

Article

Entropy's Enemies: Postmodern Fission and Transhuman Fusion in the Post-War Era

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Abstract: In the early to mid-twentieth century, thermodynamic entropy—the inevitable dissipation of usable energy in the Universe—became a ubiquitous metaphor for the dissolution of Western values and cultural energy. Many Golden Age science fiction writers portrayed twentieth century technological progress as anti-entropic, a sign of Universal progress and unity which might postpone or negate both cultural and thermodynamic forms of entropy. Following the evolutionary metaphysics of Georg Hegel and Pierre Teilhard de Chardin, Golden Age science fiction writers like Arthur C. Clarke and Isaac Asimov imagined the creation of powerful collective beings whose unitary existence signified the defeat of entropy. In contrast, later literary postmodernists like Thomas Pynchon and Pamela Zoline often accepted and even exalted in the chaotic, liberating potential of entropy. In postmodern fiction, the disorder of entropy was often compared favorably to the stifling hegemony of cultural universalism. More broadly, these two responses might be understood to represent two societal stages of grief—denial and acceptance—to the new trauma introduced to the world by the parallel concepts of cultural entropy and a Universal “heat death.”

Keywords: cultural entropy; postmodernism; posthumanism; transhumanism; Georg Hegel; Pierre Teilhard de Chardin

Before long, all existing things will be transformed, to rise like smoke (assuming all things become one) or be dispersed in fragments. -Marcus Aurelius (Meditations 6.4)

1. Anti-Entropic Transhumanism

As John Kuehl notes,¹ though the second law of thermodynamics had been described as early as 1850, the concept of entropy—the increasing disorder of a system—wasn't widely popularized until the publication of *The Education of Henry Adams* in 1919. While Western civilization had, since the Enlightenment, embraced the notion of historical progress, the concept of entropy functioned as a mirror impulse, portending chaos and degeneration. Kuehl argues that the quintessential modernist T.S. Eliot further popularized the idea of cultural entropy as the primary metaphor of the “Waste Land.” According to Kuehl, Eliot's goal is to resist the entropic tendency of the Universe by applying his own overarching schema of mythic order. While Eliot looked to old-world myths as a salve against entropy, technologists and futurists began forging new anti-entropic myths from the promises of emergent information technology. Broadly speaking, these techno-utopian myths fall under the umbrella of transhumanism, a term coined by Julian Huxley in his 1957 treatise, *New Bottles for New Wine*. Transhumanism is an outgrowth of the Enlightenment belief in universal progress, with an emphasis on revolutionary transformation of humanity through technology. While Eliot's high modernism attempted to shore up the fragments of humanistic universalism, early transhumanists imagined a more radical continuation of cultural universalism through technological interconnection. *Alternate Worlds: A Study of Postmodern Antirealist American Fiction*. Nicola Tesla, one of the first thinkers to intuit the revolutionary potential of a truly interconnected world, writes:

When wireless is perfectly applied, the whole earth will be converted into a huge brain, which in fact it is, all things being particles of a real and rhythmic whole. We shall be able to communicate with one another instantly, irrespective of distance. Not only this, but through television and telephony we shall see and hear one another as perfectly as though we were face to face, despite intervening distances of thousands of miles; and the

instruments through which we shall be able to do this will be amazingly simple compared with our present telephone. A man will be able to carry one in his vest pocket.²

As Tesla's prescient quote illustrates, the concept of an emergent world-brain had become increasingly tenable as a result of the telecommunication advancements of the early twentieth century. The notion of a singular world-brain—an entity which emerges from the synthesis of human consciousness—pushes directly against conceptions of cultural and informational entropy. The most influential conception of a technologically enabled world-brain comes from the work of the Jesuit anthropologist Pierre Teilhard de Chardin, who expanded upon Hegel's evolutionary metaphysics by incorporating modern conceptions of physics, biology, and information technology. In his philosophical treatise, *Phenomenon of Man* (Teilhard and Huxley [1941] 1959), Teilhard saw in global transportation and communication technologies the coming of a noosphere, a worldwide network of information and knowledge, producing a global civilization converging towards unity, power, and love. The continued evolution of humanity within the noosphere would result in what Teilhard called the "Omega Point," a transcendent being of pure consciousness, constructed from the coalescence of all human thought. An amalgamation of Hegel and Darwin, Teilhard's Omega Point evolves according to a teleological iteration of Darwinian evolution. Teilhard goes further than Tesla in personifying an emergent consciousness in human techno-civilization. He writes:

If words have any meaning, is this not like some great body which is being born—with its limbs, its nervous system, its perceptive organs, its memory—the body in fact of the great Thing which had to come to fulfill the ambitions aroused in the reflective being by the newly acquired consciousness that he was at one with and responsible to an evolutionary All. (Teilhard and Huxley [1941] 1959, p. 124)

Like Hegel's Geist, Teilhard's Omega Point is a literal apotheosis of humanistic Enlightenment progress, a posthuman God that emerges from humanity (Hegel [1807] 1998). Moreover, the term Omega Point implies an ultimate convergence (in some formulations represented by a new space-time singularity), a cosmology in direct opposition to the ultimate and complete entropic disunion predicted by modern physics.

For Teilhard, consciousness was, from its inception, a force acting against the entropic principle. He believed that, while thermodynamic energy necessarily dissipates, the energy of consciousness is able to coalesce against the current of entropy. He writes,

[Consciousness] gravitates against the tide of [entropy] towards a divine focus of mind which draws it onward. Thus something in the cosmos escapes from entropy, and does so more and more. When consciousness broke through the critical surface of hominisation, it really passed from divergence to convergence : : : [Human consciousness] escapes from entropy by turning back to Omega: the hominisation of death itself : : : [The Universe] will reach collectively its point of convergence—at the 'end of the world'. (Teilhard and Huxley [1941] 1959, p. 137)

² "When woman is boss", *Colliers*, January 30, 1926.

For Teilhard, the end result of the Universe is not the heat death³ of ultimate dissipation, but the ultimate convergence represented by the Omega Point. Thus, the growing interconnectivity of human consciousness, as evinced most clearly by the telecommunications of the early twentieth century, prefigured the coming defeat of entropy. It must be noted that Teilhard's Omega Point represents a denial of both thermodynamic and cultural entropy: the coalescence of human consciousness (the cultural anti-entropic) allows an escape from the physical constraints of Universal entropy.

Certain works of transhumanist fiction in the 1930s, 40s, and 50s similarly spoke to the newly ordered technological interconnectedness of humanity as an antidote to cultural and thermodynamic entropy. These works use science fiction tropes like teleportation and telepathy as metaphors for the emergent systems of international transportation and telecommunications connecting the world into a nascent equivalent of Teilhard's noosphere. Works like Olaf Stapledon's *Star Maker* (Stapledon 1937), Theodore Sturgeon's *More than Human* (Sturgeon 1953), Arthur C. Clarke's *Childhood's End* (Clarke 1953), and Isaac Asimov's "The Last Question" (Asimov [1956] 1990) reconceptualize human consciousness as a force of cosmic cohesion. These writers imagined the evolution of powerful anti-entropic beings as metaphors for unification and progress in the twentieth century.

The transhumanistic apotheoses at the heart of these works was perhaps first hinted at by Friedrich Nietzsche, who saw in the modern death of the religious superstructure the potential for cultural dissolution and nihilism. In *The Gay Science*, he writes:

God is dead! God remains dead! And we have killed him! : : : Are we not plunging continually? Backward, sideward, forward, in all directions? Is there still any up or down? Are we not straying, as through an infinite nothing? Do we not feel the breath of empty space? : : : Is the magnitude of this not too great for us? Do we not ourselves have to become gods merely to appear worthy of it? (Nietzsche [1882] 2001, p. 120)

While Nietzsche was not likely imagining a transhumanist apotheosis when he suggested that humanity "become gods," the radical nature of his solution speaks to the magnitude of the cultural dilemma he foresaw. Moreover, Nietzsche's comparison of the death of the religious superstructure to "infinite nothing" and "empty space" precedes the later connections between cultural and thermodynamic entropy seen here. Absent God, what holds humanity and the Universe together? Like Teilhard, these science fiction writers offered a more literal solution than Nietzsche imagined.

Olaf Stapledon's *Star Maker* (Stapledon 1937) was one of the first works of fiction to posit the concept of a collective consciousness as an anti-entropic force. In a work that is more philosophical treatise than narrative, Stapledon conceptualizes worlds that become more and more interconnected through radio and telephone communications until they function as a single consciousness. Eventually, these world-minds expand outward even further, telepathically connecting to other world-minds to form galactic-minds, and ultimately, a single consciousness spanning the Universe. Like the literary modernists and later postmodernists, Stapledon acknowledges the chaos and uncertainty of the modern era. However, for Stapledon, the primary goal of any civilization is to resist both cultural and thermodynamic entropy through communion and understanding; or, as he states, "to win for their race some increase of lucidity before the ultimate darkness" (Stapledon 1937, p. 257). In fact, Stapledon imagines individual minds and civilizations linked together in spite of the growing physical distances between atoms, individuals, and planets:

The many populations, teeming in the galleries of the many worlds, maintained their telepathic union. Intimately they knew one another in all their diversity. Together they supported the communal mind, with all its awareness of the whole vivid, intricate past of the cosmos, and its tireless effort to achieve its spiritual goal before increase of entropy should destroy the tissue of civilizations in which it inhered : : : The populations maintained their

³ The Heat Death of the Universe is the postulated state in which entropy has reached a maximum level.

straitened Utopian civilizations, lived their personal lives of work and social intercourse, and at the same time, upon the communal plane, refashioned the whole structure of cosmical culture. (Stapledon 1937, p. 220)

At one point in the novel, Stapledon posits beings so powerful that they can reverse thermodynamic entropy, though the text as a whole seems to accept the inevitability of Universal heat death, focusing instead on achieving Utopian communion and increased interconnectedness before that final end, striving to eliminate cultural entropy even as thermodynamic entropy marches relentlessly on.

If we accept Georg Hegel as an antecedent of transhumanism, we find a surprising degree of continuity in the tradition, which is particularly evident in Theodore Sturgeon's *More than Human* (Sturgeon 1953). Sturgeon's homo gestalt—a superhuman organism, made up of individual human beings representing the organism's hands, eyes, legs, and brain—has a clear antecedent in Hegel's Geist, as we can see in Bertrand Russell's description of Hegelian gestalt; Russell writes:

Hegel's logic led him to believe that there is more reality and excellence in wholes than in their parts : : : they are wholes in which the individual does not disappear, but acquires fuller reality through his harmonious relation to a larger organism : : : A person is a complex whole, having a single life; can there be a super-person, composed of persons as the body is composed of organs, and having a single life which is not the sum of the lives of the component persons? (Russell [1945] 2004, p. 734)

Sturgeon's gestalt consciousness informs us that "multiplicity is our first characteristic; unity our second," mirroring Hegel's gestalt synthesis of unity and difference. As in Stapledon's *Star Maker*, the group consciousness in *More than Human* continues to combine into larger and larger beings, ultimately taking part in an even larger world-mind. In the final moment of the novel, the protagonist, now part of a gestalt consciousness, finds himself in the company of other gestalt beings:

He saw himself as an atom and his gestalt as a molecule. He saw these others as cells among cells, and he saw in the whole the design of what, with joy, humanity would become. He felt a rising, choking sense of worship, and recognized it for what it has always been for mankind—self-respect : : : And humbly, he joined their company. (Sturgeon 1953, p. 186)

Sturgeon writes that God—"the Guardian of Whom all humans knew" was not, in actuality, "An exterior force, nor an awesome Watcher in the sky, but a laughing thing with a human heart and a reverence for its human origins, smelling of sweat and new-turned earth rather than suffused with the pale odor of sanctity" (Sturgeon 1953, p. 186). The humanistic elements in Sturgeon's cosmology echo those in both Teilhard and Hegel, in which God is manifested in collective human consciousness. Moreover, the central conflict of *More than Human*, for which Sturgeon's gestalt consciousness is the resolution, is the overcoming of cultural entropy in the guises of loneliness, dissolution, and nihilism. The novel begins with the death of the paternalistic God-figure in the form of the zealous Mr. Kew, subsequently ruminates on loneliness, dissolution, and nihilism (following the Nietzschean death-of-God), and culminates in the triumphant forging of a new universalist ethos based on empathy and communion.

In Arthur C. Clarke's *Childhood's End*, as in both Stapledon's and Sturgeon's novels, human minds begin to link telepathically into a single consciousness, forming a world-mind. Eventually, this human world-mind matures enough to join the even larger cosmic mind which had nurtured and enabled the development of human consciousness. Clarke describes this process of connecting human minds into a cosmic Overmind as an "apotheosis," and like Sturgeon, depicts the convergence of consciousness as the ultimate solution to modern alienation and isolation. He writes,

Lonely? : : : That was the one thing they could never be again. Only individuals can be lonely—only human beings. When barriers were down at last, loneliness would vanish as personality vanished. The countless raindrops would have merged into the ocean : : : This was not tragedy, but fulfillment. (Clarke 1953, p. 186)

Like Teilhard's Omega Point and Stapledon's Starmaker, Clarke's Overmind transcends time and space, with the anti-entropic ability to reverse the order of cause and effect. And, like both Sturgeon's and Teilhard's world-minds, Clarke's Overmind is explicitly identified with the Abrahamic God. Clarke describes the Overmind's appearance as "a great burning column, like a tree of fire, reaching above the western horizon" (Clarke 1953, p. 215), evoking Yahweh's appearance as a "the pillar of fire" in Exodus. Again, the solution to the entropic nihilism and dissolution of Nietzsche's death of God is to create a new transhuman God, which might be understood as a stand-in for humanistic techno-progress more generally.

While Stapledon and Sturgeon focus on cultural entropy, Isaac Asimov's short story, "The Last Question" (Asimov [1956] 1990) uses a similar transhuman framework to address the problem of thermodynamic entropy. The story begins with the creation of a massive supercomputer, Multivac, which is given the question: "How can the net amount of entropy of the universe be massively decreased?" Multivac replies: "THERE IS AS YET INSUFFICIENT DATA FOR A MEANINGFUL ANSWER," and the human programmers quickly forget the incident (p. 290). However, like Stapledon's Starmaker, Asimov's story takes place on a geologic timeframe, following the progressive evolution of humans and machines over millennia. Asimov imagines machine consciousness evolving from the powerful Multivac into the nigh-omniscient Universal AC (Automatic Computer). Like Sturgeon, Clarke, and Teilhard only a few years prior, Asimov imagines a far future mankind coalescing into a single consciousness. He writes:

Man considered with himself, for in a way, Man, mentally, was one. He consisted of a trillion, trillion, trillion ageless bodies, each in its place, each resting quiet and incorruptible, each cared for by perfect automatons, equally incorruptible, while the minds of all the bodies freely melted one into the other, indistinguishable. Man said, "The Universe is dying." (Asimov [1956] 1990, p. 298)

In this transhuman state, the heat death of the Universe holds an analogous significance to humankind as an individual's own death today. However, even the immortal consciousness of Man and its cosmic supercomputer, AC, are unable to reverse entropy. Finally, as Universal heat death nears closer, the consciousness of Man merges with the technological consciousness of AC, leading to the story's iconic ending:

One by one Man fused with AC, each physical body losing its mental identity in a manner that was somehow not a loss but a gain. Man's last mind paused before fusion, looking over a space that included nothing but the dregs of one last dark star and nothing besides but incredibly thin matter, agitated randomly by the tag ends of heat wearing out, asymptotically, to the absolute zero. Man said, "AC, is this the end? Can this chaos not be reversed into the Universe once more? Can that not be done?" : : : And AC said, "LET THERE BE LIGHT!" (Asimov [1956] 1990, p. 300)

The religious undertones of the transhumanist ethos are laid bare in Asimov's solution to the problem of entropy, which concludes in a synthesis of Biblical scripture and the cosmology of the Big Bang (a term which had only been coined a few years prior in 1949). And, again, we find a transhuman solution to dissolution in embracing physical and psychological communion. In this, as in many of the above works, cultural entropy and thermodynamic entropy are irrevocably intertwined: the solution to both is techno-psychological communion: the fusion of all consciousness into an anti-entropic singularity.

In stark contrast to later postmodern fears of homogenization and hegemony, these transhumanist thinkers reiterated the Enlightenment sentiment that further societal interconnectivity was "not a loss but a gain." Humanity's rapid technological and scientific progress in the early twentieth century had, for these writers, confirmed the Enlightenment metanarrative of progress, with technology seen as instrumental in bringing about a positive, even necessary form of human cohesion. The above works, identified as broadly transhumanist, are products of the Golden Age of science fiction, a period heavily

influenced by the ideological predilections of editor John W. Campbell, who promoted a pro-science, pro-technology agenda in his science fiction magazine, *Astounding Science Fiction*. New Wave science fiction of the 1960's and 70's, like that of Pamela Zoline and Philip K. Dick, would converge with the chaotic style and irreverent philosophy of literary postmodernism, providing an entirely new perspective on entropy.

2. Postmodern Entropy

While modernists like T.S. Eliot used their art to alternately resist and lament cultural entropy, later literary postmodernists often accepted or even reveled in the increasing disorder of the twentieth century. In postmodern fiction, the notion of entropy becomes ubiquitous and irresistible, a force dominating both the physical and cultural spheres.⁴ However, the dissolution represented by entropy, when compared to the hegemony of cultural universalism, could be interpreted as the ultimate liberation. Jean-Francois Lyotard famously defined postmodernism as the rejection of grand narratives (Lyotard 1984). In many ways, entropy functions as the perfect symbol of that rejection: the Universe is not progressing toward the hegemonic unity offered by either millenarian religions or humanistic universalism (Hegel's end of history), but becoming more diverse and chaotic.

Thomas Pynchon examines the concepts of thermodynamic and cultural entropy in his early story, "Entropy" (Pynchon [1960] 2011), in which a hermetically sealed greenhouse apartment—filled with summer plants in the dead of winter—is contrasted with the chaotic discord of a rowdy party in the apartment below. As the story progresses, the disheveled downstairs apartment is rendered more and more culturally disorganized as people of various classes, languages, and ideologies join the raucous party, while the inhabitants of the sealed upstairs apartment feel increasingly trapped in the sterility and stagnation of their false refuge from entropy. Pynchon describes the greenhouse apartment as "hermetically sealed : : : a tiny enclave of regularity in the city's chaos, alien to the vagaries of the weather, of national politics, of any civil disorder" (p. 726). At the story's conclusion, the owner of the basement apartment works to calm his chaotic houseguests (partially and temporarily pushing back the encroaching entropy), while the character confined in the hothouse apartment shatters the sealed window, choosing to embrace the approach of chaos rather than continue to languor in the stagnation of self-imposed order. Pynchon's prototypically postmodern story affirms both the inevitability of entropy and a sense of human freedom in embracing it.

Pamela Zoline's story, "The Heat Death of the Universe" (Zoline [1967] 1997), analogizes the entropic principle to a housewife's dwindling sanity. Zoline plays with multiple definitions of entropy, from the thermodynamic, to the cultural-linguistic emptiness of cereal box messaging, to the protagonist's physically degrading body, to the Sisyphean nature of housework. She writes: "Housework is never completed, the chaos always lurks ready to encroach on any area left unweeded, a jungle filled with dirty pans and the roaring of giant stuffed toy animals suddenly turned savage" (p. 263). For Zoline's protagonist, every aspect of life becomes a constant, futile attempt to beat back entropy. Both the content and the style of her writing descend into disorder as the story progresses, beginning with a dictionary definition of "Ontology" and ending in a stream of consciousness in which the protagonist finally stops attempting to preserve equilibrium and gives in to the inevitable disorder of both her life and the Universe. In an echo of Pynchon's conclusion, Zoline's nameless housewife "begins to break glasses and dishes, she throws cups and cooking pots and jars of food which shatter and break and spread over the kitchen" (p. 267). Like Pynchon, Zoline seems simultaneously fascinated and horrified by entropy, pendulating between a futile attempt to resist it and a liberating, destructive urge to embrace it.

⁴ Gerald Gra makes a similar point: "Whereas modernists turned to art, defined as the imposition of human order upon inhuman chaos—an antidote for what Eliot called the 'immense panorama of futility and anarchy which is contemporary history'—postmodernists conclude that, under such conceptions of art and history, art provides no more consolation than any other discredited cultural institution" (Gra 1979, p. 55).

In *Do Androids Dream of Electric Sheep?* (Dick 1968), Philip K. Dick proposes his own version of cultural entropy, which he calls “kipple.” According to Dick, the meaningless flotsam of consumer culture eventually piles up—like a junk drawer slowly overtaking a house—until one is overwhelmed by heaps of postindustrial detritus. Dick explains that,

Kipple is useless objects, like junk mail or match folders after you use the last match or gum wrappers or yesterday’s homeopape. When nobody’s around, kipple reproduces itself. For instance, if you go to bed leaving any kipple around your apartment, when you wake up there is twice as much of it. It always gets more and more : : : the entire universe is moving toward a state of total, absolute kippleization. (Dick 1968, p. 30)

In contrast to previous eras, in which scarcity was the central dilemma, Dick identifies the primary aliction of the consumer age as overabundance. In Dick’s world of artificial humans that can be bought and sold, people become commodities, and commodities inevitably become unwanted trash. Dick does not provide a clear solution to this cycle, declaring, “No one can win against kipple, except temporarily and maybe in one spot” (p. 30). Moreover, the protagonist, Deckard, comes to realize that his occupation as an android hunter makes him “part of the form-destroying process of entropy” (p. 44). The novel ends in a tacit acceptance of entropy, with Deckard assured that time (and entropy) cannot be reversed and “all [you] can do is move along with life, going where it goes, to death” (p. 110). Thus, Deckard comes to understand the central religion of the novel, Mercerism, which postulates the acceptance and communal appreciation of suffering, death, and entropy as the inevitable fate of humankind, with Mercerism itself presenting a perfect metaphor for a particular strain of postmodern art.

The postmodern movement, inspired by an increasingly mystifying modern physics, was broadly dominated by the concepts of ontological instability, di raction, and di usion.⁵ Jean Baudrillard argues that the increased production of linguistic artifacts in our culture can be understood as another form of cultural entropy. Baudrillard notes, “we live in a world where there is more and more information, and less and less meaning” (Baudrillard and Glaser 1994, p. 79).⁶ This linguistic entropy is especially noticeable in temporary, disposable types of writing like news and advertising, both genres that were commonly incorporated into postmodern fiction. According to John Kuehl, postmodern minimalists like Donald Barthelme were attempting to excise the entropic processes of language production through the meticulous limitation of verbiage in their own prose, while the postmodern maximalist works of Thomas Pynchon and John Barth were meant to acknowledge, expose, or embrace the entropic overabundance of modern language. As we’ve seen, the postmodern authors examined above o er any number of strategies for coping with and even celebrating entropy, from stoic resolve to anarchic delight.

Narratives of dissolution are among humanity’s most ancient etiological myths. The Biblical Fall (Genesis 3:1–24) explains the existence of sickness, aging, and death, while the Tower of Babel narrative (Genesis 11:1–9) explains the cultural-linguistic diaspora of humanity. However, the new concepts of thermodynamic and cultural entropy at the turn of the century necessitated new narratives and new myths of existential dissolution. Cultural responses to entropy, like the responses to all trauma, vacillated from denial to acceptance. Golden Age science fiction writers and futurists used transhumanist frameworks to create grand myths of defeating or displacing entropy. In contrast, many postmodern writers appropriated the power of entropy into the chaotic styles and themes of their own work, variously championing the positive implications of di usion, exalting in the vitality of disorder, or positing some local resistance to entropy’s intractable pull. If postmodernism is fundamentally

⁵ For broader examinations of postmodernism and modern physics, see Brian McHale’s *Postmodernist Fiction* (McHale 1987) and Susan Strehle’s *Fiction in the Quantum Universe* (Strehle 1992).

⁶ Baudrillard seems to be echoing Norbert Wiener’s “information theory” which “extends entropic proliferation of waste into linguistics, where it becomes noise” (Kuehl and Tuttleton 1989, p. 301).

defined, as Lyotard argues, as the rejection of grand narratives, the above transhumanist works can be understood as attempts to revitalize the anti-entropic grand narratives of the past, a connection strengthened by the innumerable allusions to Abrahamic religion in these texts. Much as Christ would defeat death in the great Christian narrative,⁷ these twentieth century thinkers sought to apotheosize Enlightenment ideals of progress into a technological triumph over the death of the Universe. If, as James Frazer argued in the *Golden Bough* (Frazer 1890), the symbolic defeat of death is the central motif of all myth and religion, the birth of such anti-entropic techno-mythologies in our own time should come as little surprise. Time will tell which, if any, of these myths survive and thrive in the twenty-first century, as humanity continues to vacillate between cohesion and dissolution in the face of ever-increasing globalization and technological interdependence.

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References

- Asimov, Isaac. 1990. *The Last Question*. In *The Complete Stories*. New York: Doubleday. First published 1956.
- Baudrillard, Jean, and Sheila Faria Glaser. 1994. *Simulacra and Simulation*. Ann Arbor: U of Michigan.
- Clarke, Arthur C. 1953. *Childhood's End*. New York: Ballantine.
- Dick, Philip K. 1968. *Do Androids Dream of Electric Sheep?* New York: Doubleday.
- Frazer, James. 1890. *The Golden Bough: A Study in Comparative Religion*. London: MacMillan and Co.
- Gra, Gerald. 1979. *Literature Against Itself*. Chicago: University of Chicago Press.
- Hegel, Georg. 1998. *The Phenomenology of Spirit*. Boston: Digireads.com. First published 1807.
- Kuehl, John Richard, and James W. Tuttleton. 1989. *Alternate Worlds: A Study of Postmodern Antirealistic American Fiction*. New York: New York UP.
- Lyotard, Jean-Francois. 1984. *The Postmodern Condition: A Report on Knowledge*. Minneapolis: University of Minnesota Press.
- McHale, Brian. 1987. *Postmodernist Fiction*. New York: Methuen.
- Nietzsche, Friedrich. 2001. *The Gay Science*. Cambridge: Cambridge University Press. First published 1882.
- Pynchon, Thomas. 2011. *Entropy*. In *The Norton Anthology of American Literature*. Edited by Nina Baym and Robert S. Levine. New York: W.W. Norton. First published 1960.
- Russell, Bertrand. 2004. *A History of Western Philosophy*. London: Routledge Classics. First published 1945.
- Stapledon, Olaf. 1937. *Star Maker*. London: Methuen Publishing.
- Strehle, Susan. 1992. *Fiction in the Quantum Universe*. Chapel Hill: U of North Carolina.
- Sturgeon, Theodore. 1953. *More Than Human*. Ballentine: New York.
- Teilhard, Pierre De Chardin, and Julian Huxley. 1959. *The Phenomenon of Man*. New York: Harper. First published 1941.
- Zoline, Pamela. 1997. *The Heat Death of the Universe*. In *The Road to Science Fiction. from Here to Forever*. Edited by James E. Gunn. Clarkston: White Wolf Pub. First published 1967.

⁷ Similarly, figures like Osiris, Baldur, Dionysus, Persephone, Odin, Krishna, and Ganesh feature in death-defying resurrection narratives in world mythologies and religions.