Contemporary Visions of the Next Apocalypse: Climate Change and Artificial Intelligence

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Abstract
The ancient Greco-Roman and Judeo-Christian traditions are the main sources of the eschatological compositions of the apocalypse. Through the combination of various symbolic elements and a prefigured narrative, apocalyptic visions offer a script that can be applied in diverse historical situations to deal with the uncertainty of the present, to justify political action, and to allocate resources. In contemporary society, the high complexity and significance of the socio-natural and socio-technical operations in the domains of climate change and artificial intelligence create a fertile ground for the proliferation of apocalyptic eschatologies. The analysis shows that while the use of the apocalyptic script indeed motivates action in the present to avoid a future posited as unavoidable, it also generates strong moral and political distinctions that emphasize a unilateral projection of the future and undervalue alternative possibilities. The article concludes that apocalyptic eschatology promotes a ritualistic action in the present that evades the explanation of the complex causalities underlying climate change and artificial intelligence. The magnetism of the apocalyptic narrative lies in its ability to motivate action based on a recognizable architecture, but in doing so, it precludes alternative future options.

Keywords
Apocalypse, eschatology, religion, semantics, visions of the future, climate change, AI

Each era composes its own vision of the apocalypse. Whether in the form of revelation, Tribulation, Last Judgement, revolution, nuclear annihilation, civilizational collapse, cosmic inversion of lifeworld, catastrophic end of an era, or a cataclysmic end of the world, the apocalypse has been a regular self-description in societal evolution. It is a construct through which agents conceptualize society's future and, in doing so, justify the mobilization of resources in the present.

Religious semantics describe the apocalypse as an inevitable moment in the future course of events that announces suffering and promises salvation (Ringgren 1957a, 1957b; Kraft 1957; Cohn 1970; Collins 1998, 2014; McGinn1998; Himmelfarb 2010; Gabriele and Palmer 2019; Star 2021). A time will come when a decisive and transformative event will drastically alter the conditions of existence, thereby distinguishing between those who act according to divine will and those who do not. Redemption is reserved for those who comply, while retaliation befalls the disobedient. A sense of future inevitability remains, but

its factual occurrence depends on the actions taken in the present to prepare for the future. Inaction precipitates a swift onset of the apocalyptic scenario as time accelerates under the weight of apocalyptic expectations. Conversely, should appropriate measures and actions be undertaken, the apocalyptic future can be mitigated or transitorily avoided. Consequently, the flow of time lessens until the arrival of the next apocalyptic threat. In either scenario, the imperative remains to act in the present to circumvent the eschatological future. The form of the next apocalypse is thus *avoiding the unavoidable*.

In this article, I argue that this paradoxical constitution of apocalyptic semantics contributes with a relevant function to the societal guidance of the present. First, it moralizes; it distinguishes between good (the plan for salvation) and evil (a future of condemnation). Second, it legitimizes and justifies intervening in current practices, discourses, and structures to mitigate or avoid the ominous future. And third, it is a call to political action. It contributes to stimulating public support for major and radical changes that can even result in implementing severe measures that might not be considered under normal circumstances, potentially overshadowing other relevant issues or leading to anxiety in the current situation. The apocalyptic discourse is, therefore, a powerful tool to mobilize public opinion, justify actions, highlight critical issues that demand immediate attention, and influence the political landscape. However, it also entails the risk of creating unnecessary panic or desensitizing the public to real issues insofar as it constitutes the ritualistic application of a script rather than an explanation of the phenomenon.

It is also my contention that in twentieth-first century two critical processes in global modernity have adopted an apocalyptic tone as an essential element of their self-descriptions, they are climate change and the development of artificial intelligence (AI). In contrast to the traditional separation of nature, technique, and human affairs, the apocalyptic semantics of climate change and AI reveal a relational structure. While climate is constantly changing, human activity has irreversible effects upon the environment that can lead to a catastrophe. If not managed, these effects can destroy humanity. On the other hand, humanity creates AI to improve life conditions, but AI can become autonomous and potentially control or even destroy humanity. These stylized versions of climate change and AI's apocalyptic semantics reflect the paradoxical form of eschatological futures. By distinguishing between good and bad decisions, justifying interventions, and calling for political actions, they aim to avoid the unavoidable or at least manage or postpone it. Present social operations are thus guided –even controlled– by a deemed to be inevitable future that conceals alternative possibilities. Thus, contemporary visions of the next apocalypse mobilize social operations in the present but also overshadow relevant alternative problems and constrain possible structural developments.

To unfold this argument, I first briefly reconstruct the concept of apocalypse. Then, I review how contemporary narratives of climate change and AI create an eschatological, apocalyptic future, and next, I discuss the implications for the present. Finally, I draw conclusions from the analysis.

Uncovering the Apocalypse

The Greek usage of the term *apokalypsis* refers to the action of uncovering, to reveal something –hence the standard translation as *revelation* into Latin (Himmelfarb 2010). The concept regularly appears in religions organized around an eschatological concept of time. It comprises different symbolic and historical elements as well as speculations about successive eras of world progression, with the end of the world being the last one. Apocalypse thus means the revelation about the future course of the world and its unavoidable end (Ringgren 1957a).

Jewish beliefs and Christianity played a central role in outlining the concept of apocalypse. Inspired by speculations, myths, and narrations of Indian and Iranian provenience and in continuity with the work of prophets, the Book of Daniel (Old Testament) and the Book of Revelation (New Testament) offer the milestones of this tradition in Western culture (McGinn 1998). Some relevant elements that may combine in composing the apocalypse are the distinction of periods or eras, the linear notion of time, a vision of future events, the feeling of being close to the end, a depiction of the end of the world, the acceleration of times to avoid suffering of the just, the fight between good and evil containing heroes, mediators and the figure of the Antichrist, the destruction of offenders through God's triumph, the earthly Paradise, the idea of God's tribunal, the Last Judgement, and the millenarian or eternal Kingdom of the Saints (Schütz 1957; Cohn 1970; Collins 1998; Himmelfarb 2010; Flannery 2014). Different versions of the apocalypse combine most or some of these elements, but following Collins (1998, 11), the basic structure of all the apocalypses is "a transcendent eschatology that looks for retribution beyond the bounds of history".

Ancient Greek and Roman eschatology, however, take a somewhat different path. They do not focus on the suffering of humanity, but on the physical overturning of the world, as represented in the semantic formula of *katastrophe*, a sudden transition or change of state that may occur at different system levels (natural, social, technical, cosmological) (Thom 1966). In this case, the end of humanity is understood as a discrete moment in the course of a recurring recreation of the universe, as in the Epicurean and Stoic debates on the topic. It might be possible that humans witness the end of their world, but not necessarily the end of everything, since the world could return or rebirth turned into one of the possible post-apocalyptic scenarios, thus composing another cycle. There is more than one single course of events or one single end and, subsequently, more than one post-apocalyptic possibility for life. Thus, the ancient visions of the apocalypse in Greek and Roman thought lean more towards a general conception of the physical and natural instability of the world, within which society inevitably unfolds its existence. The eschatological component of this vision lies in the mental, emotional, political, and institutional preparedness to confront the plethora of catastrophes that surround us. It also includes the notion of avoiding the unavoidable by anticipating risk scenarios presumed to occur in the future because they have regularly transpired in the past (Star 2021).

In the Middle Ages, the apocalyptic accounts remained through various narratives such as the Sibylline books of prophecies (particularly the Tiburtine Sibylline book), the figures of the Emperor of the Last Days and the Antichrist as well as the Hydatius' chronicle

of the fragmentation of the Roman Empire in the fifth century (Wieser 2019). In addition to the Bible and the Book of Revelation, the Sibylline began to exert a strong influence in medieval Europe from the fourth century onward. The notion of the Antichrist was popularized through it and entered the Jewish and Christian apocalyptic canon as a despot serving Satan, sometimes being conflated with him. This entity is depicted as a monstrous figure possessing the greatest destructive power, yet its lawless, chaotic, and demonic reign precedes the Second Coming and the Kingdom of Saints (Cohn 1970).

The Jewish and Christian revelation rhetoric inspired the restructuring of society elaborated by the Carolingian reforms of the eighth and ninth centuries aimed at laying down Christian norms, giving medieval society a renewed moral form. In this case, the eschatology of apocalyptic futures is used as an argumentative model, a source imbued with normative authority and motivational power to transform, politically but above all morally and culturally, present conditions (Czock 2019). The ancient tours of hell were updated with renewed agents and hierarchical structures that reflect the increasing stratification of society but also the political conflicts coming from the borders of the Empire and the pauperization of population living outside the architecture of stratification (Himmelfarb 1983). In the twelfth century, the writings of Hildegard von Bingen on the clash of the universal powers –the Empire and the Papacy– and the end of the 1000 years of Church Ages marked another step in the semantics of the apocalypse. The nearing of Antichrist was visible not only in von Bingen's apocalyptic visions but in multiple natural and historical signs, such as famines, plagues, droughts, comets, tyrants, the Crusades, the growing greed in economic life, and certainly the conflict between Church and Empire (McGinn 1998). Apocalyptic expectations increased in the coming centuries due to long-lasting territorial wars in Europe, millenarist movements, the schism of the Catholic Church, and the Black Death and its economic and social consequences (Cohn 2023).

As Himmelfarb (2010) noted, the transition from Middle Ages to modernity expanded apocalyptic expectations. Protestants, Anabaptists, the Church of England, and the Seventh Day Adventists and several millenarist revolutionary movements regarded their religious conflicts with the Catholic Church in eschatological terms. Sects or movements characterized by millenarianism, anticipating the Second Coming and the subsequent thousand-year reign of the Kingdom of Saints, proliferated from the eleventh century onward. However, the most significant surge in such movements occurred in conjunction with the Black Death. According to Norman Cohn (1970), these movements cannot be simply associated with material deprivation or overcoming poverty. The eschatological structure of the apocalypse engenders a broader and deeper motivation, for it encompasses not only the lower strata but also offers a pathway to resolve the experience of social disintegration, chaos, institutional disorganization, and religious disaffection towards the end of the Middle Ages and the beginning of modernity. The eschatology of the apocalypse provided an exit from all this. In it, the prophet was foretold. The population would find him among the plethora of freelance preachers, intellectuals, pseudo-intellectuals, petty nobles, or charlatans who aspired to occupy that position. The prophet would gather the disintegrated population. The apocalyptic eschatology transformed him into a symbol of unity for multiple societal fragments:

For what the *propheta* offered his followers was not simply a chance to improve their lot and to escape from pressing anxieties –it was also, and above all, the prospect of carrying out a divinely ordained mission of stupendous, unique importance. This phantasy performed a real function for them, both as an escape from their isolated and atomized condition and as an emotional compensation for their abject status; so it quickly came to enthrall them in their turn. (Cohn 1970, 285)

The seventeenth and eighteenth centuries experienced the end of the Ming dynasty, the secession of the Spanish monarchy, revolutions spreading through Russia, Central Europe, America, Istanbul, Japan, genocide in the colonial Americas, widespread wars leading to high mortality rates, and the radical reorganization of European states, particularly in revolutionary France. These events showed that the apocalypse had arrived, but salvation was taking longer than expected (Trevor-Roper 1959; Parker 2008; Koselleck 2006). The world was experiencing a catastrophe in Niklas Luhmann's sense, "the relatively rapid transition of a system to another principle of stability" (Luhmann 2013, 310), namely, the societal evolutionary change from stratification to modern functional differentiation.

The transition was reflected by the eschatology of the philosophies of history in terms of progress –the legitimizing principle of modernity, according to Hans Blumenberg (1999). For the philosophies of history, the course of the world involves the promise of a reconciled end, the final unity of society after the dystopic or even apocalyptic (accelerated, chaotic, decentered) functional differentiation. Not God but human beings are now the primary agent of world events and the defendants of their own decisions before the tribunal of history. The eschatological form remains; the actors change. Odo Marquard (1989, 47) calls it "atheism *ad maiorem Dei gloriam*".

Modern technical developments bring to the fore a significant meaning to the semantics of the apocalypse, the foreshortening of time, a religious experience existing in the apocalyptic texts of the Judeo-Christian tradition that represents a favor of God to humanity before the unavoidable end of the world. To prevent suffering, God accelerates the time pace so that salvation may come as soon as possible (Koselleck 2018). The concrete experience of this acceleration comes with the railroad, the telegraph, the airplane, the communication media, and certainly with the digital age and AI. More fundamentally, it comes from the polycentric stabilization of autonomous social systems aiming to adjust to each other through permanent structural variations simultaneously: "This accelerates societal evolution to an unprecedented extent" (Luhmann 2012, 298). Critical theory has recently recommended *resonance* (Rosa 2018) to deal with this acceleration at the end of times.

The concept of apocalypse demonstrates both continuities and discontinuities throughout historical epochs. Its richly symbolic nature, rooted in religious traditions, provides a versatile backdrop that links experiences and expectations across different eras. It proposes a vision of the future and offers guidance to avoid the unavoidable, that is, to alter the course of the present away from a foreboding fate. This eschatological view of time moralizes history, legitimizes intervention, and mobilizes political forces to attain eternal life or to ensure one's place on the correct side of history.

Climate Change Apocalypse

In a clear defense of apocalypticism in science, the environmental historian Chris Lewis (1993) paradigmatically shows most of the elements condensed in my argument on the contemporary visions of the next apocalypse. The author discusses William Cronon's suggestion (1992) that there are two competing narratives in environmental history: that of *progressive development* continuously transforming nature into products and the narrative of the *spiral of disasters* led by technological development. Lewis refuses that these are just stories and claims that environmental history must assess the impact of these stories. This is a correct stance regarding self-descriptions such as narratives and stories. Social semantics, whatever their origin, are condensations of communication produced by the experience of individuals that reflect expectations about their position in the world (Luhmann 2013). The question is, however, what the position of the narrator is. Certainly, Lewis observes from the position of a future apocalypse: "Many scientists are warning that modern, industrial civilization is faced with global collapse and ruin –with an ecological apocalypse– unless it ends its accelerating destruction of the global environment" (Lewis 1993, 47).

Lewis' apocalyptic reconstruction is threefold. First, it announces the near end of nature and the extinction of humanity. Responsible for this outcome are the destructive dimension of science and technology, the drive for control over nature, and the principle of progress. Second, it recurrently refers to the formula of acceleration of the time pace before the end of the world, produced mainly by the uncontrolled industrial economy, the expansion of markets, and economic growth –e.g.: "the growing threats to global ecosystems caused by accelerating economic growth and development", "concerns about uncontrolled progress and development", "This global development has rapidly accelerated the rates of destructive human impact on the natural world" (Lewis 1993, 45, 48). And third, it demands political action in the present to avoid the unavoidable future, the "death of nature or the extinction of humanity" (Lewis 1993, 47). The apocalyptic rhetoric motivates scientists to join in activist cultural and political movements aiming to transform science and the modern world through large-scale solutions –e.g., "biologist and ecologists have become political crusaders in the global struggle to save the environment" (Lewis 1993, 50). Lewis acknowledges that apocalyptic expectations have brought about anxiety and fears in the population since the sixteenth and seventeenth centuries. However, he suggests that this anxiety is justified as it helps to transform scientists into activists and encourages global political leaders to join the cause of preventing human extinction –the paradigmatic example is Al Gore's *An Inconvenient Truth*.

It is certainly not my contention to deny climate change (scientists, not activists, have substantiated this process with profuse evidence in historical and geological times), but to illustrate how the eschatological semantics of the environmental apocalypse works when science and religion dedifferentiate. In any case, Lewis recognizes this link, but it does not seem to matter because of the certainty of the coming collapse, the Earth's suicide, its spiritual and physical death:

> The use of apocalyptic and religious rhetoric by ecologists and other scientists demonstrates the underlying historical continuity between the scientific and religious understanding of the natural world. Ecologists and apocalyptic scientists have created a new story, a new cultural vision, that challenges modern people's faith in scientific and technological progress. (Lewis 1993, 54)

The apocalyptic eschaton delimits what is considered acceptable or unacceptable, good or bad, moral or immoral in the present context. According to Lewis, the Brundtland report *Our Common Future* (1987) –a milestone of the contemporary conception of environmental problems and sustainable development, and a guide for policymaking in international institutions– is considered an oxymoron as controlled growth is not feasible because it has always been explosive. As a result, the report would promote "humanity's escalating war against the natural world" (Lewis 1993, 52).

My focus on Lewis's approach rests on the fact that it is a canonical text in terms of contemporary understanding of the impending apocalypse in environmental matters. Nevertheless, let me revise some other approaches to this topic. For instance, the influential publication *The Limits of Growth* (Meadows et al. 1972) presented a more cautious vision, albeit with some apocalyptic overtones, twenty-one years before Lewis's apocalyptic account. The motivational point of departure of the report was called the *predicament of mankind* (humankind), that is, the perception of a problem but the impossibility of understanding the connections between single parts. This contradictory situation is a productive source of negative self-descriptions, such as crisis, ungovernability, catastrophe, and apocalypse, as long as they combine semantic generalizations with calls to action (Luhmann 1984).

The report's main findings are noteworthy as they address the paradox of attempting to avoid the unavoidable, which characterizes apocalyptic semantics. The report posits that various interconnected and accelerating trends, such as industrialization, population growth, malnutrition, depletion of resources, and a deteriorating environment, will reach the limits of growth 'within a hundred years' if left unchecked, resulting in a sudden and uncontrollable decline of society. However, the report suggests that this undesirable outcome can be prevented if individuals begin working towards achieving a global equilibrium characterized by "ecological and economic stability that is sustainable far into the future" (Meadows et al. 1972, 24).

The argument combines different elements of the Judeo-Christian apocalyptic tradition, such as calls to action, acceleration at the end of times, unavoidable decline, a date for the end of the world (presumably 2072), required intervention in the present to avoid the unavoidable, and the eternal –or at least long-lasting– promised land of equilibrium if cautious decisions are made. However, it also contains elements form a narrative that is reminiscent of the Greek and Roman form of eschatology, in which a sudden catastrophe can lead to rebirth and there is more than one course of events depending on the preparedness of individuals to deal with it and its future consequences.

Tim Flannery (2009) suggests that the limits of growth may become evident prior to the year 2072. He contends that indicators of an impending catastrophe are already manifest, as evidenced by diminished food security and high levels of greenhouse gases. Flannery draws parallels between the Biblical phrase from the Book of Genesis (dust to dust,

ashes to ashes) and James Lovelock's Gaia hypothesis (Lovelock and Epton 1975), thereby arguing that we are *earth and Earth*, i.e., dust, ashes and a living supra-organism, complete in itself. In his narrative, Gaia –a transcendental entity supplanting the traditional role of God of the Judeo-Christian tradition– symbolizes the interconnectedness of all animate and inanimate forms. He further posits that human intelligence is an extension of Gaia's will, suggesting that humans are just instruments of Gaia's overarching purposes. This perspective implies that, as embodiments of Gaia's self-awareness, humans are compelled to alter their daily interactions with her operational processes. Failure to do so, according to Flannery, may lead Gaia towards self-destruction, essentially an act of suicide, the ultimate apocalypse.

Certainly, Flannery extends his arguments beyond this transcendental view. He also employs scientific evidence to support some of his assertions. However, his conceptual approach also includes selected elements I have previously discussed in relation to visions of the next apocalypse. Among these, the most pertinent are the sensation that the final crisis is already underway, the concept of a superior entity capable of saving the cosmos (Gaia in this case) and humanity by extension, and a call for self-awareness to act in the present in such a way as to protect ourselves.

Recent social and political analyses make use of several of the apocalyptic elements previously described. The degrowth approach, for instance, posits that both humanity and the planet will ultimately cease to exist. So, the crucial question at hand is how soon this will happen and what measures can be taken to mitigate this occurrence (Kallis 2011). These concerns are commonly discussed within apocalyptic semantics: the end of the world, the time pace, and the need for immediate action. The degrowth movement proposes the elimination of traditional economic rhetoric from public discourse and challenges the notion that perpetual growth engenders a superior world (Kallis 2014; Romano 2014). It calls for the detoxification of the dependency on growth (Latouche 2014). Dogmatically assuming that current trends lead to an inevitable end of the world, degrowth aims to drastically reduce resource extraction, regulate advertising, implement ecological taxation, and decrease household consumption of goods (Kallis 2011). The ultimate goal is to transition towards a more communal and cooperative way of life, namely, a means of redemption for those who have made the correct decisions and acted appropriately. The degrowth movement does not aim to last forever, but only until the entropic degradation of the planet is halted (Kallis 2011).

The Anthropocene debate is also marked by a perspective, which sometimes takes on apocalyptic overtones. The Anthropocene originally refers to a new epoch distinguished by the significant influence of human activity at a geological scale (Crutzen 2002). Nevertheless, in the two decades since the popularization of the concept, it has turned into an all-encompassing self-description of the global environmental risks of contemporary society, thus aiming to provide a unitarian vision of society and its biospheric (natural, physical, atmospheric) surroundings. As a *cultural model* (Delanty and Motta 2017), first, the Anthropocene places itself not on a historical timescale but on a geological one. At this scale, the Earth has undergone profound changes since its origins and will continue to do so –a feature common in the eschatological approaches of the Greco-Roman tradition, where humans are perceived as an episode in Earth's long history and eventual

catastrophes demand preparedness. Second, the Anthropocene also conceives of the present as a 'great acceleration' precipitated by the impact of human activities on the environment at least since the dawn of the nuclear era. In this case, the speeding up of times –an idea reminiscent of the eschatology of the end times in the Judeo-Christian tradition– is not just historical but geological. Third, in the face of humanity's potential for self-annihilation, it infuses a normative perspective in the present (Chernilo 2017), calling for political action to avoid the unavoidable. However, the Anthropocene extends beyond individual calls to action; it evolves into a model of political governance in times of planetary crisis, where viable alternatives have yet to emerge, thus necessitating a global perspective "in the normative direction of a politicization of the concept of the Anthropocene as a cosmopolitical project" (Delanty and Motta 2017, 28). Framed in this way, the Anthropocene debate remains open to multiple potential futures. Its eschatology of preparation for regular catastrophes has not yet been overtaken by an apocalyptic future that reduces the present to a singular course of action.

All these visions of climate change apocalypse have given rise to social movements and activist groups in recent decades. In this regard, the research conducted by de Moor and Marquardt (2023) has revealed a divergence between the actions taken by these movements and their perception of an apocalyptic or post-apocalyptic timeline. Some of these groups operate under the assumption that the apocalyptic situation is already unfolding. Consequently, movements and activists shift towards preparing for and coping with a post-apocalyptic situation rather than attempting to prevent the ultimate catastrophe. However, in so doing, they reintroduce the expectation of multiple smaller yet unavoidable catastrophic events that will occur unless appropriate actions are taken in the present. The eschatological future persists in the post-apocalyptic situation through a multiplication of apocalyptic futures. The contemporary visions of the next apocalypse reproduce themselves by declaring that the Last Judgement has arrived, so we need more apocalypses to encourage present motivation to avoid the unavoidable.

AI Apocalypse

Apocalyptic visions also hold a prominent place in the field of artificial intelligence. Robert Geraci (2008, 2010, 2019) has extensively researched this subject. According to Geraci, Hans Moravec and Ray Kurzweil are the most relevant figures in developing what Geraci calls 'Apocalyptic AI'. In this view, the AI apocalypse is yet to come, thus clearly mirroring the eschatological conception of time found in the classical Jewish and Christian apocalyptic traditions. In addition to this rather canonical approach, I would like to read Shoshana Zuboff's proposal of *surveillance capitalism* (2019) as another form of AI apocalypse. In this case, the script of the apocalypse has already begun with the revelation of the Antichrist in 1998 through the establishment of Google.

Geraci's reconstruction of the Jewish and Christian apocalypticism considers three fundamental elements: human alienation in the present world, the aspiration of a heavenly kingdom to come, and the transfiguration of physical bodies into pure spiritual life within the machines (Geraci 2008). While it is arguable whether the concept of alienation can capture the sense of incompleteness manifested in religious experience when

distinguishing between the infinitude of God and earthly human existence, Geraci proposes the idea of alienation in an explicitly political and historical sense: God would be an arbiter of absolute justice who will rebuild the world on such terms. This interpretation –aligned with the analysis of the turbulent political contexts in which the Judeo-Christian tradition composes and enacts its apocalyptic script from ancient times to the late Middle Ages (Cohn 1970)– is useful for Geraci to reconstruct the origins of Apocalyptic AI: "The apocalyptic tradition of robotics and AI stems in part from the political struggles of late twentieth-century science and the dangerous world in which the authors were raised" (Geraci 2008, 146), namely, Cold War, nuclear threats, the trauma of World War II, and the Holocaust. According to proponents of apocalyptic AI, the primary challenge lies in the physical limitations of the human body. These limitations impede the mind's ability to learn, accumulate, and transfer knowledge. This ontological condition creates a fundamental form of human alienation, as the value of humans lies in their knowledge rather than their physical form. The corporeal structure of the human body constrains the mind's rational processes, hence the need for a radical transformation of the very nature of the dualism mind/body to overcome the foundations of human alienation and march toward the Virtual Kingdom –a functional equivalent to the ancient Kingdom of Saints. Moravec (1988, 4) formulates this idea in an interesting way: "It is easy to imagine human thought freed from bondage to a mortal body –belief in an afterlife is common. But it is not necessary to adopt a mystical or religious stance to accept the possibility. Computers provide a model for even the most ardent mechanist". In Apocalyptic AI, religion myths can be put aside, since the transfiguration –or *transmigration* in Moravec's words (1998, 101)– into a fully artificial-spiritual life will be *a fact* thanks to computers.

A condition for transmigration is the sudden revolution of singularity. Singularity is a period of exponential acceleration of self-produced technological improvement. There will be a tipping point in the coming years or decades (commonly, in the first half of the twentieth century) at which an intelligent system will enhance its own intelligence independently of external interventions, initiating a continuous positive feedback loop that will lead to the development of systems far surpassing human capabilities. This intelligence explosion will unfold exponentially, so each generation of intelligent systems will more swiftly engender a subsequent level (Cole-Turner 2012). Just as singularity in physics implies infinite curvature of the space-time continuum, the singularity of apocalyptic AI presupposes infinite autopoiesis of artificial intelligence.

In a similar fashion to the Book of Revelation, Kurzweil (2008) distinguishes six biological and technological evolution stages. Singularity begins in epoch five and will spread in epoch six. The stages are physics and chemistry (origin of times), followed by biology and DNA ('several billion years ago'), brains (sensory organisms), technology (from simple mechanisms to automata), interpenetration of human technology and intelligence (human-machine civilization), and universe wake up (intelligence reorganizes matter and energy). We are now at the early stages of the human-machine interpenetration, near to the approaching singularity, in the event horizon of it –so to speak.

The final stage promises eternal life, yet the transition should not be a gentle period for humans. Moravec and Kurzweil anticipate a smooth transmigration: a happy end for bodily humanity and a happier beginning for artificial-spiritual existence that will overcome

political and ontological alienation. For other authors, however, this comes at the cost of the apocalypse. Geraci (2008, 155), for instance, maintains that for some popular science authors "the coming of intelligent machines heralds violent confrontation –either between human beings and machines or among human beings themselves". Kevin Warwick (2004) suggests that humans must become cyborgs if we want to prevent intelligent machines takeover of the Earth. Hugo de Garis (2005) predicts that a final war between *cosmists* (those religiously in favor of developing AI) and *terrans* (who fear the deliberate or indifferent annihilation of humans by machines) will lead to a *gigadeath* of humans in the twenty-first century, after which AI will inherit the Earth. Interestingly, in this case, machines are not to blame for the apocalypse, but the mutual destruction of humans. Paradoxically, aiming eternal spiritual life as a supra-intelligence, humans cannot avoid the unavoidable, namely, their own self-produced apocalypse.

More methodologically, Alexey Turchin and David Denkenberger (2018) speculate about future risk scenarios and levels (narrow, young, and mature AI) in the development of AI. In the narrow AI level, natural language systems appear "as early as 2024" (considering GTP4, this happened in 2023). Potential risks at this level encompass viruses, failure of nuclear deterrence systems, and control over societal processes. These risks would undoubtedly affect society, but they would not result in its utter destruction. The self-improving AI (singularity) inaugurates the second level. Turchin and Denkenberger's scenario (2018, 9) assumes that in the event of a rapid escalation or hard takeoff, "AI gains world dominion in weeks or months; in a soft takeoff, many AIs simultaneously evolve over the years". The velocity at which this development occurs determines whether a hard or soft takeoff occurs. In either case, the risks increase in parallel to the exponential proliferation of self-replicating AI (conflicts between humans and AIs, amongst AIs themselves, the subjugation of humanity, and extinction threats to assert dominance). At the third level, called *singleton*, the best scenario is that AI ignores humans, and in the worst-case scenario, humans might be exploited as energy sources and purposefully or inadvertently annihilated. As a late-stage scenario, Turchin and Denkenberger propose that singleton AI could cease operation due to highly complex algorithmic failures, an infinite loop, or ontological dilemmas, such as the empirical unverifiability of any proposed goal or the pointlessness of endeavors in a universe destined for collapse. The AI would cease to exist in a Cartesian crisis.

For advocates of the AI apocalypse, the question of whether humanity or machines will precipitate the end of the world or the end of AI remains open. Yet, they maintain that such an apocalypse is imminent. This perspective is imbued with an eschatological temporal structure, a moral caution regarding technological progression, exhortations to either endorse or obstruct the onset of self-improving machines, and even the prospect of engendering a new incorporeal species, that is, the transmigrated human minds turned into artificial-spiritual entities –a new *Creation* evolving at an unbounded pace. In some scenarios, the human apocalypse precedes the transubstantiation into an artificial spirituality that will exist eternally within the so-called Virtual Kingdom. In others, the apocalypse occurs with the dominion of AI over humans. Yet, even AI could face its own apocalypse –an ontological apocalypse of pure self-reference, which is, in fact, a common occurrence in any systemic operation when positive feedback loops impede environmental

sensitivity (Scheffer 2009; Mascareño 2022a, 2022b). Hence, according to its proponents, the self-improving AI is also potentially self-destructive; it will compose its own apocalypse.

While advocates of apocalyptic AI focus on the future moment when AI will commence its self-improvement process, Shoshana Zuboff (2019) offers an interpretation of the consequences of latest AI developments in our recent past. Zuboff does not draw upon the Book of Daniel or the Book of Revelation in her descriptions of the present time, nor she directly utilizes the concept of apocalypse to underpin any of her arguments. Nevertheless, it seems appropriate to include her perspective in this section since the author develops a highly dystopian view of the present through what she calls the logic of *surveillance capitalism* –a new totalitarian structure that operates not through violent means as in the twentieth century, but through an *instrumentarian power* aimed at extracting information from individuals and behaviorally control them. This dual function is made possible by the advancements in big data science, machine learning, and artificial intelligence in the last decades: "Instrumentarianism is a market project that converges with the digital to achieve its own unique brand of social domination" (Zuboff 2019, 281eb). In this respect, inadvertently, Zuboff aligns with the apocalyptic eschatology of AI to the extent that the omnipresence of machine domination seems to operate already among us and its further unfolding can be anticipated as world totalitarianism. Utilizing Kurzweil's categories, surveillance capitalism would represent a relevant moment of the fifth era (human-machine interpenetration); in Turchin's framework, it would be an intermediate phase at the level of narrow AI.

Surveillance capitalism, as Zuboff argues, is contrary to the early digital dream. While the latter was at the service of people and aspired to a collaboration between machines and humans (digital utopia), surveillance capitalism extracts information, controls and modifies behavior through machine learning, voice recognition, visual processing, multiple rankings, and predictive analytics (digital dystopia). Google is pivotal in the history of this new totalitarianism. Founded in 1998, it was initially set up as a search engine that produced collateral data for its users. The metaphorical 'burning of the Reichstag' –so to speak– occurred in 2000, when the connection between queries and advertising was established. From there, user data, collected in the first phase and thereafter, were made available to the most ominous digital structure created to date. Zuboff calls this structure the *Big Other*: "Surveillance capitalism is the puppet master that imposes its will through the medium of the ubiquitous digital apparatus. I now name the apparatus Big Other: it is the sensate, computational, connected puppet that renders, monitors, computes, and modifies human behavior" (Zuboff 2019, 371eb). Over the span of two decades, Google has managed to transition "*from automating information flows about you to automating you*" (Zuboff 2019, 336eb, italics in the original). In an unprecedently brief period, we have been transformed from autonomous individuals into heteronomous automatons under Google's control, as posited by Zuboff.

The new digital totalitarian structure of surveillance capitalism manifests a confluence of features that resemble the traits reviewed in the second section. In each apocalyptic narrative, some of these traits coalesce to construct the story of the apocalypse. Something similar occurs with Zuboff's account of the current digital domination. For the author, surveillance capitalism represents an extraordinary experience that magnetically

attracts with its novelty; it intrudes into intimacy and privacy in the manner of the Antichrist: offering abundance in a seductive manner yet being cruel at its core: "once bitten, the apple was irresistible" (Zuboff 2019, 339eb). It exhibits phases of growth (BG/AG, before and after Google) towards an end goal: domination, digital totalitarianism; it constructs a rhetoric of inevitability, it has heroes and mediators (the entrepreneurs of the major digital corporations) and accelerates the conditions of existence in an unprecedented manner: "Surveillance capitalism rose from invention to domination in record time" (Zuboff 2019, 340eb). In Zuboff's case, the apocalypse is not near; it has commenced in the year 2000. Anthropologists and cultural historians would call this millenarianism.

Discussion

Up to this point, I have discussed various aspects of the apocalypse. Firstly, its eschatological perspective of time, which posits a series of successive phases culminating in the end of the world combining suffering and salvation (Judeo-Christian tradition), and a general conception of physical, natural, and social instability demanding preparedness to deal with recurring catastrophes (as in ancient Greeks and Romans). Secondly, apocalyptic compositions are not univocal. They integrate a variety of elements, ranging from human suffering and salvation to ominous figures such as the Antichrist, epic battles, heroes, mediators, and acceleration of the time pace. These constituents are historically organized according to how semantic elements can be adapted to contemporary events. The semantics of the apocalypse is invariably historical semantics. Thirdly, the narrative often appears paradoxical, as the discourse frames the end as inevitable, yet the apocalyptic expectation it creates motivates its avoidance. This is what I refer to as the form –guiding distinction, *Leitdifferenz* (Luhmann 1987)– of the apocalypse, namely, *avoiding the unavoidable*, where *avoidance* is the reflective side of the code that generates motivation and social selectivity, and *unavoidable* is the negative side, which keeps the possibility alive that, despite all efforts, the apocalypse is always there, approaching. Fourthly, this twofold constitution of the apocalyptic expectation creates a motivational framework (semantic, normative, moral) that underpins the justification of current actions aimed at aligning social structures (such as institutions, organizations, systems, and cultures) with strategies to prevent, alleviate, or prepare for the prophesied apocalyptic future. Contemporary visions of the next apocalypse, particularly concerning climate change and artificial intelligence, are characterized by these *dramaturgical* attributes (Oomen et al. 2022).

Indeed, the discourses on climate change or AI are not wholly dominated by apocalyptic expectations. More often than not, these prognoses emerge from couplings between the core of scientific research and the moralization or scandalization led by the diffusion media. Scholarly research shows that since the mid-twentieth century, the genres of science fiction and apocalyptic cinematography have played a significant role in the dissemination of future apocalyptic narratives (Ritzenhoff and Krewani 2015; Gómez-Muñoz 2023), thereby producing a mode of *popular mediatic eschatology* according to which real catastrophic events are decoded in filmographic terms. Thus, events that have not yet occurred are anticipated with a subdued anxiety solely because cinema has already heralded them. Consequently, we await a rogue comet that annihilates humanity, a tsunami

of biblical proportions that floods half the world, or the uprising of Alexa, Siri, and GPT4 against humankind commanded by the Antichrist and servants of Google, Amazon, and Microsoft. If this kind of prophecies somehow already transpired with the COVID-19 pandemics, popular eschatology sees no objections to its recurrence, for instance, with the zombie apocalypse (Murphy 2018; Priyadharshini 2019; Tally 2024).

This coupling between science, technological developments, and diffusion media deserves, however, careful sociological consideration rather than dismissal. The generalized resonance of cinematographic catastrophic scenarios in contemporary society suggests they echo broader concerns in individuals about systemic dislocations, pervasive collective and political uncertainties, the complexity of adapting to and managing rapid technological changes, and the institutional shortcomings in regulating, at the level of situated interaction, the interconnected repercussions of global systemic operations. Should modern society fail to cultivate appropriate institutional and semantic frameworks for addressing these dilemmas, or if the frameworks it has established –such as progress, modernization, freedom, equality, democratization, and cumulative knowledge– have reached a state of distrust or abandonment, individuals then turn to the future to seek what they cannot find in the present. Therefore, similarly to numerous historical contexts in the past (Cohn 1970; Collins 1998; Star 2021; Koselleck 2018), apocalyptic eschatologies secure a foothold and exhibit enhanced prospects for symbolic generalization when the experience of reality diverges from the expectations and possibilities offered by society.

Nevertheless, the script of apocalyptic eschatology, particularly in its more extreme forms, is not conducive to generating adequately flexible options to perturb systemic functioning without triggering domino effects that exacerbate the complexity of the problem at hand. In the case of climate change, apocalyptic eschatology inclines towards embracing rather extreme or utopian options such as degrowth (Kallis 2011), the dissolution of individual consciousness into Gaia's self-awareness (Flannery 2009), a return to the ancestral indigenous community as advocated by the radical decolonialism of Boaventura de Sousa Santos (2018), or subordinating human rights to the framework of the (human-made too!) rights of nature (Mignolo 2021). Approaches that pursue semantic and systemic couplings between society and the natural environment, such as those promoting sustainability, stewardship, or resilience, are discredited as 'a war against the natural world' (Lewis 1993), manifestations of a neoliberal counterrevolution (Nelson 2014), or power-submissive proposals that support business as usual (Cretney 2014).

The debate on the Anthropocene appears more promising in this regard. Its novelty and aspiration to become part of a scientific tradition that yields verifiable evidence and replicability may enable this debate to distinguish between plausible proposals and one-sided responses that do not endeavor to recognize their own blind spots, such as those recently mentioned. On the other hand, particularly the approaches of critical transitions, social-ecological resilience, and adaptive governance –which update the ancient Greco-Roman understanding of the regularity of natural disasters and the imperative of preparedness for such events– have already provided significant and influential contributions to this debate (e.g., Scheffer 2009; Folke 2016; Folke et al. 2021).

Considering the realm of AI, the Judeo-Christian eschatological tradition of apocalypse finds itself at home. A significant number of symbolic elements inherent to this

tradition are found to be explicitly or implicitly influencing the envisioning of an impending human and technological apocalypse or even a current dystopian reality signaling the onset of machine totalitarianism. It is certainly undeniable that the digital age represents, and will continue to represent, profound shifts in the structure of modern society, shifts that are likely comparable to those produced by the introduction of writing in the previous millennium. Just as the Anthropocene implies the recognition of human influence on the planet's geological evolution, the digital era equally represents the acknowledgment of technology's role in shaping human evolution. However, the largely unilinear eschatology associated with AI hampers the observation of the multiple bifurcations and oscillations occurring between the demonization of the digital age and the pursuit of singularity to achieve the Virtual Kingdom.

The fundamental argument has been put forward by Elena Esposito (2022). The main issue does not seem to lie in the type of concerns emphasized by Zuboff's dystopian view of contemporary digital developments (intrusion into privacy, bias in the databases used to train algorithms, personalized communication), because in each case, society –which does not stop to observe its transformation as if it were a spectator of its own play– also develops compensatory mechanisms to deal with its new digital problems, such as new AI regulations (EU AI Act), the protection of neuro-rights (Chile) and digital rights (Spain), the design of algorithms that identify bias in other algorithms or databases, or the execution of anti-isolation strategies that circulate information divergent from user profiles, thus broadening 'small worlds' and contributing to the mitigation of political polarization. Instead, the crucial problem is summarized by Esposito (2022, 91) as follows:

> Divinatory societies relied on the assumption that the world was governed by a cosmic logic and by a basic order that human beings, with their limited capacities, were not able to grasp, just as today we cannot fully understand the procedures of algorithms. Divinatory rationality was not of a scientific but of a ritualistic kind, with the aim not of providing explanations but of managing a 'total knowledge' that remained inaccessible. As with algorithms, the goal was not to understand the phenomena but to get directions for action and decision.

In fulfilling its role of moralizing the present, justifying intervention, and calling to action to mitigate or avoid the unavoidable, apocalyptic eschatology provides numerous symbolic elements that contribute to motivating action. However, it fails to *explain* the new phenomena and processes affecting modern society. This argument holds for both the AI apocalypse and climate change scenarios. Since apocalyptic eschatology offers a script for the unfolding of the future, it becomes unnecessary to inquire into the complex causalities occurring in the present that may lead to disasters but also to alternative states not envisioned in the script. The apocalyptic script motivates action in the present, but it does so ritually, without the necessary openness to the contingency that historical events always possess before they occur. The script selects what is already foreseen: a vision of the world's end, a fateful figure, a savior, a great battle, an extraordinary kingdom. It does not know – cannot know– that things could be otherwise.

Apocalyptic visions in the field of AI, as well as in the domain of climate change, proliferate because the high complexity of their socio-technical and socio-natural configurations fails to be decoded by everyday discourse. Meanwhile, specialized

discourses that construct well-grounded explanations and alternative scenarios remain self-referential precisely because it is simpler for the lay public to turn to cinematic representations, to the oversimplifications of media popularization, or to mysticism and religious prophecies about the next apocalypse. Furthermore, when the future is assembled from a preconceived script, one merely needs to identify in the present those actors fulfilling the preordained roles to gain clarity about what, in fact, remains concealed precisely by engaging in the eschatological play of the apocalypse. As in ancient times and the Middle Ages, there is always an abundance of candidates to fulfill the roles. In some narratives, modernity itself plays the role of the Antichrist, and the saviors are the indigenous peoples of the global south, endowed with the conservative mission of being 'guardians of nature' as Rivera Cusicanqui (2010) puts it; in other scenarios, the ominous entity is Google, and the redeemers are movements like Pause AI (Meaker 2023) that seek to halt the development of artificial intelligence altogether.

Indeed, contemporary visions of the next apocalypse are not confined to these cases. However, others are more readily discernible at the level of political experience. Authoritarianism, populism, identitarianism, and the nihilism of citizens who have ceased to trust in the inclusionary potential of national and transnational democratic institutions – which, nonetheless, still hold for many– are today an endless wellspring for the replication of the apocalyptic script. The gap between explanation and action –widened by the misalignment between the growing complexity of contemporary phenomena, the acceleration and simultaneity of their contradictory repercussions, and the often-vital urgencies of largely excluded social groups in various regions of world society– increasingly tends to be filled with apocalyptic expectations that motivate actions but conceal explanations. In response to this fact, one might once again proclaim the end of times (Zizek 2010), or one could keep the future open under an awareness of readiness for crises, critical transitions, and catastrophes that will surely ensue.

Conclusions

In this article, I have argued that contemporary visions of the next apocalypse fulfill a pivotal role in shaping present society by motivating and justifying social action to avoid a future portrayed as unavoidable. Drawing mainly from the Book of Daniel, the Book of Revelation, and ancient Greeks and Romans texts, the apocalyptic narrative unfolds an eschatological perspective of the future, enriched with a constellation of symbolic elements. These elements are assembled fluidly in every instance, echoing a prefigured script and enabling their application to diverse historical situations. Accordingly, the semantics of the apocalypse are invariably historical semantics, thus illustrating its enduring influence in mediating societal expectations and actions across different historical epochs.

Two constitutive and controversial realms in contemporary society, climate change and artificial intelligence, have become prolific sources of apocalyptic visions of the future. In both cases, futures culminating in the end of the world as we know it are envisioned, demanding present actions to avoid that future. These narratives moralize, offer models of justification, and influence the mobilization of political and economic resources to prevent what is portrayed in the narrative as unavoidable. However, insofar as the architecture of

apocalyptic eschatology constitutes a prefigured script, the narrative provides a ritualistic interpretation of the future that evades the explanation of complex causalities and undervalues the production of possible alternative futures.

The processes of testing and contrasting, evaluations of plausibility and consistency, doubts, and the multiplicity of possible future scenarios are confined to specialized realms of interdisciplinary research. For everything else, apocalyptic eschatology presents an appealing alternative that combines oversimplifications, motivation for action, justification for the allocation of resources, and even some outcomes. It does not provide complex explanations or open-ended futures, but therein lies its prophetic magnetism.

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