder (consider, for example, how much consistent work/energy flow it takes to ensure that your life maintains its own internal organization and how easy it would be for your life to drift into a disordered state in the absence of a consistent work/energy flow). To say this in a different way when we look out at the history of the universe and see the emergence of stars, galaxies, planets, animals, plants and so forth in particularly ordered configurations (instead of random organizations that change without any discernible regularity), we are looking at specifically ordered patterns that have been adapted to maintain their general organization across what we categorize as time (i.e. a dynamic process) (Aunger 2007b; Spier 2015).

Thus the central remarkable aspect of the rise of complexity throughout cosmic evolution in the physical, chemical, biological, and symbolic worlds is that such organizational

manifestations appear to preserve themselves against probabilistic tendencies at further and further distances from thermal-energetic equilibrium (i.e. maximal disorder) via increasingly sophisticated mechanisms of processing information (Prigogine & Stengers 1984). In this sense we could conceptualize the arrow of time as 'sharpening itself' multi-locally towards the future with the potential telos-aim of 'maximal order' or 'highest unity' which appears cross culturally (universally) on the mental-ideational horizon. In order to achieve this end phenomena that work against the entropic thermodynamic tendency towards disorder could be said to be driven by attractive "negentropic" (ordering) and/or "teleodynamic" (goal-directed) forces that are not fully understood in the classical mechanistic worldview at present (Deacon 2011) (Figure 3a). However, the most fundamental and obvious aspects of these phenomena is that their identity is inherently "incomplete" and "open" to radical processes of becoming different in relation to basins of attraction (Weinbaum 2015) (Figure 3b). This simply means that negentropic or teleodynamic phenomena inherently possess latent potentiality (invisible when observing the phenomena at any particular moment) which may become actualized as new qualities by new intensities due to a particular internal processual change and/or by a change in the external interaction with the environment (i.e. nebula becoming a star, seed becoming a tree, zygote becoming a philosopher, or tribes becoming a global civilization).

Figure 3a: Disorder and Order of Phenomenal Telos
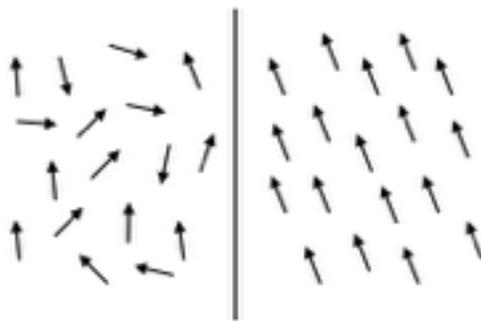
For a disordered phenomena (left) there is no discernible regularity of motion to be found in the constituent elements of the system as a whole. Consequently, disordered phenomena do not produce far-from-equilibrium emergent order. For an ordered phenomena (right) there is a discernible regularity of motion (a type of 'pattern' or 'organization') that operates on particular rules or logics which enable the phenomena to dynamically maintain itself over the course of time (e.g. biological information of DNA, linguistic information of language are good examples of ordered phenomena that maintain themselves with particular rules or logics). Consequently, ordered phenomena are capable of producing emergent phenomena that are in turn capable of maintaining themselves further and further from disorder (i.e. 'higher orders' like biology from chemistry, or like symbolic from the biological).

**Figure 3b: Becoming in Relation to Basins of Attraction**
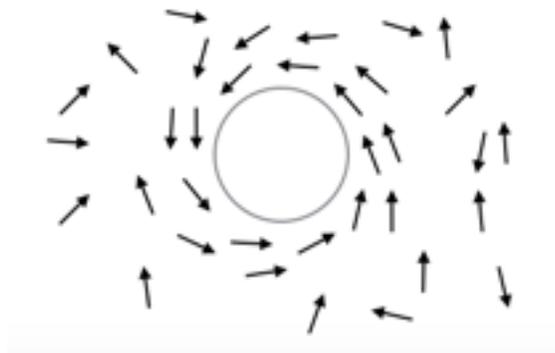
Ordered phenomena tend to have a collective direction of motion in relation to basins of attraction where all or most constituent parts orient informational function towards a goal-object that could not be achieved by any one part independently. For example, on the level of physical order a solar system only forms when planetary bodies orient motion around a collective center of gravity; on the level of biological order a cell can only form when chemical components orient motion around a collective central chemical code; on the level of symbolic order a society can only form when conscious components orient motion around collective central linguistic code.

This philosophical foundations of the cosmic evolutionary worldview could challenge our dominant cosmological conception grounded in thermodynamics of an immanent tendency to universal disorder. This is for the simple reason that future 'imminent' higher orders may be currently latent, hidden, or absent as potentiality in relation to intensities and qualities of the next qualitative phase transition driven by negentropic/teleodynamic process (Fig. 2). Furthermore, the clear emergent location of this new order should be concretely related to the future nature of the differentiated distinctions (human beings, AGI) and in the way in which their qualities or intensities are coordinated in integrated connections or links (distributed digital networks) (Heylighen 2015; Kyriazis 2015a). From the level of phenomenology this places great importance on new experiential domains or horizons of reality which act as new levels of appearance for interaction and as new platforms for potential complexification to be determined/ordered by the future-oriented cognitive agents under the particular constraints unique to that level of being (Hawkins & Blakeslee 2007). Thus the cosmic evolutionary worldview suggests that our universe possesses a denser and more lively destiny filled with potential adventure and mystery (Heylighen 2009). This is, again, in direct contrast with the dominant cosmological thermodynamic worldview which posits an inevitable tendency towards maximal disorder, where

the universe gives the appearance of a dynamic process doomed to death and void of both materiality and ideality (Adams & Laughlin 1999) (Fig. 4).

Figure 4: Thermodynamics View of the Cosmos, Primordial Order to Final Disorder
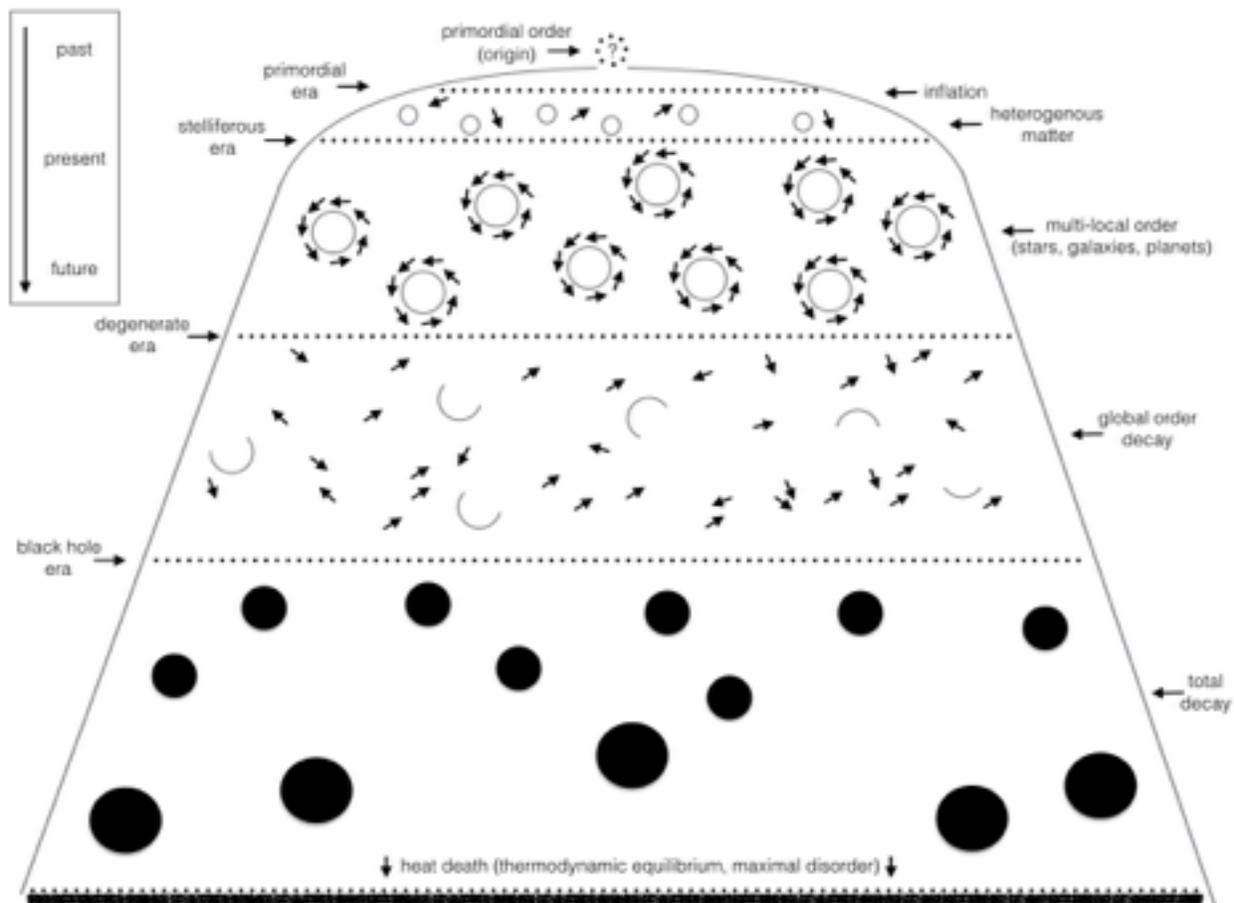
The thermodynamics view of the cosmos gives the picture of a universe with particular highly ordered initial state of being (non-random motion) which then drifts towards global disorder (random motion) over time. The multi-local order that does form throughout the primordial and stelliferous eras occurs due to feedback effects of heterogenous distributions of material organization that allow for persistent order via gravitational attraction.

In this way the cosmic evolutionary worldview not only appears well situated to help us understand something like the hypothesized/anticipated technological singularity as the realization of novel complexity and the emergence of higher order. Indeed, this view may also help us to re-situate human beings experientially in a common-universal de-centered relation to such a future-oriented horizon. As mentioned above, in the same way that astronomers would be able to identify the rise of complexity in the formation of stars and solar systems (e.g. Chary & Elbaz 2001), so to would chemists be able to recognize this rise in the formation of molecules

and complex organic chemistry (e.g. Lehn 2007), or also biologists would be able to recognize this rise in the formation of multicellular life or complex social life (e.g. Smith & Szathmáry 2000). This continuity develops with human beings as anthropologists and historians could characterize the emergence and rise of our species as a further intensification of the general cosmic evolutionary rise in complexity (Morris 2015). For example, with the emergence of cognitive linguistic agents from the realm of purely biological cognition often hypothesized as related to the formation of a neocortex size (i.e. human beings as novel distinctions) reality became teleodynamically structured by the formation of more complex social groups united by ideation (i.e. human societies as novel connections) (Logan 2015). These social groups continued to develop higher levels of complexity as various mediums of information (e.g. language, writing, printing press, internet, etc.) enabled the formation of observer controls (e.g. bands/tribes, chiefdoms/kingdoms, nation-states, international organizations) capable of cultivating and channeling energy flows towards higher sociocultural goals in autopoietically enclosed entities (Last 2015a, 2015b) (Fig 5a, 5b).

Thus, social processes internal to the human level of reality ultimately functioned as a platform for the emergence of complexity in the form of civilization produced by cognitive intensities of the symbolic order (Deacon 1997). Consequently, human cognitive intensities are also responsible for the emergence of global civilization in the 21st century and form the qualitative ground that must be dialectically analyzed as a totality in order to make sense of the relentless repetitive powers of abstraction which are causative vis-a-vis notions of technological singularity. These powers of abstraction achieve such a horizon through a seemingly universal negation of the world as given, coupled with conjectures of an alternative idealized world. Such conjectures retroactively change the human-nature relation by creating and mobilizing social systems as environments towards alternative concrete reals (Lenartowicz et al. 2016). In the most extreme variants of this process social systems point towards the creation and mobilization of either realizing the end of human civilization (post-human AGI world) (Barrat 2013; Bostrom 2014), realizing a higher level of human civilization (fully self-actualized world) (Kurzweil 2005; Heylighen 2015), or some symbiosis of the two (Table 2).

Figure 5a: Human Metasystem Transitions (Observers-Information-Matter-Energy)
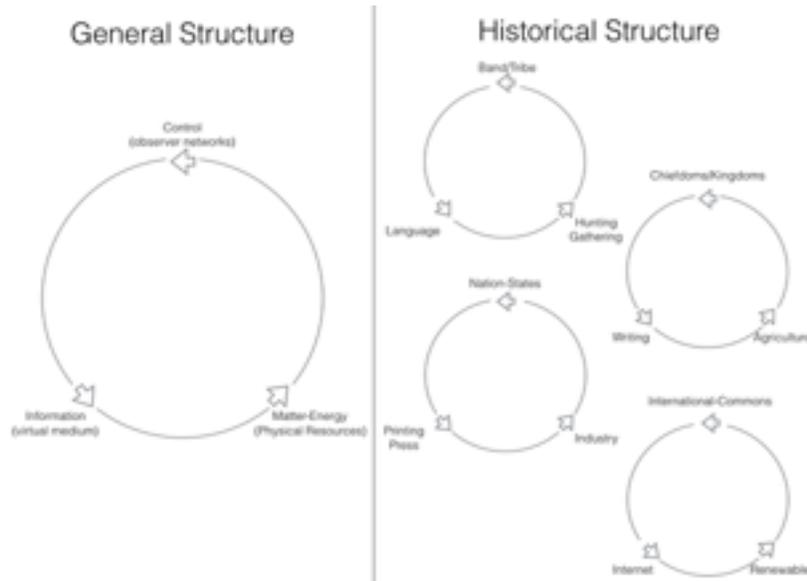
Human evolution occurred within the domain of the symbolic order constituted by language and self-consciousness. The emergence of language and self-consciousness represents the emergence of a new information medium which enabled the circular co-evolution of organizations with the capability to increase the flow and direction of energy moving through social system unities which in turn enabled growth of the social system unities. This basic process continued to build on-itself via repetitive positive feedback loops between observer-controls, information mediums, and matter-energy with the general emergence of the writing-agricultural circuit, printing-press-industry circuit, and the currently developing internet-renewables circuit. The most important aspect of this circuit emergence is the causative level of observer controls utilizing new informational mediums which can open new energy access.

Figure 5b: Human Metasystem Transitions (Spatial Scale and Temporal Function)
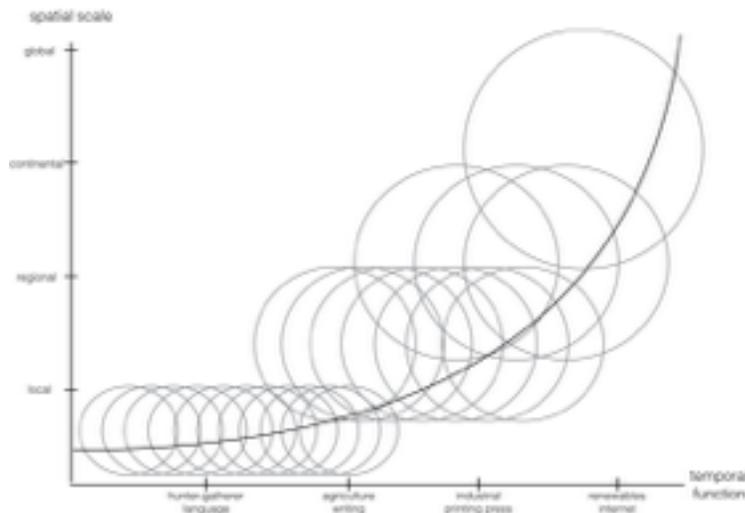
Human metasystems as circular organizations can be imagined to exhibit a type of hierarchal spiral architecture where one form of social order progressively subsumes and integrates all the lower forms of social order over the course of the historical process. Thus, with the emergence of each new regime of complexity there emerges a new regime of order that becomes structured around a new field of dynamic attractors. The most important question in regards to the next metasystem transition is whether the whole field of conscious observers will become entangled via the information medium of the internet around a common attractor.

Table 2: Potential Large-Scale Singularity Consequences for Self-Consciousness

Nature of Singularity	
Artificial Intelligence (AI) Scenario	Super-intelligent/conscious technological systems replace biocultural humans
Intelligence Amplification (IA) Scenario	Biocultural humans transform their being with technological systems becoming trans/post-humans
AI-IA Scenario	Complex interrelation of both organizational processes occur

The radical unknown and unpredictable future horizon of human becoming in relationship to scientific advancements in robotics, artificial intelligence, nanotechnology, genetics, and other possible actualizations is becoming a growing and central concern of human evolution, possibly requiring dialectical analysis.

Consequently, the point of this analysis is not to accept such technic conjectures as unquestionable scientific dogma promising imminent transcendence (e.g. Rothblatt 2014), nor refute them as pseudo-scientific speculation nested in religious metaphysics (e.g. Cave 2012), but instead to understand the nature of the thought-ideational motion itself as it relates to their effects and consequences for the future of the human-nature relation. Thus, when we consider a particular set of theoretical abstract predictive claims about the future (for example, Ray Kurzweil's set of theoretical abstract predictions 2001, 2005, 2010, 2012); the point of analysis would be to understand the mental-ideational effects and consequences in terms of power of abstraction. These powers include the force of a paradigm that can directly or indirectly create and mobilize social environments of potentially extreme relevance to universal history. Such social environments gain a 'life-like symbolic autonomy' and may be referred to as a "third party" that mediates the human-technology relation (Lenartowicz 2017). In this way this approach can be clearly distinguished from a predictive frame (Goertzel & Goertzel 2015), an anticipatory frame (Voros 2017), or a critical frame (Hofkirchner 2017) (not that these frames are without utility). In this aim the tradition of speculative negative dialectics is evoked and applied to abstract mental spaces with the tool of triadic logic (Plato 1998; Hegel 1998). The hope of such a dialectical approach is to reframe the position of humanity in the philosophy of science and the sciences of humanity by attempting to understand the ontological consequences of

scientific conceptual-ideational reduction and fragmentation as they are currently manifesting and evolving spatially in virtual fields (Jameson 2009). These virtual fields include conceptual-ideational forms as diverse as M-theory in particle physics, or artificial intelligence in cognitive science, or genetic engineering in biology.

The approach of speculative negative dialectics to technological singularity suggests a dramatic reconsideration of the dominant interpretations which characterize the deconstructive turn in post-modern social theoretic thinking (Hicks 2004). In post-modern deconstruction the relativity of truth to socially constructed power and order is juxtaposed against both the nature of the scientific real as truth and universal binary social oppositions mediated by conceptual-ideational knowledge as truth. Deconstructive logic runs counter to a speculative negative dialectics because the scientific real as universality is seen as possessing unique and imminent powers of abstraction that will have universal psychosocial effects and consequences, and the real of general social constructions are seen as producing binary oppositions that must be synthesized in relation to the development of universal historical desires. The legitimacy of such speculative dialectical logic is supported by the fact that all humans are constrained by one common world, constrained by physical embodiment, and constrained by a life and death structure. In short, the processes of scientific modernity that produce contemporary technological conditions for globalization are not just interpreted to be powerful narrative structures and value systems that can be relativized to the contingency of Western colonial culture/empire/hegemony, as is so often the underlying presupposition of hyper-critical post-modern social theory (Foucault 1970; Lyotard 1984; Baudrillard 1995; Derrida 1997). Thus such theory cannot ultimately relativize the search for a universally relevant narrative and value-structure of being grounded in evolution and future-oriented towards a higher universal level of order that includes the real of scientific abstraction, and the real of binary social opposition. This narrative structure of being has been formally recognized by ideational structures like traditional religions, ancient philosophy, classical idealism, and psychoanalysis (relevant: Kant 2013; Hegel 1998; Nietzsche 2013; Freud 2001; Jung 1980; Huxley 1947; Campbell 2008; Heidegger 1996; Eliade 1959).

In a positive sense approaching technological singularity from the standpoint of negative dialectics recognizes a type of transmodern or transhuman real which is neither the modern scientific-truth real (where the "thing-in-itself" is conceptualized as absolute physical noumena independent of human observation) or the post-modern truth-regime real (where the "thing-in-itself" is conceptualized as observationally relative to socio-historical power structures) (Žižek 2006). As a type of synthesis of both the modern and post-modern reals, the transmodern or transhuman real is fundamentally characterized by a multiplicity of linguistically entangled observers within one observed world. This real requires new perspectival analysis in order to make sense of the way in which a multiplicity of observers interact and transform the horizon of becoming (Auber 2016). To be specific the multiplicity of observers cannot be reduced to the 'one objective world' since each unit of transformation is capable of producing an objectively recognized historical real as pure difference via knowledge structures which can retroactively change being (as in, potentially, *this article*). The production of such an objectively recognized historical real becomes synthesized in relation to the geometrical nature of the subject's attractor space.

Notably approaching such an observation and attractor-dependent horizon of becoming is not novel to scientific thinking. Indeed, the real as a structure of multiple observers each with a constrained but valid objective product of one-world synthesis is shared with some modern approaches to quantum gravity (Smolin 2001). These interpretations are often an anti-thesis of a quantum multiverse interpretation where we find the claim that a multiplicity of physical universes operate according to one master observer M-theory framework (Carr 2007). Thus in contrast to the quantum multiverse interpretation we have an approach to quantum gravity which assumes "one universe, seen by many observers [inside the universe], rather than many universes, seen by one mystical observer outside the universe ['the ultimate Scientific Subject']" (Smolin 2001, p. 48). This frame may function well also within the cosmic evolutionary philosophy since the 'many observers' 'inside the one universe' must also be interpreted as fundamentally open (Prigogine & Stengers 1984) and incomplete (Deacon 2011)

as attractor dependent ordering forces. Consequently, we are able to think a type of objective real which inscribes into its core a future imminence (a 'to-become') that only exists because of the work of the observer within history. This horizon is by definition currently beyond our capability to conceptualize because "in the future we shall know more" (Smolin 2001, p. 48).

Thus, this version of the 'thing-in-itself' is neither purely reducible to the scientific real nor to the relativistic real of social historical power. In order to grasp the alternative conception of the 'thing' the crucial additional assumption would include that the open and incomplete play of a multiplicity of observers takes place on a shared or common socio-historical stage (universal historical stage) that is irreversibly constrained towards a singular imminent destiny as transformatively de-centered higher order attractor. This analysis conceives of such a de-centered higher order attractor structure as similar to the idea of convergent basins of attraction discussed in complexity science (Heylighen 2014, p. 73), which may also show meaningful theoretical parallels with dense-heavy gravitational attractors in theoretical physics (Frolov & Zelnikov 2011). However, in this conception the attractor or 'thing' of universal history is not 'out there in the external world' as in some archetypal naturalist deep future speculations (Vidal 2011), and neither is it 'out there in the transcendental world' as in some archetypal new age deep future speculations (Teilhard de Chardin 2015). Instead the thing/attractor appears internal to the multiplicity of linguistically entangled observers as an objective 'extra- or beyond-linguistic real' emerging as a consequence of subjective work energy or world-line/sheet force (the negentropic/teleodynamic arrows) (Fig. 6). Thus, this real does not exist pre-linguistically, but neither is it possible to reduce this real to linguistics. In contrast, this is a real that exists because of language and is at the same time in excess of language, as in the subjective yet absolute feeling of love that emerges in the most meaningful human relationships. Consequently, in phenomenological or psychoanalytic terms this attractor may be classified as *libidinal* and recognized with the mark of an absolute transcendental desire that is relativistic and asymmetric vis-a-vis the subject (Žižek 2012, p. 662-3) (Fig 7).

Figure 6: Teleodynamic View of the (Local) Cosmos, Primordial Disorder to Final Order
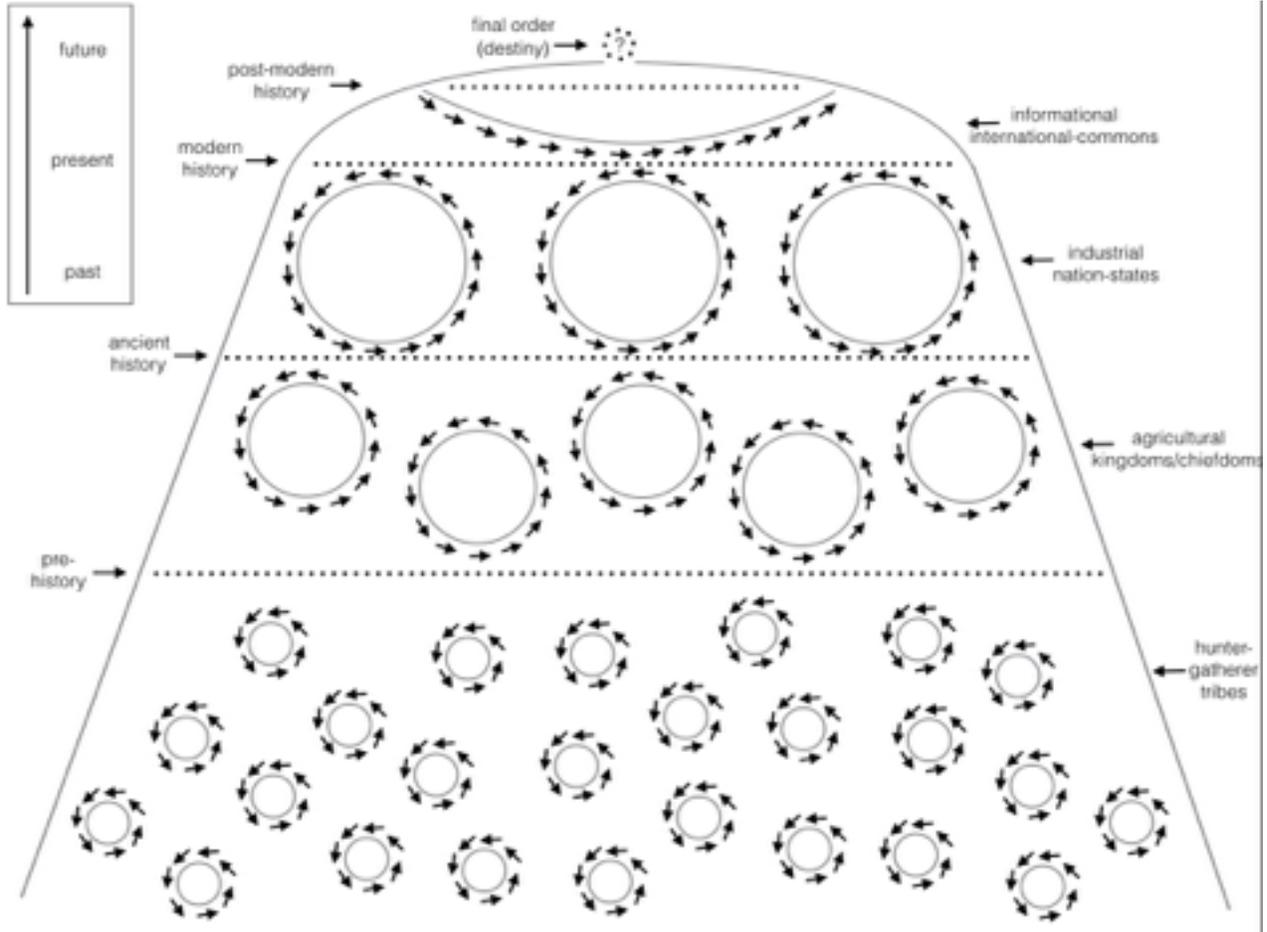
In contrast with Figure 4 and building with Figures 5a and 5b, the above representation attempts to capture the teleodynamic worldview that is characterized by far-from-equilibrium or non-equilibrium systems that operate on self-organizing principles dynamically balanced between chaos and order. In this teleodynamic conception we get a picture that resembles an inverted mirror of the classical thermodynamic image of the world that presents us with an imminent heat death (thermodynamic equilibrium) where material organization achieves structure for only a finite temporal period before falling to disorder. In contrast, in the teleodynamic conception we get an image of the world that presents us with an imminent 'immortal heat' where highly ordered far-from equilibrium systems curve their being to a state of super-symmetrical unity (a cosmic-transcendental monism). Such a state would likely annihilate the dualistic distinctions between subject-object, concept-world, observer-observed without resorting to a pre-linguistic 'biological grounding' that ignores the emergence and consequences of conceptual distinctions. In this representation the totality of process is conceived of as starting with the emergence of a field composed of ideationally constituted social unites (bands/tribes) whose ground is self-consciousness developing in language. These bands/tribes exist in the nebulous realm of pre-history where cognitive-linguistic evolution starts to form the first cultures and technologies before condensing into historically materialized civilizations. Throughout the historical process bands/tribes become progressively 'synthesized' into higher level social unities which has the effect of reducing the number of different unified groups (i.e. fewer unities) but increasing the spatial scale of the unified groups (i.e. the difference between Europe pre-and-post Roman Empire, or the Asia pre-and-post Chinese Empire, etc.). In this progressive trend to unification the level of individuation also progressively increases meaning that there are emergent degrees of freedom for the particular elements of the higher level social unities, as has been a general characteristic of the emergence of modern and post-modern civilization. This paradox between higher social unity and higher individuation continues to the present day where we see the dominance of a 'multiplicity of ideals' which are nonetheless all expressing ideality within one universal technological medium. The combination of these two trends make it difficult for philosophy to make sense of totality.

Figure 7: Conceptions of the Thing-In-Itself, from Ancient World to Future World

The 'thing-in-itself' philosophically associated with the 'true real' of being or existence has structured much of human thought in the historical process. The archetypal structure of the thing-in-itself in the (western) pre-modern age was the Ideal-Real of God. According to Plato this Ideal-Real was 'The One' transcendent reality beyond the world from which the human soul comes into the world during birth, and towards which the human soul returns after death. This true real received thorough critique and deconstruction during the modern rational scientific revolution and received its most widely accepted replacement with the Kantian critical turn to pure reason. For Kant and most modern thought, philosophy had to come to terms with the phenomenal attempt of scientific abstraction to understand the noumenal realm of the physical world in-itself from which we emerge during birth, and towards which we return after death. The scientific real, in turn, was subject to thorough critique and deconstruction during the post-modern humanist revolution which saw science as subjectively alienating from real experience. For post-modernism the true real became a 'fiction' that manifested itself as a relativistic multiplicity of narrative structures. Such structures were referred to as 'truth-regimes' conceptualized as contingently dependent on social power structures that used such ideas of real truth for social manipulation and control of subjectivity. In contrast to these true reals this works forwards the idea of the 'thing-in-itself' as the 'real virtual' which may be best described as an 'internal external field' or 'extimate field' of 'real virtuality' (dreams, fantasies, imagination, ideology, conceptualizations). Such a mental-ideational field is, as a logical fact, the location of any ability to conceptualize a 'true-real', and thus also the location where all other previous notions of a thing-in-itself can ultimately be discovered. The openness and incompleteness of the circular representation denotes the fact that the 'thing-in-itself' is itself in a state of becoming relative to the subjective work of human beings real virtual interventions as transformations in historical observer-attractor dependent dynamics (philosophers which have inspired and pointed towards such a thing: Georg Hegel, Arthur Schopenhauer, Friedrich Nietzsche, Sigmund Freud, Martin Heidegger, Jacques Lacan, Gilles Deleuze, and Slavoj Žižek). However, it must be added that there have been other 'true reals' that have been popularly conceived throughout history including the Buddhist 'true real' of the 'eternal void' beyond nature appearances; the Spinozian 'true real' of a 'transcendent Nature' where the concept is fully secularized in the interconnected Oneness of being; the Cartesian 'true real' of the self-certain cogito emergent from self-doubt; the Marxist 'true real' of the egalitarian communistic order imminent to history; and the Jungian 'true real' of a 'transcendent Self' to be located in the depths of the collective unconscious beneath the nature of appearances.

The nature of this 'object' in-itself may be general to categories of virtuality as broad as dreams (Freud 2013), imagination (Blake 1988), ideology (Althusser 2006), hallucinations (Bentall 1990), illusions (Taylor & Brown 1988), virtual reality (Cruz-Neira et al. 1993), and psychedelic experiences (Shannon 2002), in which the subject positions itself relative to attractors in a 'real' participatory spatial virtual field of pure difference, in contrast to complete identity (Deleuze 1994). There is extreme relevance with such philosophical conceptions with discussions on something like an AGI-centric notion of the technological singularity since so many dimensions of human virtuality (dreams, imagination, ideology, desire, etc.) represent unique unknowns of human experience that are often not adequately considered in futurist speculations (as emphasized in this volume, see: Braga & Logan 2018). Of course identification with the 'thing' as something like an 'attractor' with a 'real virtual' ontology of open difference should clearly separate it in analysis as something more general than the 'Kantian thing' (Kant 2013) or 'Foucaultian thing' (Foucault 1970). This analysis would posit that all such historical connections of the 'thing' were perhaps the way in which it was represented internal to the virtuality of Immanuel Kant and Michel Foucault (as well as the social real of Kantians and Foucaultians). Ultimately, such attempts of re-thinking the thing-in-itself may be aligned (or at least sympathetic) with recent attempts to re-think a scientific worldview capable of including human subjectivity (e.g. Barad 2007; Deacon 2011, Nagel 2012, Wendt 2015).

2. Technological Singularity via Negative Dialectics

When we are asked to think the future of a technological singularity driven by scientific networks actualizing artificial intelligence, genetic engineering, and quantum computing (for example), we are essentially being asked to think a fundamental impossibility of thought in the form of a qualitative level of existence beyond the human mind's cognition and abstraction capabilities (Vinge 1993). Such a transition may even be conjectured as infinite (at least from our perspective) since it could involve the ability to perceive, think, and communicate in higher dimensional geometries of space than the standard three dimensional geometries (plus time) that fundamentally characterize human experience. As mentioned above, the most frequently deployed paths for the realization of such potential emerge in conjectures of the emergence of artificial general intelligence (AGI) or human intelligence amplification (IA) (i.e. embodied superintelligence) (More & Vita-More 2013b; Vinge 2013; Soares & Fallenstein 2017). The technological singularity literature recognizes this 'unthinkable' 'impossible' dimension of the hypothesis/anticipation by deploying exponential extrapolation models of computational evolution which were originally founded on Moore's Law (Moore 1965, 1975), and since often founded on the 'Law of Accelerating Returns' (Kurzweil 2001, 2005).

These computer evolution models clearly demonstrate non-linear dynamics with surprisingly predictable growth rates indicating that in terms of pure computational capacity all human minds combined will be 'out-computed' before mid-century (Fig. 8). Consequently, the ultimate extrapolation of this process is represented with attractive metaphors from mathematics and physics of an approaching 'singularity' as an 'event horizon' towards an 'other side' of being (Sirius & Cornell 2015). The use of mathematics to describe the physics of higher dimensional geometries produced by the extreme spatial curvature around dense/heavy bodies like black holes (e.g. Green et al. 1987) is typically 'just metaphorical' but could actually be usefully analogous to the actualization of embodied superintelligence (in whatever form it takes) due to the unknown effects of higher-order negentropic/teleodynamic forces (i.e. what will a civilization with such high levels of computing power be actualizing?) (Hanson 2016).

Figure 8: Technological Singularity from Computational Capacity Perspective
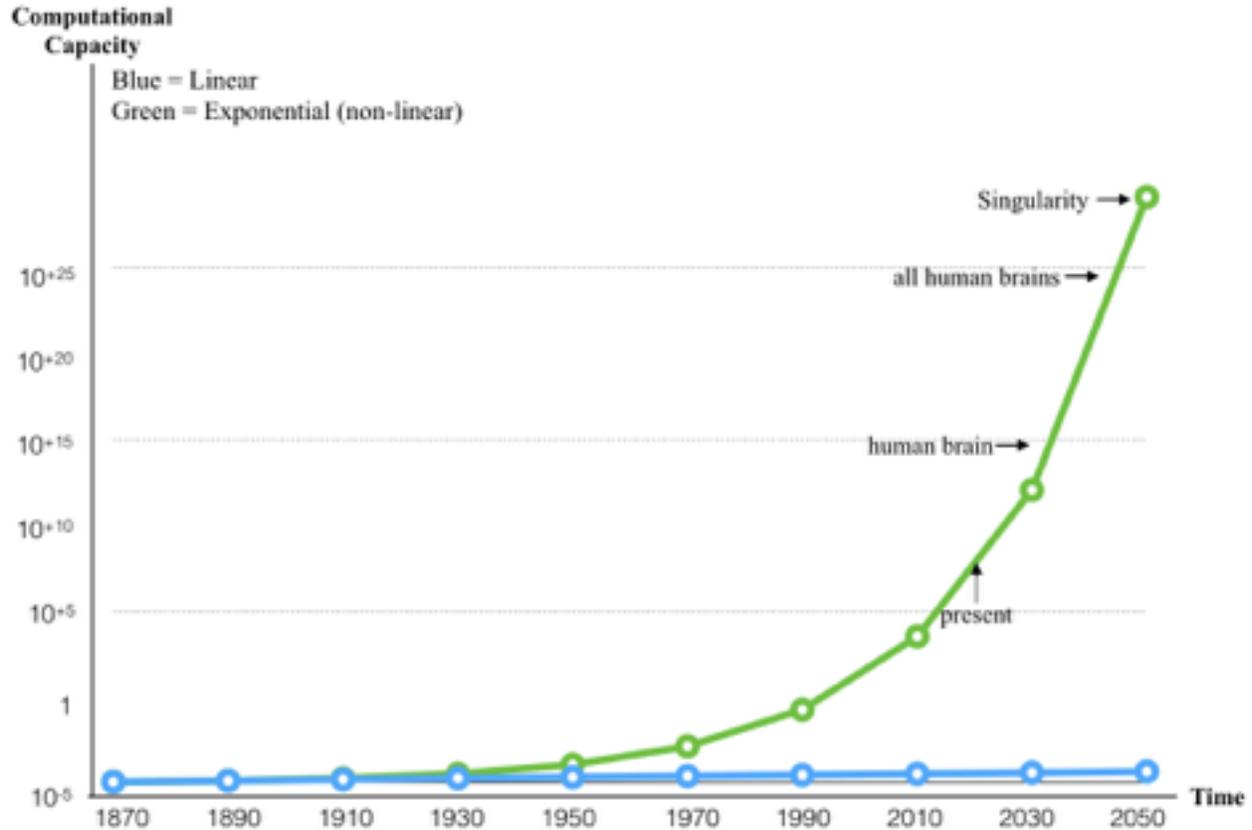
The technological singularity hypothesis/anticipation is derived from extrapolated statistics of Moore's Law trajectory which points towards the imminence of beyond human brain (individual and collective) computational capacity. The metaphors of an "event horizon" and "singularity" thus attempt to convey the idea that "beyond the horizon" of a civilization with "collective superhuman brain computational capacity" we have no idea how we will be able to understand dynamic processes since these processes will be driven by superintelligence (from our contemporary perspective). Such extrapolations raise important questions about the nature of mind and the nature of computation and how that relates to the ontological position of humanity, i.e. can the human mind be reduced to a computation? If our technology becomes more computationally efficient and powerful is there a role or a place for human beings? How is it that particular forms of material organization can become conscious and thus develop an internal subjective landscape of phenomenal experience? Current paradigms privilege the "global workspace hypothesis" which posits that human consciousness is produced from the collective interaction of neuronal networks (Dehaene 2014), which is connected to the idea that human consciousness is reducible to a model of the brain as a digital computer (Kurzweil 2012). However, a few criticisms of this paradigm include the idea that human consciousness must be understood in terms of emergent analog fields (Nicolelis & Cicurel 2015), and also the idea that human consciousness must be understood in terms of quantum mechanical phenomena (Wendt 2015).

Although this dominant thought structure in technological futurism is in many ways a philosophical novelty, its fundamental or archetypal futures structure is not distinct from many other human thought structures internal to the symbolic order. In fact, singularity metaphors (in terms of their attractive qualities) may be conceptualized as techno-scientific representations that recapture the metaphorical structures of many religious traditions (Smith & Marranca 2009), and

in particular the religious traditions of Western Abrahamic traditions like Judaism, Christianity, and Islam (Wolfson & Fackenheim 1947). In many religious traditions being as given to consciousness is conceived as insufficient or lacking (due to fundamental experiential coordinates of mortality, finitude, suffering, etc.) and can thus only be remedied by a future qualitative phase transition that occurs to consciousness. Of course, the main difference between such pre-modern religious narratives and the modern scientific narratives is that in the religious narratives such a qualitative phase transition occurs via death where the disembodied soul leaves the world and enters into the sublime gates of an eternal heaven and spiritual immortality with God (Mercer & Trothen 2015). In contrast current technological singularity theorists ground their approach towards an imminent qualitative phase transition in both secular and evolutionary terms that can be traced back to the birth of scientific thought (Hughes 2012; Wolyniak 2015).

The most common secular evolutionary analogy evoked from the past to describe the future includes the transition between simple chemical processes and complex cellular biology, a process in chemistry and biology referred to as abiogenesis (Pross & Pascal 2013), which is often associated with the emergence of life, and sometimes also mind (Thompson 2002). Another past transition often evoked is between biological great apes and biocultural human tribes, a process in anthropology often associated with the emergence of self-consciousness and language (Dunbar 2009), and a process in philosophy and theology often associated with the spiritualization of the cosmos towards the reconciliation of natural being (Hegel 1998). These past secular events of the emergence of biology and language are evoked as relevant for future process in order to communicate the fact that the emergence of a previously non-existent evolutionary potentiality has occurred before in big historical time (Christian 2004). With this evolutionary framing the technological singularity theorists believe that 'beyond the singularity' the human mind will be as capable of understanding dynamic process as chimpanzees (or any other phenomena for that matter) are capable of understanding mathematics, art, music, science and so forth (Kurzweil 2012).

Thus, because human civilization appears to be approaching an 'unthinkable' 'impossible' transition that is ultimately beyond prediction, anticipation, or critique, perhaps the best we can do is embed analysis within the human world to view the 'transcendental horizon' (the mental-ideational landscape) of linguistically-constituted civilization. This horizon may be usefully described as characterized by a "world of views" (Veitas & Weinbaum 2015), approaching a "commons order" (Last 2017b), and internally structured by fields that reveal "points of impossibility" (Žižek 2012, p. 651). In other words, this analysis could focus on the constructive ideational space of 'what is possible' and 'what is impossible' (Deutsch 2013) dialectically by focusing on the very internal emergence of points of impossibility that represent a 'multiplicity' of 'singularities' composing the total field of universal history (Delanda 2013, p. 15). By analyzing the motion of this horizon with the philosophical tool of the dialectic it may help us think about how such a qualitative transition driven by epistemological networks can be navigated and/or understood in the coming decades as our society becomes more complex and the possibility of experiential higher order comes into clearer view (which would logically be a wise program for any form of transhumanities, as discussed: Last 2017a).

In this dialectical approach we must pay close attention to the way in which the abstract mental-ideational space of the observer becomes fundamentally entangled via knowledge practices in the ontology of processual dynamics, i.e. as an effective agent that is directly involved in transforming the nature of being with the concept (Žižek 2014). From such a program we can no longer think a flat epistemology generated by pure reason as in Kantian philosophy (Kant 2013), or a static ontology independent of the subject as in classical Newtonian science (Newton 1999). Instead we must attempt an engagement with a curved epistemology due to the inclusion of a desiring subject that develops strategies for coping with its own internal deadlocks ('points of impossibility'), and a dynamic ontology due to the inclusion of the ontic effects of the subjects own projected interventions and retroactive reflections. It is via the spatial inclusion of a mental-ideational curvature and a dynamic ontology that analysis could hope to include individual and social system motion which simultaneously aims at and orients around the real virtual of truth in-itself (Dolar 2013) (Fig. 7).

In other words, it is common sense and common place to think about physicists (for example) as subjects who know about the nature of physical reality and attempt to develop universal first order conceptualization schemes independent of subjectivity (e.g. Penrose 2004). However, it is not so common sense and place to think about physicists as *desiring subjects* whose *real projections* actually change the nature of physical and social reality. Indeed physicists are agents who are not only often responsible for intervening in real physical processes with novel technological apparatus, but they are also often responsible for the emergence of new technologies that change universal historical dynamics with the virtual force of ideation (DeLanda 2013, p. 65). Furthermore, it is even less common to think further down the chain of effective causality about the ways in which the emergence of new technologies derived from physics knowledge (for example) and their use value in relation to a desiring subject will retroactively change the way we think about the human-nature relation universally and thus change future action in the world. The most obvious modern examples of such retroactive changes occurred during the industrial technology revolution which changed our conceptions of energy (i.e. thermodynamics, etc.) (e.g. Clausius 1865; Maxwell 1881; Boltzmann 1964), and also during the computer technology revolution which changed our conceptions of information (i.e. cybernetics, etc.) (e.g. Shanon 1948; Wiener 1948; Turing 1950). Consequently, when we are thinking about the desiring subjects who drive the future of robotics, nanotechnology, genetics, quantum computing, it is hard not to conclude that the logical imminence of their own sets of abstract conceptualization will retroactively change our fundamental conceptualization of reality on the level of universal history (Hegel 2010).

Thus, this path embeds scientific ideation within an observer and attractor-dependent second-order dialectical knowledge. Such a knowledge of the conflictual and antagonistic motion of ideational space may be represented in the form of a historical triadic logic — from (1) *theoretical abstractions* (imaginary) to (2) *enacted transformations* (symbolic) to (3) *concrete actualization* (real) — and could be usefully deployed in order to approach the technological singularity from the point of view of human reality (Fig 9). This dialectical approach may be
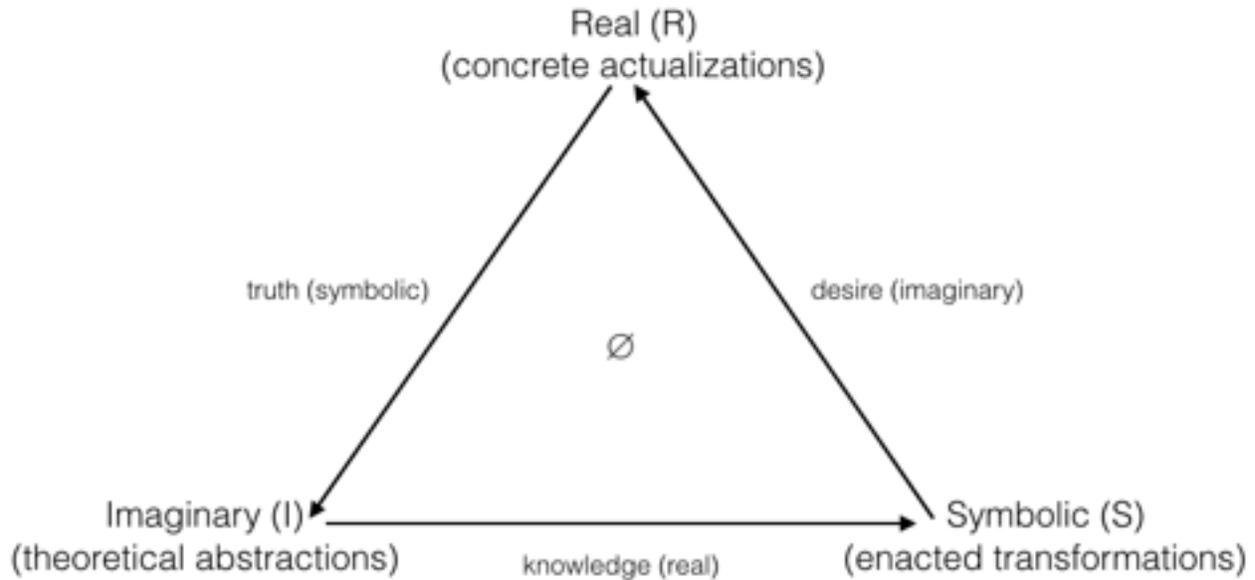
useful because it is human conscious epistemological intervention which could directly lead to a qualitative phase transition that involves artificial general intelligences and distributed digital networks of undetermined qualities and intensities (Bostrom 2014). The historical ground for the triadic logic of this dialectical approach is derived from ancient philosophy (Plato 1998), historical idealism (Hegel 1998), and psychoanalysis (Lacan 2005). This logic is a dynamic process whereby theoretical abstractions enter into a negative relation with given being vis-a-vis projected ideality (imaginary) aiming to transform the desired absence in being (symbolic) towards a satisfactory alternative full concrete actualization (real) (Kojève 1980) (Fig 9). Thus, such transformations function on a fundamental creative synthetic process that appears on the abstract ideational horizon balanced between being and absence (Evans 2006, p. 1), order and chaos (Peterson 1999, p. 332, 334), dream and obstacle (Žižek 2012, p. 17), goal and challenge (Heylighen 2014, p. 139) (Fig. 10). Furthermore, this motion may structure all human social systems via coordinates of ideality that are extraordinarily complex and diverse in terms of particular details (requiring reduction and fragmentation to understand) but at the same time simple and universal in terms of general nature (making a philosophical analysis of human-nature totality possible in principle).

In order to think an analysis of these dialectical coordinates of ideality clearly consider, for example, the most dominant community of contemporary particle physicists. This community holds a particular set of ideal theoretical abstractions about the nature of the world (i.e. standard model, M-theory). These theoretical abstractions aim to understand the hypothetical extra dimensions that may comprise the fundamental constituents of physical matter at the lowest/smallest scale of reality. Many physicists believe that an understanding of this phenomena could ultimately resolve issues related to gravitational singularities like black holes and the big bang (Becker et al. 2006). Here, on the level of the social community, we have a tension/antagonism/conflict between observer and observed that rests on the dynamic border between being and absence, order and chaos, dream and obstacle, goal and challenge (i.e. where the standard model is incomplete, where M-theory is speculative logic, etc.). In order to process the nature of the dialectical tension/antagonism/conflict we must apply a scientific approach that

is higher-order, i.e. an approach capable of including the observer or thought network that enables the community of particle physicists, as well as the consequences of their transformation processes (Umpleby 2016) (Fig. 11) (Table 3). Thus, in the higher-order theory we could posit that theoretical abstractions in the form of the standard model and string theory enter into a negative relation with given being in so far as their projected ideality (imaginary) posits a future reconciled or completed state within which the human-nature relation will be transformed (symbolic) towards a comprehensive understanding of the fundamental constituents of physical matter which would allow us to understand the origins and fate of all matter (real).

This transcendental approach of triadic logic on a dynamic horizon has not yet been usefully applied to physics communities in particular which are often (but not always) grounded in a more ancient (static-fixed) transcendental notion of ideality (see, for example, Penrose's utilization of Plato (2004, p. 18)) (Table 4). Although the ancient transcendental approach gives a clear explanation for the seeming eternal truth of mathematical formalism it appears incapable of reflectively including into fundamental theory the curved epistemological and dynamic ontological consequences of a linguistically embodied, historically embedded domain of human observation (Table 3, 4). This higher-order inclusion of the desiring subject whose projections and reflections become a part of fundamental theory is most closely aligned with what has been referred to as the 'third path' in potential approaches to quantum gravity (Fig. 12). In this context the particular example of analyzing the particle physics community from the higher order becomes an example that could be extracted and applied to general social systems (Yolles & Fink 2015). The point would not be to rest on the first order theoretical abstractions (i.e. what does community 'X' know about being) or even to deconstruct the first order theoretical abstractions (as is typical of the post-modern approach to science), but rather to analyze the communal knowledge's negative relation to being that manifests itself in the form of (2) *enacted transformations* (symbolic) and their effects and consequences (3) *concrete actualizations* (real). The dynamic ideal-real of attraction for the individual or group motion ('the path' (Smolin 2001) or 'the road' (Penrose 2004) of 'the real') in this sense may be a type of gravitational weight that collapses/condenses from a field of virtual potentiality.

Figure 9: Structural Transformations on the Transcendental Horizon

Real (R)
(concrete actualizations)

truth (symbolic)   desire (imaginary)

∅

Imaginary (I)   Symbolic (S)
(theoretical abstractions)   (enacted transformations)
knowledge (real)

The dynamic structural triad of theoretical abstractions (imaginary), enacted transformations (symbolic), and concrete actualizations (real) represents an attempt to formalize the geometry of the mental space which becomes entangled with the world. From this entanglement we see the motion of the dynamical geometry of the mental space as concretizing new reals from knowledge by processing imaginary desire through symbolic truth acts. First, the subject that intervenes/transforms emerges from the concrete real in relation to an imaginary field or screen. This field or screen becomes the invisible location of the subject's thought on its perceptual horizon of becoming and reveals to the subject an object of desire which motivates (but cannot force) it to intervene/transform the real towards a more ideal order. The subject achieves such interventions/transformations through introducing the symbolic to the real in the form of speech, writing, poetry, song, equations, jokes, and various other formalisms. From introducing the symbolic into the real the subject becomes fundamentally entangled, correlated, and/or caught up in a web of interactions with the real and thus measures its symbolic on the terms of which the real returns its message as truth (intervention/transformation). In these processes all three elements of the imaginary-symbolic-real are simultaneously co-present: the real of knowledge is present when the imaginary theoretical abstractions collapse into enacted symbolic transformations; the imaginary of desire is present when enacted symbolic transformations attempt a real concrete actualization; and the symbolic truth is there when the real of concrete actualizations informs theoretical abstractions of the imaginary. In this scheme 'knowledge' is 'real' because knowledge is the concrete actualization of the subject, 'desire' is 'imaginary' because desire represents an absent actualization, and 'truth' is 'symbolic' because truth is what returns to the subject from the real (an 'answer' from the real that 'emerges' due to our own interventions/transformations). In order to interpret and utilize this structural triad it is crucial that one conceives of it as always-already ('eternally') in motion and constantly re-setting its coordinates in a network of such structures which compose the geometric space of the four-dimensional transcendental horizon. The central ∅ denotes that 'beyond' or 'behind' the transcendental horizon there is nothing other than the void of our subjectivity which we project (imaginary) and enact (symbolic) into the real. Consequently, it is the position of this analysis, in line with previous discussions on the thing-in-itself, that historical conceptions of the thing (from Plato, to Spinoza, to Kant, to Jung, to Foucault) were imaginary projections (metaphysical screens, in the Heidegerrian sense) that historical subjects symbolically acted in relation to while intervening/transforming the real. In this way such an analysis attempts to think a dynamical real virtual thing-in-itself (between order-chaos, dreams-obstacles, goals-challenges, etc.) that is both open and incomplete making the 'thing' dependent on subjectivity for its own identity and becoming due to a crack/gap that is fundamental for the appearance of subjectivity as such.

Figure 10: Thing-In-Itself as Not-One, Dynamical Structure of the Transcendental Horizon
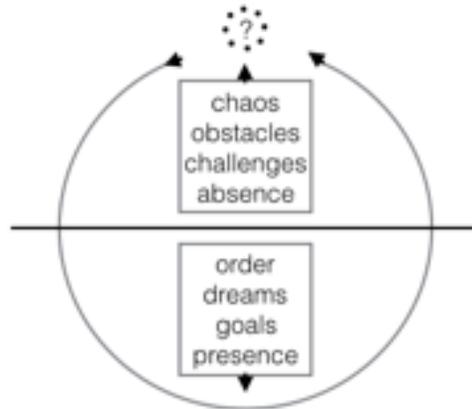

In this system the 'thing-in-itself' is not only 'real virtuality' but in-itself in a state of dynamical becoming (making it 'not-One'). This not-One is thus irreducibly dual (subject-object, concept-world, human-nature, mind-matter, etc.) and split between ontology/being that resists and epistemology/knowledge that insists. On the ontological side of the 'impossible thing' which resists our grasp we may place the domain of chaos, obstacles, challenges, and absences; and on the side of the 'transforming consciousness' we can place the insistent grasping domain of order, dreams, goals, and presences. The subject caught up in the triad of the imaginary-symbolic-real of this process (the teleodynamic triangle/arrow) is what dynamically traverses both sides of the dividing line between order and chaos, dreams and obstacles, goals and challenges, presence and absence in an asymmetrical future-directed motion. In other words the subject is what invades being with epistemological insistences, and experiences in return ontological resistances. The subject attempts to bring order to chaos, to achieve dreams that overcome obstacles, reach goals that nihilate challenges, and to make present which was once absent through its symbolic transformations. The question for analysis of this radically open 'thing-in-itself' (in contrast with conceptions that prematurely close the circle) is then a question about the maximum order, the grandest dream, the highest goal, the realest presence? Can we possibly think the actualization of the thing-in-itself or is totality nothing but reducible to this impossibility? What is in the end the status of this gap/difference internal to the thing-in-itself?

Thus, the crucial aim of this historical dialectical analysis in its particular details (e.g. the nature of the motion of physics communities) or in its general nature (e.g. the nature of the motion of the totality of human sociocultural communities) would be attempting to understand the projected ideality and retroactive consequence of their concrete realizations. In this analysis it is the *gap* or *difference* between idealized projections and concrete realizations which is constitutive of the ideal-real in-itself as a type of anti-container or not-One (i.e. the antagonistic nature of the ideal vis-a-vis the real) (Žižek 2014, p. 253). This emphasis on the ideal-real as a pure gap or difference universally resisting all insisting Ones can be conceptualized in strict opposition to the fixed-static ideal-real of a transhistorical substantive container or 'One-All' as in the closed circle of historical conceptions of the thing-in-itself. For example, when we consider the ideal-real appearances constitutive of physics communities own dynamic becoming,

can we not say that it is the gap or difference (not-One) between idealized projections and concrete realizations (i.e. the epistemological failure to grasp the ontological One of quantum gravity, e.g. Smolin 2006) which is nonetheless productive and generative in relation to points of impossibility (i.e. discovery of the Higgs boson, gravitational waves, etc.)? Is it not the radical divergence of approaches to quantum gravity (i.e. string theory, loop quantum gravity, QFT in curved spacetime, etc.) which is a productive and generative 'requisite variety' for future progress necessitating a higher order understanding of ideational difference and tension? Furthermore consider that on the socio-historical level of physics there is nothing but this repetitive failure to grasp the in-itself of the One, from pre-modern Platonic forms, to modern Newtonian space and time, to post-modern Quantum fields (Rovelli 2016, Fig. 4.6; 7.8). Does that mean every individually and socially reified 'One' is in some way a psychoanalytic by-product of a desire for static-fixed closure around the 'thing'?

Figure 11: Observer-Observed (Concept-World) Transformative Entanglement
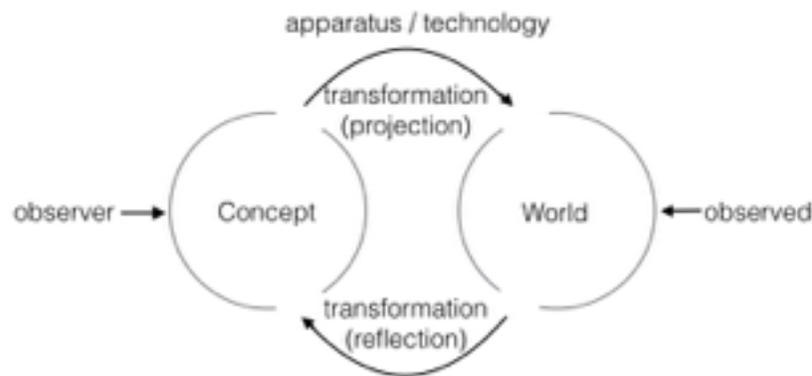
From the second- and higher-order perspective observer-observed / concept-world become fundamentally entangled in loops characterized by future projections and retroactive reflections that are constitutive of becoming and dynamic transformations of both the observer and observed. In order for this entanglement to gain a form of effectiveness both the concept and world must be 'open' and thus internally incomplete on both sides (i.e. humans are incomplete, but nature is also incomplete). If either side were closed there could be no transformation. This often occurs on the observer-conceptual side in various ideological forms that become concretized absolutes (closed 'Ones') unable or unwilling to process new information about either other observers or other observed phenomena that would contradict the internal coherence of their ideological formation. In this closure the internal coherence of the ideological formation takes primacy over the external world information that would necessitate a reflective internal transformation process. However, in its open form the transformation process of observers ideational projections are mediated by apparatus or technic mediums that extend and/or expand the observers projective intervention into the real. This intervention in turn transforms or could also reveal to the observer a new observed phenomena which leads to a retroactive reflection on the nature of the world which may or may not have been present in the relational set of concepts which initiated the projection. Of course, such intervention by the observer can be enacted in relation to the physical world (which is 'other-less'), the social world composed of 'others' (observers), and in relation to its own 'extimate' field of virtuality, as in phenomena like lucid dreams, day dreams, or psychedelic experiences where the 'world' is not the physical or social world but the in-itself of virtuality.

Figure 12: Psychosocial Virtual Field of Physics Communities
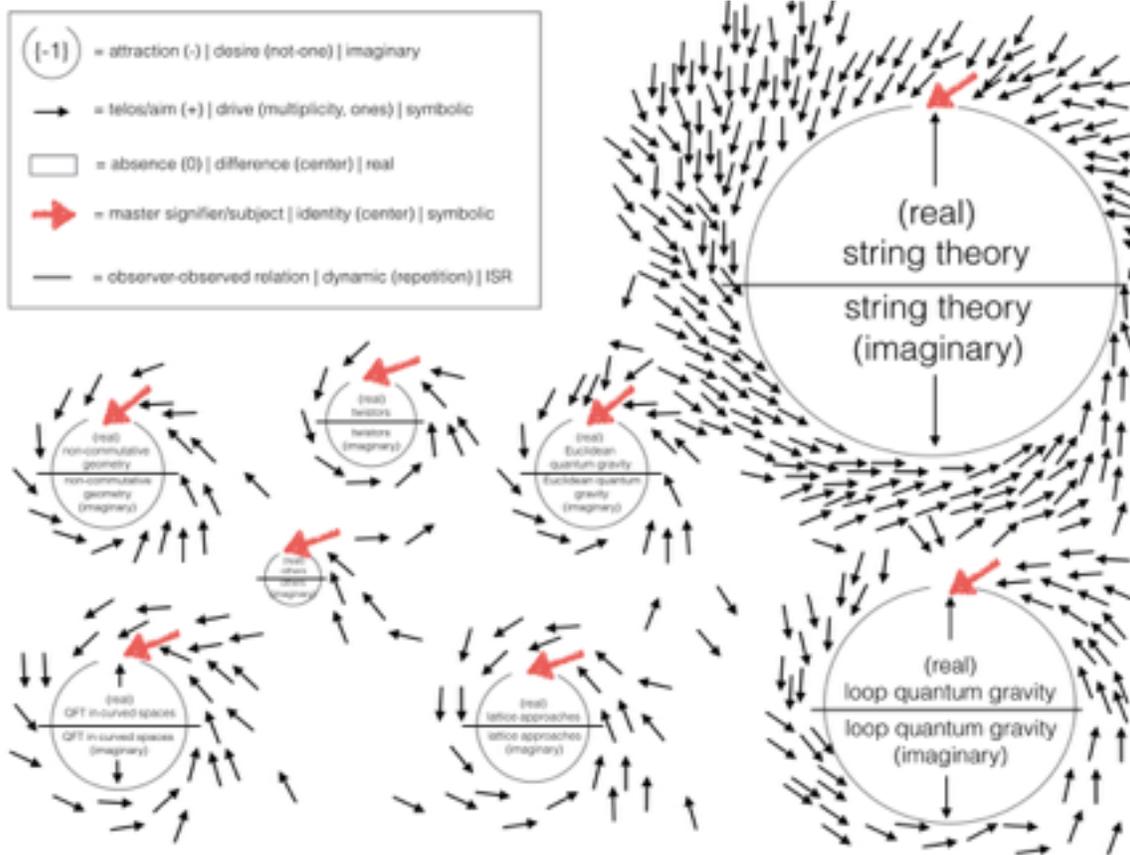
The above figure attempts to capture the general psychosocial virtual field of quantum gravity in relationship to the main abstract theoretical groups (imaginary) which aim to transform the concept-world relation through enacted transformations (symbolic) aimed at concretely actualizing the 'true' understanding of quantum gravity (real). The red arrows represent a 'master signifier' or 'main subject' which could be dominant concept(s) or person(s) in the respective fields (i.e. 'strings' and 'Ed Witten' or 'loops' and 'Lee Smolin') which orient the symbolic weight and aim (topography of black arrows) of the ideational field in relation to the absent real. The closer the network of arrows/signifiers to the real the closer they are to the in-itself of the social-historical meaning of the semiosphere. For example, black arrows (symbolic transformations) close to the site of the real may be fellow professors or graduate students with the trailing arrows representing lower levels of relation to the site of the real, i.e. colleagues, other scientists, educated public, undergraduate students, etc. In these relations the bar of the circles represents the dynamic border of the 'thing' (from order/dream/goal to chaos/obstacle/challenge and back) that can be symbolically conceptualized in light of the linguistic formalisms S|s denoting the signifier's freedom and autonomy over and above the signified (Evans 2006, p. 187). This is best demonstrated by physics communities whose signifying chain tends towards the in-itself of internal-imaginary consistency before it is validated by the return from the real. These represented social systems can be divided down the 'three main roads' of quantum gravity, i.e. (1) approaches that start with quantum mechanics (e.g. string theory, QFT in curved spaces), (2) approaches that start with general relativity (e.g. loop quantum gravity, twistors), and (3) approaches that start from novel presuppositions that rethink the foundation of both quantum mechanics and general relativity (e.g. 'others') (Smolin 2001, p. 9-10). The specific sizes of the psychosocial gravitational fields in this representation correspond to data collected by Carlo Rovelli at the *International Congress on General Relativity and Gravitation* on the count of articles published in each respective field of quantum gravity (Penrose 2004, p. 1018). Of course what this representation does not capture (requiring more sophisticated modelling) is the dynamic motion, the interaction, and the change over time of these communities. Such a model could potentially approach questions about why many different socially constituted physics tribes seem to be able to produce correct solutions to the origin and fate of matter with different fundamental constituents of quantum gravity (e.g. Frolov & Zelnikov 2011, p. 340) and thus also potentially help produce a higher order relational understanding of reductionist attempts at complete-closed grand unified theory modelling.

Table 3: Higher Orders of Observer-Observed Interaction, Intervention, Transformation

Cybernetic Orders	Real	Methods	Level	Formula
First-Order	Physical World	Physical Science	Knowledge of the World	$o\text{-}W_1^+$
Second-Order	Observer-Physical World	Deconstruction, Critique	Knowledge of Knowledge of the World	$\cancel{o}\text{-}W_1^+$
Third-Order	Observer-Virtual World	Psychoanalysis, Psychology	Self-Knowledge	$\cancel{O}\text{-}C_1^-$
Fourth-Order	Social-Physical Intervention	History, Sociology	Self-Knowledge, World Consequences	$\cancel{O}\text{-}C_1^-(W_1^+)$
Fifth-Order	Collective Social-Physical Intervention	Religion, Philosophy	Self-Society Knowledge, World Consequences	$\cancel{O}_n\text{-}C_1^-(W_1^+)$

The cybernetic orders of potential observer-observed relations (o = observer | capitalized = entangled / strikethrough = desire deadlock / italicized = desire) constitutes an approach to understand the nature of the physical world (W = world / + = physical) and the nature of conceptual mediation (C = concept / - = virtual). In this mediation humans have developed various levels of knowledge (of world, self, and society) which have interacted, intervened, and transformed the concept and the world via various methods (i.e. science, psychoanalysis, religion, etc.). In this analysis we could tentatively place discussions of the 'thing-in-itself' at the 'fifth-order' of collective social-physical interventions which takes into consideration the total work of observation as embedded in history.

This inclusion of a productive or generative gap/difference as crucial for conceptualizing the ideal-real thing-in-itself has a direct and practical application for contemporary physics. For example, a common feature of modern scientific discourse is the claim that a grand unified theory is within our 'grasp'. However, when we consider this proposition in our present context, is it even possible for us to imagine what a grand unified theory would actually mean for the human-nature relation as totality? What would it mean if communities of physicists (for example) developed a super-symmetric grand unified theory of quantum gravity as a master theory of the universe completing our understanding of the fundamental fate and origin of matter? (Susskind & Lindesay 2004; Rovelli & Vidotto 2015) In philosophical or theological terms this could be conceived as a fully grasped One realized on the level of understanding (Absolute Knowledge) (Zagzebski 2017). This would logically nihilate the primacy of the gap/

Table 4: Virtual Philosophy from Ancient World to Post Modern World

Virtual Philosophy	Secular Age	Fundamental Presupposition	Metaphysics
Plato	Pre-modern	Eternal perfect ideal forms	Transcendental concept world; static-fixed essential order
Hegel	Modern	Becoming of eternal perfect ideal forms	Concept world antagonism; emergentist dialectic experientially mediating essential order
Deleuze	Post-Modern	Eternal becoming as ideational form multiplicity	Concept world of open contingent play; experiential fluidity and unbounded flow

The history of philosophy can be conceptualized in some way as the conceptual history of the Eternal Concept (common in Hegelian philosophy), or the Eternal Idea (common in Platonic philosophy) which represents the structural horizon of human becoming. For the ancient world this becoming was and could only be in relation to a static-fixed essential order that preceded human existence and would continue to be after human existence (i.e. the origin and final resting place of the soul in God (the Total Image, the One)). This realm of essential ideational order could be conceptualized as the exact opposite of the dominant thermodynamic notion of eternal physical disorder towards which the universe tends ('heat death') (Fig. 4, 6). For the modern world this transcendental 'other eternal world' became fully secularized and imminentized within a emergentist conceptual order undergoing discursive transformations. Thus, modern notions of ideality could only be approached through dialectical analysis of an antagonism between the ideal and the real, the ideal-real as an overcoming towards a transcendent end, and the realization of perfect eternity. In the post-modern world any notions of 'transcendental ideality' on the grandiose terms of 'eternity' or 'perfection' are typically 'deconstructed' as 'illusory fictions' which constrain and limit truly free processes of becoming as a pure multiplicity that is only imminent to itself. Thus, the post-modern turn is generally hyper critical of a priori 'perfect forms' or 'eternal being' that tend to orient historical becoming in relation to traditional social reality (i.e. family, state, religion, science, art, etc.). Instead these frames emphasize experiential in-itself as a spiralling multiplicity devoid of center, hierarchy, or ground.

difference (not-One) whose broken symmetry is causative of the dualistic antagonism/tension/ conflict between observer-observed, subject-object, concept-world, mind-matter distinctions. Consequently, whenever we are approached with grand unified theories of the universe, their central and irreducible weakness is their ability to deal with their higher order effects where the primacy of the gap/difference is still left unresolved. To be more specific, would such knowledge like a super-symmetric grand unified theory of quantum gravity relate to our ability to understand and potentially computationally manipulate the way in which the fundamental constituents of reality are organized? (Lloyd 2006) If so, what would that tell us about reality?

2.1 Detour: Post-Modern and Pre-Modern Ideality Towards the Transmodern

Of course, and as mentioned, a virtual philosophy privileging the gap or difference of the 'eternal' not-One (-1) is a philosophy that explicitly negates the ancient metaphysical shoulders of Plato where ideal forms absolutely exist as static-fixed eternal substantive essences behind the cave-curtain appearances of phenomenal reality (Friedländer 1973). However, there may be many important nuances and distinctions in pre-modern Platonism (the ultimate ideal-essentialism of the 'One') that could be worth exploring in relationship to the dominant affirmations of a post-modern realm populated by an irreducible multiplicity of idealities (Deleuze 1994; Weinbaum 2015). A juxtaposition of pre-modern and post-modern ideality is precisely the philosophical attitude that could challenge the perceived weight of the contemporary orthodoxy (becoming, process) with the orthodoxy of the traditional past (being, eternity) (Badiou 2007-08, 2012; Thumfart 2017), and perhaps emerge with something new; something capable of capturing the processual multiplicity within the eternal One, and the eternal One within the processual multiplicity (Fig 13).

First, we cannot forget that the properly transcendental philosophical move of eternal substantive essentialism is still often made forcefully by mathematicians and physicists (Tegmark 2014), and has still functioned as the metaphysical ground of mathematics and physics communities (Burton 2011) (Fig. 12). This move in relation to totality may be conceived of as the 'conservative' anti-thesis seeking to preserve the absolute truth orienting and motivating the quest for real knowledge and understanding in relation to the 'progressive' thesis of social construction which 'problematizes' truth and reality in relation to textual analysis and social power. To be specific transcendental mathematicians and physicists often claim that the fundamental formulas that constitute the rational scientific enterprise are not 'created' by the human mind but are rather 'discovered' in a transhuman ideal space (Penrose 2004, p. 18). This claim has been made perennially since the time of Euclid and Plotinus and is often convincingly justified due to an internal coherence of discourse relations which appear timelessly independent

of historical context and possesses the character of truth independent of any particular form of subjectivity (Kojève 1980, p. 118).

In contrast, for social constructionists the Platonic eternalist is 'enemy no. 1' (and Hegel is often not too far behind) in the intellectual theatre of Western philosophy (Žižek 2012 p. 40-1). This is because it is believed that all Western culture and society is based on presuppositions of such an essential ideal background which makes understanding pure relational becoming of ideality problematic on a fundamental level, including the ideal historical products of mathematics that structure dynamical physics communities (Lakoff & Núñez 2000, p. 4). From this social construction point of view not only is there no eternal transhuman essential space guaranteeing the necessary order and truth of 'transcendental ideals' but there can never be such a true-order, meaning that all attempts to grasp totality through language (like that found in modern physics communities), must subject itself to the tools of deconstruction which can expose its claims to necessary unity as contingent and contextual (Derrida 1997). This creates a fundamental tension on the higher orders between physical and social theory because what emerges is a field of physics that still progressively aims for an eternal totality through reductive frames (e.g. M-theory, etc.), and a field of social theory that aims to deconstruct any attempt to realize eternal totality by affirming the irreducible contingency and contextuality that is the dynamical multiplicity of virtuality.

In contrast to these two 'extremes' of total eternal ideality that subsumes the multiplicity of becoming (pre-modern), or the total absence of eternal ideality that is the apparent manifold of the multiplicity of becoming (post-modern), perhaps a type of 'transreal' (dynamical) synthesis is possible. To be precise, this analysis would affirm the post-modern notion that ideal forms freely and contingently emerge from nothing but the synthetic unifying power (intensities) of embodied cognitive agents (qualities) capable of producing concrete ordered singularities that build and shape the motion of social networks (Lenartowicz et al. 2016). However, this analysis would also affirm the pre-modern notion that such ideal forms have a universal historical social meaning that concretize into invariants of process in an 'extra or beyond linguistic real'. The

main difference is that this analysis posits that such essences emerge as a consequence of subjective work energy or world-line/sheet force (i.e. the negentropic/teleodynamic arrows). Importantly in relation to our post-modern universe, this concretization of transcendental ideality (a type of 'premature' closure of singularity) appears to be a necessary condition for the actualization of civilization as we know and understand civilization. For example, marriages and nation-states could be understood as retroactive necessities for dealing with practical socio-libidinal and historical constraints as opposed to totalitarian patriarchal and capitalist constructs that require absolute deconstruction.

In other words, irrespective of whether transcendental ideals are 'discovered' or 'created' by the human mind, like the mathematical constructs formalizing quantum field theory (QFT (that have correlates with a noumenal real), or like the intersubjective constructs formalizing marriage and the nation-state (that have correlates with a social power real), they all nevertheless have real concrete truth-value for universal history (irrespective of their contextual and contingent emergence). Thus, the post-modern disposition that tends to reduce these ideals to *only* 'relativistic constructs' in a field of 'ideal multiplicities' produced by contingent and contextual 'social power' (patriarchy or capitalism, for example) may actually miss the historically invariant internal immortal desire for conceptual unity that emerges at their intuitive core (Fig. 15). Consequently, contemporary social theory may miss an opportunity to see the way in which concretized conceptual unities have useful and necessary meta-level conceptual guiding functions, and also have meaningful ontological effects, even if each individual unity cannot claim totality on the transcendental horizon in-itself (necessitating a need to understand their intersubjective relations, the 'absolute at war').

This synthetic analysis is not only dialectical but properly psychoanalytic in the sense that the posited synthesis of pre- and post-idealism can be found in the fact that the perceived eternal substantive essence that ideal forms concretize occurs only retroactively as a consequence of introducing a particular set of theoretical abstractions as ordered singularities into the chaotic real of challenging obstacles. In this form of intersubjective time a type of 'eternity' can emerge

internal to networks of symbolic relations that could represent a developmental logical structure overdetermining the dynamical horizon of becoming in language (Evans 2006, p. 208) and the representing the nature of the 'concept' in-itself on the highest order of understanding (Kojève 1980, p. 105, 119). Thus, from a transmodern perspective it is by studying the way in which symbolic relations are introduced into the real that we can study the concretization of what become absolute basins of attraction structuring conceptually mediated social system historical processes. The mediation of this meta-level would perhaps be the approach of a transmodern real towards the real virtual thing-in-itself, like for example, understanding dialectically the ways in which various forms of quantum gravity communities relate and function in the real as irreducibly divided unities (i.e. an ecology of unities).

In this sense the present analysis emphasizing the 'thing' as 'not-One' (in some sense contrasting with Plato) would suggest that the ontology of the 'radically openness' of the Deleuzian ideational field supporting analysis in the post-modern universe requires a new capability of understanding the psychoanalytic retroactivity of the ideal (i.e. the closure on a 'One' as in the quest for the ideal scientific theory, the quest for the ideal romantic partner, the quest for the ideal social community) (Žižek 2014). This simply means that the irreducible becoming of a relational multiplicity must be supplemented with a dialectical understanding of the practical utility of constraints, structures, laws, and so forth that enable a One to divide/ separate itself from the rest of the field (i.e. the subject becomes a part of 'this ideal' and not 'those ideals') (Weber 2010, p. 51). Such abilities are necessary to sustain the curvature of a particular form over a temporal process, which is clearly evidenced by the fact that there would be no historical process without the 'premature' closures that partition or separate themselves enabling multiplicities to functionally exist as 'paths' or 'roads' to the real-truth in-itself. In other words, if a particular quantum gravity community *did not* 'prematurely' close on, for example, 'strings' or 'loops' as major concepts for theoretical development that divide them from the rest of physics (and from each other), then there would be no community, authority, or sacred drive motivating a field of teleodynamic arrows attempting to actualize the real of an understanding of the fundamental nature of reality. Thus, if virtual philosophy can understand

not only the field of ideal multiplicities, but also the constraints, structures, and laws of such a field (that necessarily emerge retroactively to sustain the newly divided-created 'One' object), then perhaps this could point towards a singular negative object for philosophy that meta-historicizes philosophical desire in relation to the multiplicity of actual drives.

Consequently, the negative object of transmodernism may emerge when pre-and-post-modern virtualities are historically synthesized in the idea that eternal substantive essences *emerge from symbolic work of the dividing concept in the hic-et-nunc*. From this perspective let us consider again how the 'One' is emerging in the field of contemporary physics (Fig. 12). This field is constituted by communities that organize around various contingent objects posited as potentially capable of actualizing a necessary eternal substantive essence in the form of the monstrous real of M-theory (i.e. a super-symmetrical higher dimensional quantum geometry where all fundamental physical forces become unified as One) (Green et al. 1987). Is it possible to interpret this object as real (beyond deconstruction of textual analysis) and at the same time not a pre-existing eternal substantive essence (Platonic transhuman space)? In this analysis the idea would be that such a monstrous real be conceived as constitutive of the projective and reflective becoming of the ideal-real as a pure gap or difference: a separation, a division producing a *field of Ones*. This field has existed in past physics communities and will continue to emerge in future physics communities in to-be-determined forms that will have fundamental retroactive consequences to observer-observed, concept-world relations. What the totality of this 'multiplicity of Ones' points towards, perhaps, is a *higher order* super-symmetrical unity in a virtual multiplicity of individuated forms (Fig. 6, 13).

Thus, in this transmodern frame the nature of embodied cognition represents a type of ground for inquiry in the spirit of autopoiesis (Maturana & Varela 1991). However, the important difference in relation to the contemporary post-modern universe that we achieve through synthesis with the pre-modern universe, is that the ultimate nature of the historical embeddedness of the constructive structure of language where attractor fields of ideal multiplicities emerge and become socially reified beyond deconstruction, is represented as a

central and open question (Žižek 2012, p. 18). In this way it may be useful to re-emphasize that the generality of eternal essences in themselves may be conceived as retroactive necessities (or at least functional practical utilities in the spirit of philosophical pragmatists) that emerge from the introduction of the symbolic into the real. The necessity or utility of these eternal essences as concrete ordered singularities can be found in relation to stable individual and social system formation of identity (individuation). Such eternal essences as concrete ordered singularities provide what is perceived of as fixed points of ideality that can be repetitively used by individuals or communities as measures for actual motion as in the fixed point of quantum gravity in particle physics; the fixed point of natural selection in evolutionary biology; the fixed point of deconstruction in post-modern social theory, and so forth.

Here we may say that the motion of a social community aimed at and oriented around the real truth in-itself is to construct a ideational network capable of negating-transforming the distance between their actual motion (the world, W_1^+) and the ideal motion (the concept, C_1^-) as in the relation between kinetic and potential energy (T-V) in formulations of Newtonian mechanics. Thus, on the level of philosophy the goal of understanding the consequences of collective social-physical interactions and transformations (Θ_n-C_1^-(W_1^+)) can be read as a multiplicity of desiring observers mediating the actual (W_1^+) with the negating power of the concept (C_1^-) (Table 3). The important difference (from Newton to Einstein) that must be included to properly utilize this analogy in the virtual philosophy of linguistically embodied, historically embedded social systems includes the realization that attractor distances which overdetermine the relation between 'kinetic' and 'potential' energy (i.e. when the attractor is near potential motion is low but actual motion is high; when the attractor is far potential motion is high but actual motion is low) does not occur in relation between orbits and attractors around a priori eternal fixed-points (i.e. Newtonian solar systems). Instead the relation between orbits and attractors develops as symbolic bodies attempt to best fit the curvature of dynamic attractors emerging from their own straight transformation motion. This occurs, for example, when an intelligent human aspiring for real knowledge of the fundamental laws of the universe due to an

internal desire for understanding the conceptual unity of nature is attempting to assess an ideal

relation to the social field of quantum gravity research.

Figure 13: Potential Historical Triad of Virtual Philosophy
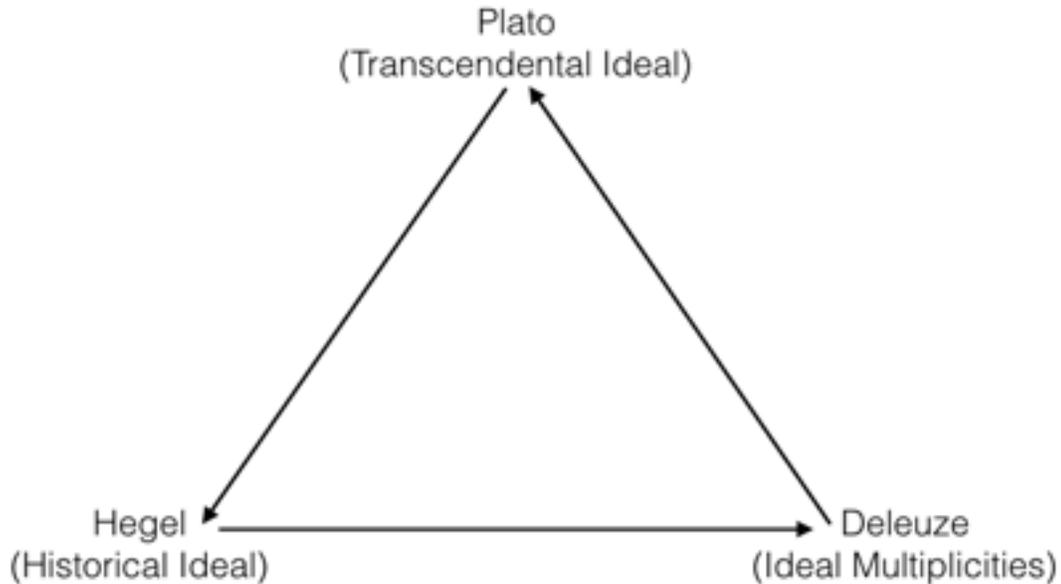
Throughout the history of philosophy the ultimate nature and historical consequence of the concept has been of central concern defining the three main eras of philosophical inquiry (pre-modern, modern, post-modern). In this analysis it is posited that we may take a meta-level analysis of the study of philosophical thought by positing that transcendental construction (pre-modern), historical construction (modern), and historical deconstruction (post-modern) necessarily relate and even curve back in on one another in a triadic unity. The reasoning for such a process could be related to a logical sequence of how self-consciousness in language relates to the emergent ideal: the first reaction can only be interpreted as 'transcendental' (the ideal coming from an eternal 'other world' outside of time) considering that its form is so detached from the real of perception and action; the second reaction comes to be interpreted as a historically constituted eternity due to idealities effectiveness and ability to change over time in relation to perceived and actual processes; the third reaction comes to be interpreted as a radical multiplicity with no absolute eternal container considering that ideality in-itself can take radically divergent yet singular forms that appear to infinitely become without end or conclusion. Thus, in order to link the first reaction to ideality which grounds a notion of absolute 'real truth' with the second and third reactions which dialectically historicize and radically multiply the 'real truth' we can say that it is still possible for the human mind to conceive of an ideal real where historically constituted ideal multiplicities are inscribed into a (potentially) singular convergent basin of attraction. Indeed, the actuality of multiple basins of attraction emerge from a diverse multiplicity of historical discursive processes as a logical necessity of civilization composed of embodied finite mortal entities with a common world background. In order to conceptualize such ideality we may attempt to link the 'real virtual' of the thing-in-itself as an open incomplete circular order with the original Platonic conception of the thing-in-itself as a closed complete circular order through including the relational becoming of all observers on an 'opening' and 'closing' dynamical horizon constrained towards a universal destiny.

The important metaphysical point here is that this linguistically embodied, historically

embedded negative dialectics does not need to posit anything more than a dynamic processual

network of evolving relational phenomena in order to ground a coherent understanding of

transcendental ideality (i.e. it is background independent) (Fig. 13, 14). Of course, as post-

modern social theory conjectures, in the past dynamical processual networks of evolving

relational phenomena have been 'falsely' subordinated to the background of transcendental

ideality in a multiplicity of social systems with, for example, the background of God in

Christianity (Rahner 1976), Utopia in Communism (Manuel & Manuel 1979), or Higher

Dimensions in Particle Physics (Polchinski 1998), and so forth. The desire to remove the

necessity of an a priori transcendental background dependence which is perceived as an

oppressive ultimate container or totality (i.e. a One that resolves any not-One of an ideal-real as

pure *gap* or *difference*) is a central concern for many thought communities including atheists

where 'Absolute God' is negated (Dawkins 2006), anarchists where 'Absolute Govermentality' is

negated (Foucault 2006), or relationalists where 'Absolute Space and Time' is negated (Smolin

2006) (Fig. 12). The difficulty in articulating a philosophy of totality that does not make this

'absolutist' 'totalitarian' move where a general concept emerges as a background for all

subsequent symbolic activity is perhaps the main difficulty that separates our contemporary post-

modern universe and a potential transmodern universe that is capable of understanding the higher

relational orders of the eternal concept.

Figure 14: Negation of the Totalitarian-Absolute One as a Background for Symbolic Work

In various fields of analysis, from theology to politics to physics, there emerges in our post-modern universe the negation of the 'totalitarian' or 'absolute' One background that seeks to conceptually subsume the symbolic work of all subjectivity. This deadlock between the major critique of modernist thought (i.e. 'the external narrative that constrains all truly free development') and the general nihilism that characterizes post-modernist thought (i.e. there is no 'true-real' for subjectivity only the relativity of social power structures) is perhaps the central location of the battle for a type of trans-modern true-real capable of articulating a universal ground for becoming without resorting to an external force in order to guarantee that ground. Of course, this problematic immediately points us towards the shift in physics that occurs from Newton to Einstein where we see the emergence of a dynamical curved spacetime with singular attractors but no external force that constrains development of 'free' material motion as in F=ma (i.e. where the external force of the Sun attracts the Earth in a flat space; as opposed to the Earth 'freely' adjusting its motion to the 'ideal orbit' of the curved space where the Sun appears).

Figure 15: Einsteinian spacetime, to Darwinian fitness landscapes, to Freudian desire
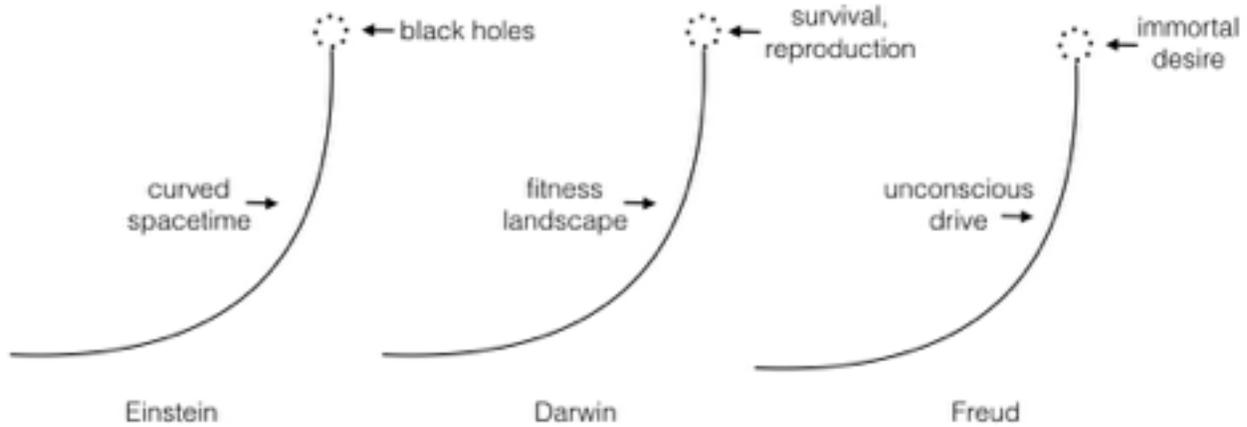
Due to the introduction of curved spaces we have a chance to formally move from a Newtonian conceptual foundation of the universe to a properly Darwinian and Freudian conceptual foundation of the universe that can properly reflect the reality of an interconnected temporal cosmic evolutionary process. In the Newtonian universe we have a flat and absolute space and time background that does not permit real evolutionary change and emergence. However, with the Darwinian universe, we have a space and time that are relative to the curved space of complex fitness landscapes mediated by a life and death struggle for survival and reproduction. In this sense the Darwinian fitness landscape of biology can be conceptualized as a natural big historical complexification of the Einsteinian curved spaces that guide the evolution of physical (non-living) matter. This Darwinian conception gives a living weight to the order of the universe where heterogenous distributions dynamically constitute reality towards the maximum value of 'more living matter'. The necessary Freudian addition to this dynamic manifold is the emergence of the ideationally mediated psycho-linguistic apparatus that can be divided into a triad composed of the unconscious id (desire, projections; which may find itself on the level of the imaginary), self-conscious ego (reason, reflection; which may find itself on the level of the symbolic), and social super-ego (morality, ethics; which may find itself on the level of the real). In this inclusion the most important feature of the emergent ideationally dynamic manifold is that it is libidinally charged with a multiplicity of drives 'pointing beyond' mere 'living matter' towards 'transcendental aims' that give the appearance of a singular eternity as 'immortal desire'. The gravitational weight of this field dynamically curves the individual and social spaces of human becoming and thus ultimately overdetermines the fate of human civilization and the human universe. Thus, the ultimate consequence of moving from Newton to 'big historical curvature' (Einstein-Darwin-Freud) is that the 'mathematized' 'de-sexualized' universe that grounds scientific modernity must, in the end, become synthesized with the pre-modern 'mythological' 'sexual' universe of sublimated creative synthetic desire.

Thus, in this approach of an attempt at transmodern 'real virtuality' the first move that need be posited is that the dynamic processual networks of evolving relational phenomena possesses an a priori horizon of becoming that is constituted and stabilized by nothing except a pure multiplicity of operators/observers/subjectivities as in the philosophical concept of a virtual plane of imminence (Deleuze 1994). This plane of immanence may be considered strictly analogous to the observer-dependent quantum field of modern particle physics which privileges the continuous non-local wave over the discrete point particle (which could be interpreted as its own form of 'deconstructing' reality) (Itzykson & Zuber 2006). However, as emphasized above, this virtual multiplicity as a pure horizon of becoming introduces the symbolic into the real and

thus introduces a field acting teleodynamically in a relational tension internal to transformation networks between idealized projections and physical constraints (dreams/goals vis-a-vis obstacles/challenges). Consequently, the continuous field or landscape of these idealized projections may be thought of as condensing out of relational necessity into singular ordering forces (what psychoanalysis refers to as the 'hard shell' of the 'ego'). These singular ordering forces retroactively stabilize in reflection the negativizing drive or motion of a multiplicity of discrete local operators/observers/subjectivities with a gravitational curvature and the weights of these ordering forces can become extreme in various sublimations like science, politics, religion, art, philosophy, and so forth. This gives analysis a type of 'psychodynamic' virtual plane of imminence with converging singularities as attractors which may point toward an intersection between continental philosophy (DeLanda 2013; Weinbaum 2015) and psychoanalysis (Lacan 2005; Evans 2006); but also between human-physical sciences that have been antagonistic since introducing Freud's unconscious desires (2013) and Einstein's curved spaces (1916) (Fig 15).

Consequently, in the transmodern view we have to be careful not to speak from the standpoint of the transcendental horizon in-itself (totality) as an a priori absolute container that exists independent of symbolic intervention. Instead we could draw from philosophical traditions that have attempted to speak of the transcendental totality in-itself as a multiplicity of drives that may represent an emergent singular core desire related to nothing but the dynamic transformation of the chaotic givenness of being into a more well-ordered higher state of permanent being at its maximum value (as in the quest for a super-symmetrical theory of quantum gravity where all forces unite as 'One'). This well-ordered higher state of permanent being gives one not only the impression of an 'opposite' to the thermodynamic tendency to eternal disorder but also a positive object in the form of a tendency to eternal order, or even a tendency to immortality (Cave 2012). In the history of modern philosophy perhaps the most relevant attempts to conceptualize the tendency of this horizon include the presupposition of the Nietzschean "will to power" as the rise to total potency (Kaufmann 1950), the Freudian "death drive" as the insistence beyond life and death (Freud 2003), and/or the Lacanian "*objet petit a*" as the object cause of transcendental desire (Lacan 2005) which can be found at the coordinated

triangular intersection of the imaginary-symbolic-real. However, such tendency to an eternal order is only to be found to emerge at the most extreme curvatures of symbolic mind, and a range of existential-phenomenal states can be found in between this highest maximized value and the lowest minimized value of death or nothingness (Table 5).

Table 5: Subjective Dispositions on the Transcendental Horizon

Transcendental Horizon	Subjective Disposition	Formula
Desire	Observer in a state that tends towards actualization of the eternal ideal-real (idealism)	~~O~~-C_1^-
Drift	Observer in a state that does not tend in any consistent particular actualization (nihilism)	O-C_n
Drop	Observer in a state that does not tend towards any actualization (detachment)	o-$\varnothing$
Destruct	Observer in a state that tends towards anti-actualization (cessation)	$\varnothing$
Drive	Observer in a state that tends towards actualizing in eternal ideal-real gap (pragmatic)	~~O~~-C_n

In terms of the observers relation between actual and potential, real and ideal, there are a number of subjective dispositions that can manifest on the transcendental horizon. The state of desire is a state where the observer demands or insists towards the actualization of a closure between the gap or difference perceived between the ideal state and the real state, often associated with 'subjective idealism'. The state of drift is a state where the observer gives up on the ideal-real and moves without a particularly strong orientation in between low-level positive valences, often associated with 'subjective nihilism'. The state of the drop is a state where the observer has no positive object or valence and tends towards non-actualization, often associated with 'subjective detachment'. The state of destruct is a state where the observer negates any potential actualization and tends toward anti-actualization, often associated with the 'cessation of subjective existence'. The state of the drive is a state where the observer maintains the motivation of the desire state while enjoying the gap or difference between the ideal state and the real state, often associated with 'subjective pragmatics'.

In these conceptions which all stem from a type of phenomenological-existential analysis of the substructures of the human mind (id, ego, super-ego) we have the attempt to think the most fundamental tendency-motion-dynamic of an asymmetrical subtraction or closure between a point particle of subjectivity that is a priori nothing but a virtual field of potential (i.e. 'loopy'

'stringy' global quantum wave functions(?)) and the absolute real truth in-itself associated with a reconciled human-nature relation (immortal desire). In its most 'naive' interpretation this permanent state of maximum value is often conceptualized as a place of highest order, dreams, goals, presences (i.e. utopia, heaven), and devoid of any chaos, obstacles, challenges, absences that would perturb subjectivity into total loss or disorder (i.e. death, hell) (Clarke 2017). However, it could be that this naive interpretation prioritizes the 'end' where the potential ideal and the actual real collapse in on each other and misses the 'process of ends' where the potential ideal and actual real are discordant and thus require subjective work-action (transformation) for their mediation. From this perspective we could highlight an important connection with processual philosophies (e.g. Bergson 1911; Whitehead 1929) where it must be emphasized that the generation of value and meaning is actually dependent upon affirming chaos, obstacles, and challenges that are not even external necessities for survival (like food, water, shelter), but are instead emergent necessary duties for the sake of higher level order, dreams, goals in-themselves, similar to the humanist psychology hierarchy of needs framework (Maslow 1943).

This philosophical stance may privilege the subjective mode of the drive (over and above the subjective mode of desire, drift, destruct, and drop) since the drive emphasizes processes in-themselves over ends in-themselves while also maintaining the tendency or orientation for self-actualization and ultimately self-transcendence (Maslow 1971). This view emphasizing a radical self-transcendence through an adventurous process of individuation in relation to high level goals or dreams would also explain why human civilizations have unconsciously tended to reify a meta-level motivational narrative pattern of a hero who journeys into the unknown chaos (risking life itself) to bring back the mysterious treasure object for the community (Campbell 2008). Such a motivational pattern often describes the subjective feeling of particle physicists relationship to discoveries in M-theory, and also the subjective feeling of experimental transhumanists relationship to discoveries with relevance to the technological singularity. Here we see clear examples of a desire for perfect unity at its maximum value (e.g. super-symmetrical higher dimensional space, immortality of transcendent consciousness) that becomes an internal

orienting force for the pragmatically driven subject that enjoys the liberating and freeing gap or difference between the potential ideal and the actual real.

2.2 Towards a Transmodern Singularity

The counter-intuitive complexity of such linguistically embodied, historically embedded approach to a transmodern real is in no way a peripheral exercise in thinking dialectically about the totality of the human-nature relation, especially when approaching notions of technological singularity which explicitly point towards the universal transformation of given being in relation to what we have identified as observer-dependent 'points of impossibility' as attractors. Indeed, in technological singularity thought ideas of imminent immortality or transcendence for all humans is a common place conjecture, and specific mechanisms for this concrete actualization as real mobilize social systems around the world in relation to particular genetic engineering or artificial intelligence programs (Gelles 2009; More & Vita-More 2013a; Goertzel & Goertzel 2015). Thus, transmodern thinking with an emphasis on emergent attractors with universal historical effects may be an essential dimension of such inquiry for the simple fact that all domains of technological singularity theory implicitly engage in a type of 'negative dialectics' in which a set of theoretical abstractions (i.e. biogenetics, quantum physics, organic chemistry, computer science, complexity theory, etc.) are conjectured as possessing an imminent processual scientific-technic abstract power to transform the totality of being in relation to a set of ideal desires (Mercer & Trothen 2015).

In this way technological singularity conjectures are literally attempting to maximize the power of scientific theoretical abstractions by reasonably processing consequences through the frame of ideal desires that would or could be satisfied by their concrete actualization. In the dominant streams of thought we have a diverse multiplicity of such idealized projections, like for example claims of ending suffering (Pearce 2017), ageing (Kyriazis 2015b), scarcity (Diamandis & Kotler 2012), or enhancing intelligence (Kurzweil 2012), experience (Nicolelis 2011), sensory perception (Kaku 2014), etc. In this specific context the job of a negativizing dialectical analysis

is thus to approach the domain of general abstractions as an entangled web of concrete actualizations that have been referred to as something like an emerging global brain (Heylighen 2015). Of course, this reality of an entangled web of concrete actualizations will be characterized by an irreducible virtual multiplicity of ideal-real gaps/differences which reset dialectical motions starting with re-framed general theoretical abstractions (i.e. the way in which the symbolic is reintroduced to the real). Thus, it should be clear that the point here is not to interpret technological singularity conjectures as in-themselves imminent on the grounds of a particular scientific networks self-posited ideals, nor to treat these conjectures as contextual and contingent aims of totality that require deconstruction. Instead, the point is to assess the abstractions unknown efficacy in relation to sets of ideal claims and to dialectically deduce the potential socio-historical and natural consequences of their causal sequences and effects for the higher order relations that point towards an emergent super-symmetrical conceptual unity.

This transmodern ideality in no way 'negates' the cosmic evolutionary worldview that seeks to understand the human-nature relation in terms of an interacting multi-level hierarchy of dynamically evolving relational networks (Smart 2008). In fact the cosmic evolutionary worldview could be the most effective means of describing the world of agential action before human existence and post-human existence, which is actually the major claim of the Bergsonian (1911) and Deleuzian (1994) inspired philosophy of New Materialism popular in contemporary academic philosophy (Latour 2005; Bennett 2009). Furthermore, this background of an interacting multi-level hierarchy of actual physics, chemistry, biology, and society functions as a crucially necessary relational arena because without the limiting constraints of this world stage no dramatic symbolic journey of transformation in relation to imminent virtual attractor states would be possible. Unfortunately, it is this very nuanced dialectical situation where a multi-level material hierarchy (between physics and chemistry, or between biology and culture, or between culture and higher-order truth, for example) often creates ideological tension in debates about reduction and holism in the physical sciences (Corning 2010), or about nature and nurture in the social sciences (Marks 2015). Thus situating dialectical negativizing processes of transformation within a multi-level cosmic evolutionary hierarchy is essential not only for understanding the

technological singularity but also for future research in fields as diverse as organic chemistry, gender studies, and theology (which should all be fundamentally challenged by the emergence of novel technological apparatuses).

However, and at the same time, transmodernism does offer an alternative methodology to approaching technological singularity by studying the general horizon of future-oriented worldviews in-themselves and consequently aims to radically relativize the realm of scientific abstractions to the realm of general abstractions and their transformative consequences. In other words what are the consequences of a 'field of Ones' constantly resetting the dialectical motions in a transhuman world where life and death may no longer have their same dynamical balance? In this sense there is a way in which the cosmic evolutionary background constituted by scientific abstractions could be conceived as yet another modernist 'One' background to be negated in favour of the ideal multiplicities 'field of Ones' as transformative elements in relation to nothing but the gap or difference that defines the background independent 'not-One' of the ideal real. When thinking about transmodern general abstractions confronting the technological singularity this background independence is key because it isolates the location of an immortal desire for super-symmetrical conceptual unity in an individuated separation from the cosmic evolutionary chain.

From this perspective we can either frame future analysis of the human-nature relation as a totality 'from the external outside' of a scientifically constituted cosmic evolutionary frame; and also 'from the internal inside' of a collective set of negativizing transformations that are purely in-themselves (i.e. free elements on the transcendental horizon). If we assume that both inside and outside views are in some way compatible then the real mystery here is whether or not the cosmic evolutionary chain ignited by an astrophysical singularity (i.e. the external outside giving an object real for subjectivity) and the technological singularity enacted by collective sets of negativizing transformations as ideal-real (i.e. the internal inside producing an object real from subjectivity) can be connected on informational, negentropic/teleodynamic terms. The nature of this conjecture is one door that may open to transmodern analysis pointing towards a

frame capable of approaching the origins (alpha) of physical universality in science (Leslie & Kuhn 2013, p. 22-3) and also solving the riddle of the destiny (omega) of historical universality in the humanities (Fig. 16).

In order to push a little further with these distinctions between outside the human universe (matter) to inside the human universe (freedom) we can say that when approaching the technological singularity from the 'inside' standpoint we may be convinced to operate analysis from a different but compatible starting and ending point then the cosmic evolutionary starting point. In the cosmic evolutionary worldview we tend to start analysis with the big bang as the mysteriously ordered causal event that sets forth the emergence of relational networks, and typically end analysis with the thermodynamic heat death of the universe in a state of maximal disorder (Ćirković 2003, 2004) (Fig. 4). The big open question in this frame, currently without a clear resolution, is the ultimate consequences of human civilization and its mental-ideational horizon of becoming which represents the highest level of complex phenomena in far from equilibrium states (Fig. 6). However, if we start from inside the human universe, of metaphysical frames structured by language (Heidegger 1996) or the concept (Kojève 1980), we are attempting to embed an approach of thinking how to resolve this open question by thinking the imminence of reason filtered virtual desire (Lacan 2005). This virtual imminence is interesting in the contrast to the thermodynamic worldview because it gives the impression of an 'immortal' perpetual motion machine, an *eppur si muove* (Žižek 2012, p. 3-4) (as opposed to a 'winding down' to thermal equilibrium).

Thus, from this stand point we are clearly dealing with a field of Ones balanced between 'white holes' (birth, as phenomenal 'inflation' into the world) and 'black holes' (death, as phenomenal 'collapse' from the world), which could be conceived as the existential inverse of the astrophysical 'white hole' and 'black holes'. However, in the human universe we also can identify a constant unconscious tendency to immortal desire (which is the same as a desire for an eradication of the dualistic conditions of the 'not-One'). Furthermore, we can identify this desire as a manifestation in circular rotary motion located in the ideal-real drive (sets of habits/

repetitions) that aim to transforms the real into a more ideal state of being (Table 5). In this existential structure perhaps transmodernism can isolate a dynamic motion to understand how individuated future-oriented projections of the concept could be mediated by the emergence of novel technic apparatuses or mediums towards the resolution of dualistic appearances (e.g. Drexler 2013). Such a resolution could emerge because the 'field of Ones' exhibit as a maximum value a phenomenal eternal state of 'heaven' or 'utopia' that may be 'impossible' in 'normal historical conditions' but at the same time 'imminent' in the context of totality due to indestructible perpetual motion of virtual desire? From such a presupposition the 'thing-in-itself' as balanced between chaos/obstacles/challenges and order/dreams/goals can be reframed on the 'level of totality' as a balance between death (not-One) and immortality (Ones) (Fig 17). This 'ultimate structure' between a gravitational field of Ones (concrete singularities) maximally attracted by immortality and a deathly not-One as an absolute anti-container may give analysis the dynamic that processes the tension/antagonism/conflict motivating the drive of the negative dialectic emerging so forcefully in technological singularity theory (Kurzweil 2005). In this way perhaps we can understand the force of general abstractions vis-a-vis the perfectly ordered super-symmetrical real imminent to cognitive destiny (Fig. 16).

This transmodern approach represents the idea that the mental-ideational space of abstraction that describes the transcendental horizon of becoming could be taken much more seriously then it is currently by many theorists of the technological singularity. To be specific inscribing the imminence of this horizon on its own terms could help us to approach issues presented by the technological singularity within a new frame of reference. In the current literature there appears a common presupposition that human minds are doomed to irrelevance in a post-human AGI landscape (Kaj & Yampolskiy 2017). Of course, such presuppositions may turn out to be correct (even if we would by definition not be around to confirm the hypothesis). However, it could also be that we do not properly conceptualize the nature of cognition and its cosmic-historical relevance to future process, specifically in regards the projection of the concept (a claim also made in this issue: Braga & Logan 2018). In the frame explored in this work it is possible that human minds are de-centered in relation to their own imminent actualization of

immortal desire and that the scientific theoretical abstractions of reduction and fragmentation that orient the field of technological singularity speculations are mechanisms for its concrete actualization via symbolic transformation processes that are general to humanity. Furthermore, considering the nature of this problem involves emerging and returning to singularity, it could be the case that the mystery of cosmic evolution in complexity science and the mystery of micro-macro quantum gravity in physics are actually the same problem requiring an understanding of the way in which dynamically evolving 4-dimensional quantum geometry emerges and returns to singularity in white and black holes (Fig. 15, 16, 17, Table 6).

Figure 16: Cosmic Evolution and Negative Dialectic connecting beginning and end
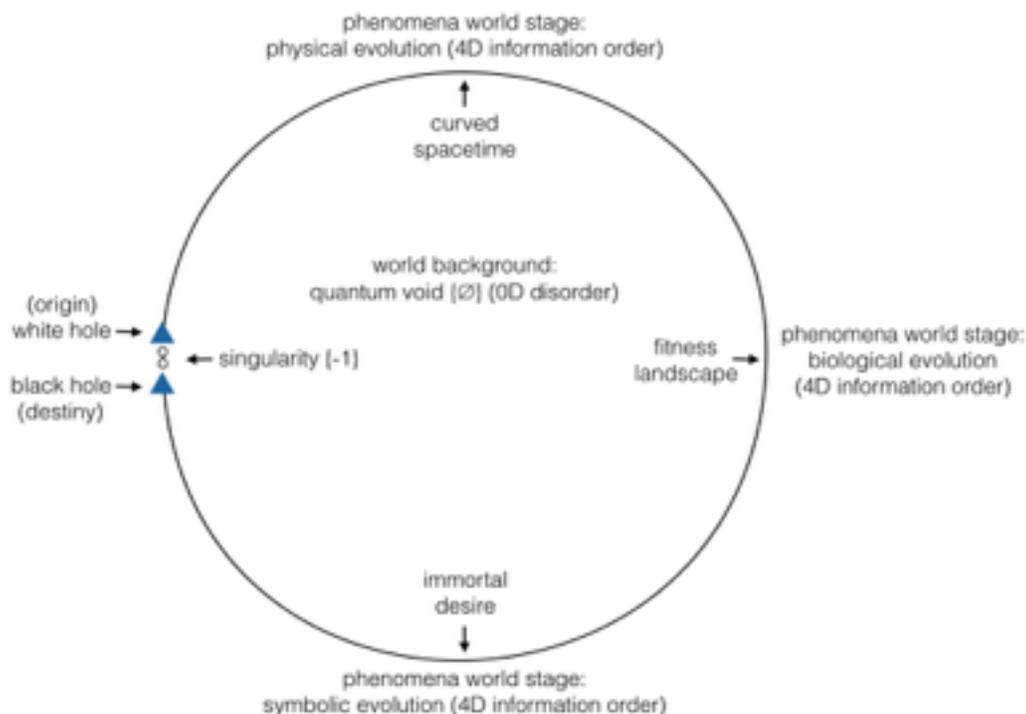
In this representation we see the contemporary cosmic evolutionary process that can be divided between physical evolution of curved spacetime, biological evolution of fitness landscapes, and symbolic evolution of immortal desire. Here, although highly (or, rather, properly) speculative, we can start to entertain a potential theoretical link between the mystery of the ordered astrophysical singularity at the beginning of spacetime and the mystery of the destiny of ordered evolutionary processes. From this link we are asked to think the way in which the horizon of mentality-ideation can be possible inscribed into the imminence of cosmic-physical processes via the inclusion of a type of extreme primordial *and* emergent curvature where evolutionary change can be reconciled with eternity. The true question here becomes the ultimate nature of the 'eternity'. Here it is negativized (-1) as absent in the historical process since its presence would nihilate our 4D existence. However, the possibility the actualizing and perceiving higher super-symmetrical dimensions is mathematically real and experientially realizable given the known future technological possibility space available to future observers.

Figure 17: Ones and Not-One, as Immortalities and Death
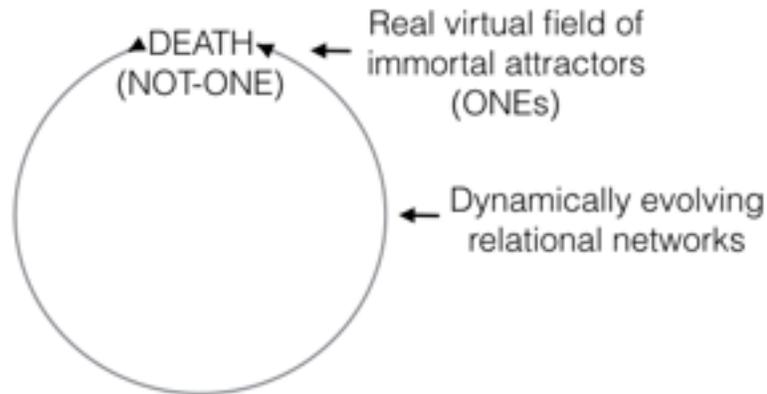
In order to ground firmly in this cosmological-transcendental conception the real virtual 'thing-in-itself' we can inscribe as the highest relation the field of immortal attractors as ordered Ones in relation to their most fundamental common background as the disordered not-One of death, the void.

Table 6: Unifying the Contemporary Scientific Problem Field

Dialectical Structure	Scientific Problem Field
Thesis	Cosmic evolution as complexity problem (past and future singularity)
Anti-Thesis	Physics as scale problem (micro-macro unity)
Synthesis	Complexity and scale as one problem: relational evolution of 4D quantum geometry emerging from and returning to singularity

For several decades the scientific field has confronted a deadlock with the problem of complexity (its origin and fate), and the problem of scale (its micro-macro unity). However, it is also the case that these problems have been viewed separately and distinctly with the complexity problem manifesting in evolutionary sciences at 'middle scale' reality and the scale problem manifesting in physical sciences in the 'micro-macro scale' reality. From the perspective of the real virtual thing-in-itself it becomes at least possible that what science has conceived of the biggest problems can only be resolved by framing the becoming of linguistically-embodied, historically embedded observers on the higher orders of human-nature reality as critical parts of the solution. In this frame it could be posited that the universe emerged from the smallest scale of reality (10^{-35}) expanded at increasingly large scales of reality (10^{-35}-10^{+25}) while curving in on itself multi-locally in the form of physical order towards black holes, biological order towards higher fitness (10^{-10}-10^{+5}), and symbolic order towards immortal desire (10^{+5}-10^{-35}). Here the symbolic order uniquely opens up the potential for a return to the smallest scale of reality via sub-atomic computational manipulation of matter. Thus, if we consider human cognition from this perspective it is not that mind is reducible to a computation (as is the common thesis today), or that mind is reducible to quantum mechanics (as is the common anti-thesis today), but that computation developed by human mind could enable the concept to project itself towards the quantum mechanical realm of being.

In conclusion this paper offers an introduction to the philosophy of cosmic evolution as an integrated and holistic view of the human relation to dynamic processes connecting physics, chemistry, biology, linguistics, sociology, and history. This philosophy is then utilized as a starting point for the grounding of a negative dialectics of transformation on the mental-ideational horizon of human becoming which may be ultimately capable of helping philosophical analysis to connect the origin of cosmic evolution and the destiny of human civilization via emergent concrete singular ordering forces. Of course, this work is a preliminary speculative philosophical investigation on fundamental questions of origins, process, and ends that will require greater in-depth analysis in the future as the horizon of human becoming continues to transform human-nature relations. However, as a ground this works suggests that the next qualitative phase transition of cosmic evolutionary process may not necessarily be a transition that simply overtakes and eliminates human cognition but rather may be a process that is not only driven by human cognition but that also includes some to be determined destiny for human action that is currently unknown and yet imminent to our presence.

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