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Up-To-Date: Gunther Anders between updatism and the human obsolescence

Up-To-Date: Gunther Anders entre o atualismo e a obsolescência do ser humano

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Abstract

This text analyzes Gunther Anders' reflections on technology in an actualist society. Anders emphasized the pursuit of technological updates and people's desire to become 'gadgets,' which he referred to as the Promethean gap. Based on the premise that technology affects one's perception of fear, trivializing threats and hindering the identification of real dangers, Anders' main hypotheses addressed the alienation caused by (false) technological conformity and the inability to fear the invisible (or what is overly shown). In conclusion, critical reflection on the moral and existential implications of technology is of paramount importance in actualist society, symbolized by the atomic bomb. Gunther Anders reflections on the atomic bomb and his critical analysis of society are a fundamental diagnosis of what Mateus Araújo and Valdei Pereira (2019) call updatism.

Keywords

Temporalities, Theory of History, Japan.

Resumo

Este texto analisa reflexões de Gunther Anders sobre a tecnologia em uma sociedade atualista. Anders destacou a busca por atualização tecnológica e a tendência das pessoas em desejar serem *gadgets*, o que chamou de lacuna prometeica. Partindo da premissa de que a tecnologia afeta a percepção do medo, banalizando ameaças e dificultando a identificação de perigos reais, as principais hipóteses elencadas abordaram a alienação causada pela (falsa) conformidade tecnológica e a incapacidade de temer o invisível (ou o que é exageradamente mostrado). Em conclusão, argumenta-se sobre a importância da reflexão crítica sobre as implicações morais e existenciais da tecnologia na sociedade atualista, simbolizada pela bomba atômica. Dessa forma, consideramos as reflexões de Gunther Anders sobre a bomba atômica e sua análise crítica da sociedade um diagnóstico fundamental daquilo que Mateus Araújo e Valdei Pereira chamam de atualismo.

Palavras-chave

Temporalidades, Teoria da história, Japão.



Introduction: Life and Work on Human Obsolescence

Gunther Anders, born Gunther Stern in 1902, was a German intellectual who earned his doctorate in philosophy in 1923 under the supervision of Edmund Husserl. As the son of psychologists, he was profoundly influenced by his daily encounters with World War I amputees while living in Hamburg, Germany, from 1915 onward. According to Christian Dries (2009), Anders faced persecution at school for being Jewish and witnessed the rise of anti-Semitism in 20th-century Germany. After World War I, he joined a pacifist group that supported the League of Nations, which aimed to promote a borderless European integration to resolve ethnic and territorial conflicts.

In 1925, Anders began a relationship with Hannah Arendt, which led to their move to Berlin four years later and their marriage in the same year. They lived together until 1937. Despite being considered highly prolific and erudite, Anders did not secure a university professorship in the early years following his exceptionally early doctorate at the age of 21 from the University of Freiburg. Instead, he worked as a researcher in independent institutions and lectured at various locations. His birth name was Gunther Stern, but after contributing regularly to the leftist newspaper *Berlin Stock Exchange Courier*, it was suggested that he adopt a pseudonym to avoid the appearance of monopolizing the newspaper's content. Consequently, he became known throughout his career as Gunther Anders.

Primarily due to the rising tide of anti-Semitism, Anders, who was still married to Arendt, moved to Paris in 1933 to escape the rise of Nazism. The Reichstag fire that year confirmed his fears, prompting the philosophical couple to relocate to France. In the article "Pathology of Freedom" (*Pathologie der Freiheit*), published in two parts between 1935 and 1936 in the journal "Recherches Philosophiques", Anders (2009) examined the role of freedom in human anxieties and decision-making. Jean-Paul Sartre (2015) regarded this work as a direct influence on the development of his existentialist theories. Anders was a second cousin of Walter Benjamin, who assisted him during his exile in Paris. As an exile, Anders relied on Arendt's earnings from her involvement in French Jewish movements, particularly her fight against anti-Semitism, as he was unable to establish himself as an intellectual in France and had no income to support himself. Anticipating World War II, he moved to the U.S. in 1936, with the assistance of his father, who had become a professor at Duke University in North Carolina. This move strained his relationship with Arendt, leading to their separation in 1937. He worked as a private tutor in the U.S., attempted to write stories and scripts for Hollywood (without success), and even held



administrative positions in factories in Los Angeles. These experiences significantly influenced his profound philosophical reflections on human obsolescence.

During the war, Anders worked at the Office of War Information (OWI), where he created fake leaflets simulating Nazi texts to be distributed in Nazi-occupied Europe. He left this position shortly afterward, feeling that producing fascist-style texts was inconsistent with his background as a refugee. He then secured a position as a professor of philosophy and the philosophy of art at the New School for Social Research, where he developed phenomenological works on the interpretation of art, including paintings and classical music. Upon his permanent return to Europe in 1950, he began writing "The Obsolescence of Man – Vol. 1" and began seriously reflecting on the atomic bomb and its impact on human perception of temporality, as well as the establishment of new paradigms, such as the potential for human involvement to become obsolete in the extinction of the species. At this stage, Anders's philosophical shift is crucial to my analysis, particularly due to his concern with the continuous obsolescence faced by humans in post-war society and the potential for such profound destruction that the complete annihilation of humanity seemed genuinely possible.

The Guntherian Thought

Gunther Anders followed a philosophical trajectory inspired by the Frankfurt School, particularly Theodor Adorno. Although he was an avid reader of Heidegger, Anders was also a critical opponent of his work. He was among the first to denounce not only Heidegger's political and personal affiliations with fascism but also his philosophical stance, specifically Heidegger's view that technology, while intrinsic to humanity, enhances human capabilities. Anders contended that technological advancement, rather than enhancing humanity, leads to human obsolescence. He argued that Heidegger's intellectual success in philosophical currents, such as Sartrean existentialism, stemmed from his individualistic nihilism, which perceived war as a means to comprehend Dasein as the "mystical self". Heidegger's approach, according to Anders, neglected the economic origins and needs of individuals, thereby failing to address significant social issues grounded in Marxism that are essential for understanding human dilemmas. Anders (1948) suggested that this perspective deepens Heidegger's intellectual ties to Nazifascism. From this vantage point, Anders criticized Heidegger's intellectual stance as being disconnected from material realities and highlighted its limitations.



Starting from the premise that technological products should be used as swiftly as possible (Anders, 2011a), Anders argued that human desire has shifted towards becoming akin to a machine. The capitalist principle of “if something breaks, you replace it” cannot be applied to human life (Anders, 2011b). Consequently, technology must adhere to a divine, incorruptible, and infallible standard, with constant updates to prevent obsolescence. Errors are often perceived as human failings rather than faults in the technology itself. This pursuit reflects an attempt to replace imperfection and incompleteness, where humans are supplanted by the very technology they have created but no longer need to control. As Anders comments:

When I presented this idea at a cultural congress, I was questioned that, in the end, people have the freedom to turn off their devices or even not buy any and dedicate themselves solely to the “real” world. What I questioned. And precisely because it dismissed those who, like strikers, abstain no less than consumers: whether we participate or not, we participate, because we become co-participants. Whether we act or not, we already live in a humanity for which the “world” and the experience of the world no longer matter, but only the ghost of the world and the consumption of ghosts: in this, our “private strike”, our abstention changes nothing: this humanity is already the world that surrounds us, with which we have to reckon, and it is not possible to go against it (Anders, 2011a, p.19).

His unconventional and nonconformist views eventually led to his estrangement from intellectual peers in European universities. His anti-academic and militant stance—especially on anti-nuclear issues and the defense of controversial topics (which I will discuss shortly), combined with his public criticisms of Heideggerian and Sartrean schools of thought—left a significant mark. He was deemed reactionary by a materialist faction due to his broad and ambiguous approach to reflecting on and problematizing pressing issues like the Holocaust, which, during the 1950s and 1960s, was an enormous taboo in Europe.

Upon returning to Austria in 1950, now married to the Viennese writer Elisabeth Freundlich (whom he married in 1945 and remained with until 1955), Anders began working as a freelance writer, mainly for newspapers. He wrote several books that resonated well within German and European intellectual circles. In 1957, he married American Jewish pianist Charlotte Zelka, with whom he remained until her death in 1972.



As a severe critic of the German division, particularly the policies of Konrad Adenauer in West Germany and Walter Ulbricht in East Germany, Anders declined the most significant offer of his career: a professorship at the University of Halle, which was extended by his friend and philosopher Ernst Bloch. Anders rejected the position for political reasons and because he believed that his thought might be confined by the dogmatism inherent in a university structure (Dries, 2009). As a committed outsider, he continued to be an anti-nuclear activist and, to the same extent, a prolific author and lecturer on various philosophical topics, primarily influenced by Husserl's phenomenology. Much of his income came from his intellectual work, including analyses and digressions on the arts—a subject he extensively explored in his writings—and translating important works into various languages.

In 1951, Gunther Anders published one of his most significant works, *Kafka: Pro e Contra* (*Kafka, pro and contra. The Trial Records*), which is regarded as a landmark in Kafka literary criticism. As one of the first critics to defend Kafka's literature, Anders highlighted the profound injustices inflicted upon Kafka by contemporary critics (Anders, 2007). Conversely, he argued that these injustices were exacerbated by readers who were immersed in a reality analogous to the world of Mr. K (in Kafka's *The Metamorphosis*) and other Kafkaesque characters. Anders not only paved the way for philosophers and literary critics to engage with Kafka's work but also expanded his influence in prestigious German debates and publications following the release of his book. He began publishing in the journal *Der Merkur*, which disseminated the initial parts of the first chapter of what would become the magnum opus of his philosophical career: *The Obsolescence of Man – Vol. 1*. The complete work was officially published in 1956.

In 1959, Gunther Anders taught several courses at the Free University of Berlin, focusing throughout the year on the philosophy of freedom. According to Anders (2011a), technology is not separate from freedom; rather, it mediates and controls human freedom to the same extent that it generates sensations of power and extreme freedom through enhanced control of phenomena via technological devices. Merging his militant perspective with his public intellectual role, Anders began to theorize and analyze the works of major German playwrights, such as his friend Bertolt Brecht, in the early 1960s. Following the trial of Adolf Eichmann in 1962, Anders wrote an open letter to Eichmann's son. In this highly controversial text, Anders (2013) expresses solidarity with Eichmann's son and argues that his loss is twofold: he suffers as a human being from the horror his father caused (as everyone does) and personally from the loss of his father. In a gesture of empathy, Anders even extends a form of forgiveness toward the family.



During the movements of 1968, Gunther Anders increased his frequency of publications on the Vietnam War, becoming a staunch critic of the conflict and aligning himself with Bertrand Russell in pacifist and anti-nuclear movements. He participated in the Russell Tribunal, a non-legal tribunal assessing the criminal practices of the United States during the Vietnam War, led by the Welsh philosopher and coordinated by Jean-Paul Sartre. Established in Stockholm in 1967, the tribunal conducted investigations, questioned witnesses, and produced a comprehensive report on U.S. war crimes, resulting in a seminal book by Bertrand Russell (2011). Anders was among the tribunal participants, alongside notable figures such as Julio Cortázar, Lázaro Cárdenas, James Baldwin, and Tariq Ali.

Following the arrival of humans on the Moon in 1969 and the advancement of television in households worldwide, Gunther Anders dedicated himself almost exclusively to exploring the impact of these developments. He consistently related technological advancements to the obsolescence of humanity, emphasizing how technological progress, particularly in nuclear weaponry capable of species extinction, contributes to this obsolescence.

In 1980, Anders published the second volume of his book, *The Obsolescence of Man – Vol. 2*, focusing on more contentious topics such as the three industrial revolutions, changes in social and labor relations, and, crucially, how machines render (or fail to render) humans obsolete and outdated (Anders, 2011b). The labor themes addressed in this volume are strikingly prescient compared to 21st-century gig economy trends. Towards the end of this decade, Anders also reflected on his Jewish identity, particularly in relation to the Holocaust and his visits to concentration camps. Although these writings are less frequently referenced by scholars studying the Holocaust, they offer valuable insights into the formation of German National Socialism and approaches to dealing with this past—a topic I will explore further.

Anders broke with Jewish organizations in Vienna due to their support for Israel's stance during the Lebanon War (1982), leading him to disassociate from yet another intellectual movement to which he belonged. This conflict also prompted him to decline the title of Doctor Honoris Causa from the University of Vienna in 1992. Anders spent his final years in isolation, suffering from severe arthritis that nearly incapacitated him from writing. Additionally, in the late 1980s, he began to lose his vision gradually, which prevented him from completing his last work, *Die Antiquiertheit des Hassens (The Obsolescence of Hatred)*. He passed away in 1992 in Vienna.



Obsolescence and Updatism

Reading *Atualismo 1.0* by Mateus Pereira and Valdei Araújo (2019), some aspects of Anders' academic trajectory become clearer, and connections between the concept proposed by the Brazilian authors and the ideas of the German philosopher emerge. Pereira and Araújo (2019) first highlight the emergence of the term "up to date", which later evolved into "update" (translated by them as "updatism"), as an important phenomenon for understanding an era that demands constant updating and seeks novelty that is already obsolete. In this sense:

The expansion of the semantic field surrounding the term "updating" and the corresponding loss of significance of words like "progress" may suggest a competitive relationship between the two domains. The futurism of the first post-war decade, which was so attuned to an optimistic idea of progress, seems to give way significantly to the ideal of a present-centered updatism (ARAÚJO; PEREIRA, 2019, p. 46).

According to the authors, this updatist present began to manifest in the 1960s and gained strength in the following decades, driven by the technological shift of the Fourth Industrial Revolution and its associated advancements in technology and informatization. One symptom identified by the authors is the crisis of authority among experts, which has led to an apparent popularization of diverse voices on a wide range of topics. Consequently:

The crisis of authority among experts highlighted by Lyotard and the notion of consensus, in contrast to inventors and their 'paralogies,' are themes today extensively explored by authors analyzing the positive and negative, utopian and dystopian impacts of social media, the digital age, and the post-human (ARAÚJO; PEREIRA, 2019, p. 52-53).

The crisis of authority has been further complicated by the rise of social media, which has displaced the traditional notion of an expert as someone from an academic environment or someone with recognized expertise. Instead, it has amplified the voices of individuals who express opinions on any subject, allowing them to assume authority without necessarily having specialized knowledge. This authority, lacking formal legitimacy and highly unstable,



is in constant competition with new, ephemeral authorities emerging from social media, each vying for perceived legitimacy on various topics. Gunther Anders (2011a) anticipated such a phenomenon, arguing that the obsolescence of human beings was leading to the obsolescence of knowledge itself. He observed that the reproduction of superficial discourses had become so commodified that the content mattered less than its form and marketability.

Many intellectuals categorize Gunther Anders as a thinker who foresaw postmodernism and its impacts. However, Anders' ideas (2011a) extend beyond postmodernism, explicitly addressing how perceptions of temporality were changing and how generalizations weakened the complexity of relationships established through new technologies and the advance of neoliberalism. Anders, like Pereira and Araújo (2019), was a notable reader and critic of Heidegger. Thus, complicating the notion of the present is crucial to all of them. After all:

We believe that one of the issues with the reflection on presentism or the broad present is its insufficient attention to these different forms of the present, particularly the fact that any present will inherently contain specific forms of the past and future (ARAÚJO; PEREIRA, 2019, p. 222).

The present, according to Anders, is perceived as a means to understand complex, multifaceted temporality. This perspective captures all elements that contribute to human obsolescence while simultaneously, in a kind of Promethean saga, condemning humanity to an unattainable and contradictory quest for perfection in light of its inherent flaws. Thus, "what we want to understand is the multiplicity of dimensions of past, present, and future within these structures" (ARAÚJO; PEREIRA, 2019, p. 83-84). In this context, Anders (2011a) argues that:

Today, fear serves to create the sensation of being up-to-date and, as always, of "belonging". In the present age of the bomb, this expression is therefore not only false but also implausible. A modicum of lamentable fear, which occasionally and almost always only when we are under pressure, should not deceive us. (ANDERS, 2011a, pp. 253-254)

This fear, which creates the sensation of being up-to-date and belonging to a world that could vanish at any moment, leads to the illusion of suppressing other potential temporalities



that could be perceived in the present. Based on the arguments of Valdei Araújo, Mateus Pereira, and Gunther Anders, it can be asserted that updatism is a framework for understanding society in various post-war contexts. It is particularly marked by the rupture caused by humanity's evolving perception of the atomic bomb and its destructive potential through technology, as well as its gradual obsolescence in relation to machines and their informatization.

Valdei Araújo and Mateus Pereira (2019), like Hartog, reflect on François-René Chateaubriand and his experience of living in a double world – where a new temporality emerges alongside the manifestations and characteristics of his era's perception of time. This threshold between two worlds suggests that: "everything seems to suggest the image of a new epoch as the blend, not necessarily synthetic, of these two principles, the old and the new, irreparably involving the contemporaries" (ARAÚJO; PEREIRA, 2019, pp. 116-117).

This heterogeneous amalgamation of two universes is evident in Gunther Anders' work. He observed and theorized how analog machines progressively rendered humans dispensable. The informatization and resultant humanization of machines – where technology replaces humans to prevent failures and increase efficiency – transformed atomic weapons into not only a human problem but also a problem potentially deemed irreversible, as technological logic has outsourced many human decisions. Anders' pessimistic and apocalyptic view is tempered by a contained optimism regarding technology's potential, always framed by a materialist and phenomenological perspective that sees technology as a social product. This perspective views the use of technology as a driving force in the quest for perfection—an unattainable goal for humans, leading to a constant need for updatism. This updatist paradigm confronts us with varying references to the past and future, imposing a necessity for constant updating to avoid obsolescence. Thus, the authors argue:

The present should not be conceived merely as an expanded present or as a present without a future, but rather as a form of temporality grounded in a specific mode of the present that articulates future and past, which we are tentatively referring to as updatism. What this movement can bring new to the presentist argument is the clarification that it is not essentially about an extension (or contraction) of the present, but rather about an expansion of references to both the past and the future, albeit in an updatist mode (ARAÚJO; PEREIRA, 2019, p. 123).



This updatist mode can be perceived as a “subtle and subterranean shift in experience: a substantive displacement in modern ways of signifying historical time” (ARAÚJO; PEREIRA, 2019, p. 31). It is inaugurated by “clues provided to us, in its precise diagnosis, of the post-industrial turn” (ARAÚJO; PEREIRA, 2019, p. 51). As Araújo and Pereira (2019) reflect, this post-industrial world is a central focus of Gunther Anders’ analysis. Anders, when he addressed television’s capacity to render human choice obsolete and condition people to see and desire only what others want them to see, could not have foreseen the rise of algorithms. These algorithms, under the guise of providing freedom of choice, direct and curate what individuals are exposed to, consume, and reconsume.

Anders (2011b) warns of the risks associated with post-humanism when it intersects with capitalism, potentially leading to a form of cyber-fascism. Unlike Heidegger, Anders developed a critical theory of technology. For Anders, technology is not merely a collection of tools. Instead, capitalism and imperialism function as global systems for the accumulation of capital and power, which influence and are influenced by technologies in a reciprocal manner. Thus, updatist temporality is deeply intertwined with the capitalist world. This form of post-humanism aims to construct a present from a succession of transient events, continually updating to prevent obsolescence (or to obscure its inability to update). Therefore:

The act of making present or updating would be the response to the experience of time as a succession of empty ‘nows,’ the way in which the Dasein aims to keep this succession before itself. The world, then, can be present because it updates automatically, as if it were the nature of things to maintain this almost magical preservation of its own presence (ARAÚJO; PEREIRA, 2022, p. 73-74).

This allows us to analyze how the exaggerated worship of technology, associated with the relentless pursuit of updates promoted by Promethean thought, manifests today in phenomena such as digital positivism, the obsession with big data, and post-human ideology. It is important to recognize that, during Anders’ time, the concept of post-humanism and its derivatives had not been fully explored. There are fundamentally different approaches to understanding how technology may or may not be replacing the human being in a neoliberal world and the implications of this shift.



Zoltan Simon (2019) distinguishes between two significant perspectives on the post-human: technological post-humanism and critical post-humanism. According to Simon, technological post-humanism emphasizes a technological-scientific approach to post-humanity, anticipating a profound transformation in the notion of what it means to be human. In this view, the post-human is conceived as a fundamentally new and distinct entity, suggesting a radical evolution driven by technological advancements.

In contrast, critical post-humanism, as discussed by Simon (2019), theorizes a post-anthropocentric subjectivity while maintaining a connection to humanity. This perspective focuses on emancipatory concerns regarding the non-human, with particular emphasis on ecological relationships and the recognition of the ecological Other. The tension between these two strands lies in reconciling the notion of technologically enhanced beings with the vision of an ecotopia that seeks equality among species.

Gunther Anders (2011a), in his reflections on the obsolescence of humanity in the face of technological advancement, aligns more closely with critical post-humanism. His focus on the ethical and social implications of technology suggests a concern with both human and non-human relationships, resembling the critical approach to post-humanism. Anders' ideas fit within the tradition of critical post-humanism, which extends humanist concerns beyond the human to include ecological relationships and emancipatory issues, although the classifications advocated by Simon (2019) and the broader discussions on post-humanism and transhumanism were not yet fully developed during Anders' time.

These discussions are manifestations of updatist temporality, which seeks to transform the human being into a machine, trapping them in a system inundated with information and the ceaseless pursuit of updates, even if this idea appears ephemeral.

When Brazilian intellectuals reflect on the typologies between the obsolete and the updated, the etymological root of these concepts becomes crucial. The term "obsolete" derives from the Latin "obsoletus", which is the past participle of the verb "obsolescere". This verb is composed of two parts: "ob", meaning "toward" or "against", and "solescere", meaning "to become accustomed" or "to be accustomed to". Thus, "obsolete" refers to something that has become unused or infrequent, something that people are no longer accustomed to using or seeing (FARIA, 1962). This notion of being against the accustomed, of opposing the act of becoming accustomed to something, is fundamental to understanding updatist logic. The pursuit of updates represents a constant quest to avoid becoming accustomed to anything,

as this would render it less useful, more flawed, and less integrated into a society that values novelty that is perpetually fleeting.

The division between the obsolete and the updated, which may initially seem fragmented or a monumental theoretical endeavor, reflects a specific reality also recognized by Anders. Thus:

The subjects perceive themselves and are perceived by others as more or less updated or obsolete based on how they handle the pressure of this repetitive movement without recognizing a genuine structural and positive transformation. (ARAÚJO, PEREIRA, 2022, p.75)

Image 1 – Typologies of Updatism



Source: PEREIRA, ARAÚJO, 2020, p.130.



When humans confront contrasting temporalities in a post-industrial, standardized society that demands constant updating, the primary dilemma between the updated and the obsolete is established, similar to the apocalyptic and integrated dichotomy described by Umberto Eco (2004).

This apparent division is not merely an abstraction but reflects the essence of the updatist society critiqued by Anders and theorized by Valdei Araújo and Mateus Pereira (2019). As they state: “Being new is not synonymous with being updated. A product may be new but, at the same time, outdated, since planned obsolescence is part of the surveillance capitalism strategies and its updatist historicity” (ARAÚJO; PEREIRA, 2021, p. 3).

In this world, which demands constant updates while resisting changes in modern structures such as the concept of family and science, the atomic bomb stands out as a principal artifact—an item that can be seen as both updated and obsolete.

The concept of obsolescence in Anders (2011a) and Araújo and Pereira (2021) is interconnected, particularly through the notion of the Promethean gap—the quest for humans to achieve machine-like perfection, which is inherently unattainable. In the post-industrial society, every human being is, by nature, outdated. Indeed, as Anders previously warned, Pereira and Araújo highlight that updatism: “does not offer a future for the obsolete, although their existence functions as a functional legitimization of the demands for updating” (PEREIRA; ARAÚJO, 2020, p. 129). In this context, it is worth noting: “there is a systemic place for the obsolete in updatism, and this place seems to have been discovered by global right-wing movements” (PEREIRA; ARAÚJO, 2020, p. 129).

Since being obsolete is not synonymous with being outdated, obsolete updatism, as illustrated in the flowchart above, reveals its most vulnerable point in the exploited worker as an entrepreneur. By treating app drivers as owners of their own means of production, the Promethean gap becomes evident. It becomes increasingly clear that these workers will lose their jobs soon, as they are inherently obsolete. It is only a matter of technological advancement and cost reduction before their services are no longer needed. However, Anders (2011a) raises a fundamental question: if all workers are replaced by machines, who will be left to consume in this society? If an entire war can be conducted without human involvement, will it be done? Will human obsolescence become so profound that machines will lead to our extinction?



Anders (2011b) does not share this fear, although he remains persistently pessimistic. According to Anders, the issue should be considered in relation to the limits of the Promethean gap, acknowledging that humanity will always be at the center of these discussions. However, from an updatist perspective, humanity is always outdated, obsolete, and incapable of achieving the levels attained by machines. Its imperfection enables exploitation, low wages, and the maintenance of capitalist inequalities. Therefore, the atomic bomb exemplifies capitalism within updatist temporality, revealing its inequalities, the fragility of the Promethean gap, and the aporias of escaping obsolescence while seeking constant updates, regardless of the costs involved.

Update and the Atomic Bomb

Gunther Anders held a profoundly critical view of the atomic bomb and its implications. He was among the first intellectuals to recognize the radically new and destructive nature of nuclear weapons. Anders (2011a) argued that the atomic bomb represented a pivotal moment in human history, introducing an era of unprecedented destructive power. For Anders, the advent of the atomic bomb established a new temporality, where notions of present and future began to clash. The present could annihilate the future through a simple analog process—and later, a digital code—enabling a nuclear war without direct human involvement, yet potentially leading to human extinction.

In addition to acknowledging that technology is inseparable from humanity in the post-war context, Anders warned of the impossibility of “disconnecting”. His activism aimed to dismantle the power wielded by these technologies, advocating for a comprehensive critique rather than focusing on a single device. He was involved in movements advocating for the regulation of television and radio programming, particularly promoting educational content and editorial diversity to broaden public debate.

Anders was a close friend of Robert Jungk, a German journalist who traveled to Hiroshima and Nagasaki in the 1950s and wrote the foreword to Anders’s book *Off Limits für das Gewissen* (Off-limits for the Conscience). This book emerged from the correspondence between Anders and Claude Eatherly, the American pilot involved in the atomic bombings. Jungk, along with Anders, was a prominent figure in anti-nuclear and pacifist movements in Europe, founding organizations such as the International Movement Against Nuclear Weapons (IBNW), now part



of ICAN. Anders visited Hiroshima and Nagasaki in 1958, publishing *Der Mann auf der Brücke* (The Man on the Bridge) in 1959, recounting his experience (ANDERS, 1959).

In the same year, Anders began a correspondence with Eatherly, whose situation had become a media sensation. Eatherly had been expelled from the U.S. Armed Forces and faced minor crimes after the war. He admitted to feeling guilt over his role in the atomic bombings, described his depressive episodes, and attempted suicide. Anders's correspondence with Eatherly involved defending and empathizing with him, acknowledging his guilt and the broader implications of his actions. Anders's reflections are based on the premise that Eatherly's recognition of his guilt reflects a broader understanding of the consequences of the atomic bombings.

Anders (2012) argued that Eatherly's apology should be seen not as an isolated act but as indicative of a systemic issue. He opposed the trivialization of bureaucratic defense and explored the notion that humans, when reduced to mere functionaries in the face of advanced technology, are punished for their empathy and regret. Eatherly represents why humans are and should increasingly be seen as obsolete. Unlike machines, which do not experience remorse or regret, humans possess the capacity to reflect on their actions.

Anders argued that the existence of the atomic bomb created a condition of "reverse Prometheanism", where humanity acquired a power beyond its capacity to manage. He described this phenomenon as an "obligation" wherein humanity, possessing the ability to destroy itself, lacks the wisdom to control it.

As Anders reflected on Eatherly's role and guilt, new avenues for his theories emerged. Eatherly became a tragic example of the moral and psychological dilemmas faced by those involved in nuclear weaponry (HARRINGTON, 2020). Anders argued that humans have a tendency to dissociate their actions from their devastating consequences.

Anders saw Eatherly as a figure who, tormented by guilt and responsibility, attempted to alert the world to the dangers of nuclear weapons and the effects of uncontrolled technological power. In a letter to U.S. President John F. Kennedy, Anders quoted Eatherly, encapsulating the idea that Eatherly's guilt reflects a broader societal issue: "In truth, society simply cannot accept the fact of my guilt without simultaneously recognizing its own much deeper guilt" (ANDERS 2003, Position 4.1064).

For Anders, modern progress is blind to the consequences of its technological advancements. He introduced the concept of "annihilism" (Annihilismus), reflecting the loss of



universal values and a lack of belief in humanity's ability to address the constant, invisible threat that could lead to extinction.

According to Felipe Catalani (2022), Gunther Anders represented a new type of apocalyptic thinker. Catalani argues that, following the atomic bomb, humans became the enemies of the apocalypse. We transitioned from a theological notion of the end times to a tangible possibility of human extinction. Thus, after the atomic bombs, the end is truly the end; nihilism has established itself in our society, with no prospect of resolution.

For Anders (2012), Eatherly is not merely a bureaucrat following orders but a victim of a system of obsolescence driven by hatred. Modern wars required soldiers to hate the enemy to foster unity and achieve victory. However, as machines increasingly perform killing functions, humans are rendered obsolete. Eatherly's trauma and guilt stem from executing orders without fully understanding their implications, reflecting the obsolescence of humans in a technological world. If Eatherly had been recognized for his role, would he have repented? Might his story have been told differently? These are questions Anders indirectly addresses.

I refer to "advancing and surpassing". This clearly delineates the difference between the intentions of Human Engineering and those of our essays. While Human Engineering seeks to transform us into gadgets, i.e., to conform completely to the world of devices without any residue, we rely on "advancing and surpassing" the world of devices with our essays; and to do so as if "recovering" a rope that has been stretched for us; that is, we trust in returning to reach its end (ANDERS, 2011a, p. 262).

The theoretical perspective on the atomic bomb and involvement with the Claude Eatherly case, as presented by Gunther Anders (2011a), reflects a deep concern for ethical responsibility and the need for critical and reflective thought in the face of new technologies. This perspective argues that philosophy should actively engage with contemporary issues, questioning the alienation and indifference that accompany technological progress.

A contemporary issue is the quest to delay and surpass machines. "Updatism" involves more than merely keeping up with technological advancements; it reflects the human drive to become akin to a gadget or machine. Neoliberalism, although unevenly applied, seeks to extend the working hours of the proletariat, "flexibilize" their schedules, making them more dependent



on their employers, and neglect their social security. This reflects the expectation for humans to function like machines. While it is true that elites, who do not require such extreme work schedules and have access to better living conditions, may seem to escape this trend, even billionaires often strive for machine-like efficiency, whether in terms of strength, recognition, intellectual perfection, or financial success. Few manage to remain outside this contemporary society where humans increasingly aspire to be like machines, in an ontological sense.

In philosophical work influenced by phenomenology and existentialism, Gunther Anders sought to raise acute awareness of the moral and existential implications of technological society. Emphasis is placed on considering the consequences of our actions, both in terms of individual and collective responsibility, and developing ethics appropriate to address the dilemmas introduced by technology. This post-war logic gradually eroded humans' capacity to feel fear, leading to a fragmentation of notions of guilt and responsibility. In 1956, prior to the 1960s when Araújo and Pereira (2019) identified the more established emergence of the term "updatism", it was argued that:

have not yet seen a contemporary who was suddenly struck by the wave of threat and stunned; at best, only a few were frightened, but strictly speaking, not so much out of fear, but merely because they suddenly realized how powerless they were to feel fear; and some were embarrassed for having been caught up in their impulse of fear and, having discarded the newspaper, could still continue as if nothing had happened; or they could do nothing but continue as if nothing had happened; that is, return to their usual proportions of grandeur and the concerns of the next day and beyond; in comparison to the amount of fear we are supposed to feel and should properly feel, we are simply illiterate in fear. If a motto were to be applied to our era, it would be better to call it the age of the incapacity to feel fear. Certainly, viewed from the perspective of a screenwriter, the moment when the bomb appeared was, if one may say so, the worst of those that could have been chosen, as it was precisely the moment at the final stage of the war when the effective fear brought about by dictatorship and war was beginning to diminish for the first time; the moment when millions of people, for the first time in years, dared to sleep without fear of the police or a night raid; the moment when in some less ravaged parts of the world, people began to think again about resuming the good old life. And at that moment of truce, was it necessary to adapt to a new



danger of supposedly greater and incomparable dimensions? Or at least to the possibility of such a huge threat? It was rejected; it was unfeasible. A danger that was not understood as a threat for the next night was then laughable. It was not understood. And it was no longer possible to recover what had been failed to understand in the first moment. A year later, the danger was already something familiar, something read hundreds of times, something boring. And today it is already an old and familiar danger, an old and friendly fragment of our post-war (ANDERS, 2011a, pp. 253-254).

The updatist society has trivialized fear. In updatist times, the experience of fear has become almost impossible; this quest for constant updating and the escape from obsolescence, while coexisting with other temporalities, makes fear inherent to our society. We are afraid of everything; everything is considered dangerous, and what is not dangerous must be perceived as having the potential to become so. We are conditioned to fear things that do not scare us now but might in the future.

The apathy and insensitivity of people toward threats or dangers, especially following a period of crisis or war, is a significant issue in the context of the Cold War. This phenomenon can be examined within a broader sociopolitical framework and invokes fundamental discussions in philosophy and sociology about the nature of morality and human responses to extreme events.

The lack of reaction from people does not stem from a state of courage or fearlessness but rather from an inability to recognize the threat at hand. This phenomenon of insensitivity to fear relates to Hannah Arendt's theory of the "banality of evil" (1999), which posits that individuals can commit cruel and inhumane acts without fully grasping the moral implications of their actions. This concept can be applied to individuals who fail to recognize the danger around them. Consequently, we fail to feel fear because it is invisible, a point discussed in my book "Medo do Invisível" (Fear of the Invisible) regarding fear of terrorism and nuclear weapons (NETO, 2023).

Gunther Anders (2011a) emphasizes the role of war in shaping human perceptions of danger. During the final phase of the war, people had already experienced tangible and comprehensible fear. However, as the threat diminished, they found it challenging to adjust to new forms of danger, such as the threat of an atomic bomb. This can be analyzed in the



context of Zygmunt Bauman and Leonidas Donskis's concept of "moral anesthesia" (2014), which suggests that contemporary society, due to information overload and a lack of emotional connection to distant events, can become indifferent to complex moral issues.

Understanding that the perception of danger must be immediately comprehensible as a real threat for it to be taken seriously is crucial. This perspective relates to Elisabeth Noelle-Neumann's concept of the "spiral of silence" (1995), which argues that people are afraid to express unpopular opinions to avoid social isolation. Similarly, individuals may struggle to recognize threats when there is no social consensus about them. From this perspective, the updatist society uses fear as a form of social coercion and cohesion, primarily through neoliberal and necropolitical logics, as argued by Geoffrey Skoll (2010). The social use of fear in contemporary society internalizes the idea that this invisible fear, which exists but cannot be narrated or verbalized, can be overcome with a new update, product, service, or consumption. Thus, the fear of obsolescence becomes an inescapable updatist tonic.

This understanding of fear, already considered by Anders (2011a), can be seen as a foundational characteristic of a society experiencing contemporary temporality. This is possible due to the relationship between the human body and technology, as excessive demands on human bodies to keep up with increasingly complex and strenuous tasks performed by technological devices become routine. This reveals a tendency for individuals to sacrifice their health and well-being in pursuit of conformity with technology, akin to philosophical critiques of reason and metaphysics. Even before the internet and mobile phones, Anders (2011b) recognized that the world of radio and mass cinema created social environments that modified routines and practices, which, despite being harmful to society, were maintained in the pursuit of constant updating, aiming to stay connected to the future, the new, and the yet-to-come. This includes newly arrived news, radio soap operas with episodes airing only at specific times, or new Chaplin films.

It is worth noting the comparison between the demands placed on the human body and those imposed by speculative metaphysics on reason. Anders (2011a) suggests that just as metaphysics seeks to understand and explain complex aspects of the universe, humans strive to master and operate increasingly advanced technological devices. Both pursuits seem to overlook the "factum", or what is empirically observable and real. This comparison critiques the disconnection between human aspirations and the limitations of reality. While humans aim to be as perfect as machines, the question remains whether machines exist solely because humans do. This question remains unanswered today. For Anders:



The excessive demands that man places on his body to keep up with the enormous tasks of his devices particularly resemble the immense demands that speculative metaphysics imposes on reason: here, as there, the factum is ignored; once again, one has to move or jump over this limit. However, this time, man does not aim to be omniscient *sicut deus*, but his goal is to become equal to the device, that is, *sicut gadget* (ANDERS, 2011a, p. 53).

Furthermore, the phrase “however, on this occasion, man does not intend to be omniscient *sicut deus*, but his goal is to become like the device, that is, *sicut gadget*” (ANDERS, 2011a, p. 53) underscores a significant shift in human aspirations. While the ambition to achieve omniscience like God is a recurring theme in philosophy and religion, the desire to become “like the device” or “like the gadget” reflects an updatist concern. This perspective can be seen as a critique of modern society, which often idolizes and seeks conformity with technology rather than pursuing higher or transcendental qualities.

The chess match between Garry Kasparov and the Deep Blue computer exemplifies the updatist pursuit of human perfection akin to machines, while also recognizing that such perfection remains elusive. Similarly, the VAR (Video Assistant Referee) system, introduced in soccer matches, represents another example. Although referees can make mistakes due to various factors, details overlooked by the human eye can be clarified by other referees using video technology. However, this has not resolved controversies in soccer decisions; in some cases, it has even intensified them. This highlights the underlying issue: who creates these machines, and for whom are they created? Humans, of course. Therefore, machines are subject to failure, just as humans are.

This Promethean view of technology, as noted by Gunther Anders, presents a dilemma between product and creature, or between the children of God and the outcomes of a technological world. It positions humans as mediators or minimal controllers in a world that evolves and functions autonomously. With this:

The fact that man is not a god, but merely a creature, would never be recognized by any religion as a safe-conduct for moral indolence; nor will it be accepted today that he is not a product, but merely a creature, by the religion of industry



and its acolytes as an excuse for a lazy insistence on his deficiency as a creature (ANDERS, 2011a, p.52).

Therefore, the concept of a gadget, as introduced by Gunther Anders, is crucial for understanding the atomic bomb's disruption of modern temporality and its foundational role in updatism. Notably, the term "gadget" was the nickname given by Manhattan Project scientists to the first atomic bomb, officially known as Trinity. In this context, the term "gadget" used by Anders (2011a) carries a dual meaning.

The first interpretation aligns with the common understanding of "gadget" as a "gizmo" — a piece of technology intended to simplify people's lives by performing functions that were previously carried out by humans. This usage refers to tools that replace human tasks with machines, typically involving simple, everyday functions.

The second interpretation refers specifically to the atomic bomb itself. Anders (2011a) uses these dual meanings intentionally to illustrate how such fleeting technological innovations render humans as obsolete and disposable as the products they create. For example, if a smartwatch becomes outdated within a year, the human who relied on it to monitor their heart rate becomes even more obsolete. The facilitation of life, the reduction of distances, and the relentless pursuit of updates that create a sensation of constant connection lead to a human obsolescence that diminishes human relevance in a human-centered world.

In this context, necropolitics (Mbembe, 2018) becomes increasingly evident. If humans are deemed disposable, it follows that many must perish, with the criteria for such disposability often intersecting with identity markers such as gender, race, and social class. Anders argues that the concept of obsolescence extends beyond mere market logic:

On the contrary, there is no characteristic that is as defining for us today as our inability to be mentally 'updated'; to keep up with our production, and thus to keep up with the pace of transformation that we impose on our products and to catch up with the devices that are ahead of us or eluding us into the future (which we call the 'present') (Anders, 2011a, p.31).

This mental updating, reflecting on our need to be continuously 'updated' and interconnected with future novelty, reveals the relentless pursuit of a future that remains



elusive and has been swallowed by the present. This need for incessant updating, modification, and improvement demonstrates that there is no updatist world and no true “today” instead, tomorrow will always be the most crucial day for updating ourselves and connecting with the real neoliberal and postmodern world.

Conclusion

In conclusion, Anders (2011a), through his critical analysis of the atomic bomb combined with the reflection on updatist temporality proposed by Mateus Pereira and Valdei Araújo (2019), provides a profound and provocative perspective on the implications of technology for the human condition. The relentless pursuit of updates, the desire to become machine-like, and the alienation resulting from post-industrial society impact our understanding of fear, ethical responsibility, and existence itself.

Anders (2011a) cautions us about the dangers of becoming obsolete in a world that values constant updating and conformity with technological devices. He argues that updatist society promotes the idea that human beings should resemble gadgets, adapting to the rapid pace of technological changes, often at the expense of their own humanity. The atomic bomb, as the ultimate symbol of uncontrolled technological power, exemplifies the dilemma between the updated and the obsolete, between the quest to be a machine and moral responsibility.

Through his dialogue with Claude Eatherly, the pilot involved in the atomic bomb launch, Anders highlights the moral and psychological complexity of human choices in an increasingly technological world. Eatherly, tormented by guilt, becomes a tragic example of this human condition, where responsibility is often obscured by the logic of updatism.

Additionally, Anders draws attention to the inability to fear the invisible and recognize real threats in a society that trivializes fear. His critique of the disconnect between human aspirations and the limitations of reality, as well as his comparison between the demands humans place on their bodies and the metaphysical demands on reason, prompts reflection on the necessary balance between technological advances and ethical responsibility.

In sum, Gunther Anders challenges us to question our relationship with technology, prompting us to consider the updatist society envisioned by Mateus Pereira and Valdei Araújo (2019). This involves recognizing the importance of preserving our humanity in a



world increasingly driven by the logic of machines, where the threat of human extermination is becoming both more evident and, paradoxically, more invisible.

References

- ANDERS, Gunther. **Der Mann auf der Brücke. Tagebuch aus Hiroshima und Nagasaki**. München: C. H. Beck, 1959.
- ANDERS, Gunther. **El piloto de Hiroshima**: Mas allá de los límites de la conciencia. Correspondencia entre Claude Eatherly y Gunther Anders. Barcelona: Paidós, 2003.
- ANDERS, Gunther. **El piloto de Hiroshima**: Más allá de los límites de la conciencia. Barcelona: Paidós, 2012.
- ANDERS, Gunther. **Kafka**: pró e contra. São Paulo: Cosacnaify, 2007.
- ANDERS, Gunther. **La obsolescencia del hombre. Vol. II**: Sobre la destrucción de la vida en la época de la tercera revolución industrial. Valencia: Pre-Textos, 2011b.
- ANDERS, Gunther. **La obsolescencia del hombre. Vol. I**: Sobre el alma en época de la segunda revolución industrial. Valencia: Pre-Textos, 2011a.
- ANDERS, Gunther. **Nosotros, los hijos de Eichmann**: Carta Abierta a Klaus Eichmann. Barcelona: Paidós, 2013
- ANDERS, Gunther. On the Pseudo-Concreteness of Heidegger's Philosophy. **Philosophy and Phenomenological Research**, v. 8, n. 3, p. 337-371, 1948. Disponível em: <http://www.jstor.org/stable/2103208>. Acesso em: 28/10/2010.
- Anders, Gunther. The Pathology of Freedom: An Essay on Non-Identification. **Deleuze Studies**, vol. 3, n.2, p. 278-310, 2009. Disponível em: <https://www.jstor.org/stable/45331703>
- ANDERS, Gunther; EATHERLY, Claude. **Off limits für das Gewissen**. Der Briefwechsel zwischen dem Hiroshima-Piloten Claude Eatherly und Günther Anders. Hamburgo (ALE): Rowohlt, 1961
- ARAÚJO, Valde; PEREIRA, Mateus. **Atualismo 1.0**: como a ideia de atualização mudou o século XXI. Vitória: Editora Milfontes, / Mariana: Editora da SBTHH, 2019
- ARAÚJO, Valde; PEREIRA, Mateus. Atualismo: pandemia e historicidades no interminável 2020. **Estudos Ibero-Americanos**, Porto Alegre, v. 47, n. 1, p. 1-16, jan.-abr. 2021, p.3
- ARAÚJO, Valde; PEREIRA, Mateus. O passado como distração: modos de vestir a história no neopopulismo brasileiro. **Revista de Teoria da História**, vol. 25, n.2, 2022.
- ARENDT, Hannah. **Eichmann em Jerusalém**: um relato sobre a banalidade do mal. São Paulo: Companhia das Letras, 1999.
- ARENDT, Hannah. **Eichmann em Jerusalém**: um relato sobre a banalidade do mal. São Paulo: Companhia das Letras, 1999.
- BAUMAN, Zygmunt; DONSKIS, Leonidas. **Ensaio sobre o livro cegueira moral**: a perda da sensibilidade na modernidade líquida. Rio de Janeiro: Zahar, 2014.
- CATALANI, Felipe. A inocência perdida das forças produtivas: O progresso das armas e as origens da "discrepância prometeica" (Walter Benjamin, Gunther Anders). **Limiar**, vol. 9, n.17, 2022, p.102-127.
- DRIES, Christian. **Günther Anders**. Stuttgart (ALE): UTB GmbH, 2009
- ECO, Umberto. **Apocalípticos e Integrados**. São Paulo: Perspectiva, 2004.
- FARIA, Ernesto. **Dicionário Latino-Português**. Rio de Janeiro: Campanha Nacional de Material de Ensino, 1962, p. 665. Disponível em: dominiopublico.gov.br/download/texto/me001612.pdf. Acesso em: 12/09/2023.
- FUCHS, Christian. Günther Anders. Undiscovered Critical Theory of Technology in the Age of Big Data Capitalism. **TripleC: Communication, Capitalism & Critique**. v. 18, n. 1, p. 1-13, 2020. Disponível em: <https://www.triple-c.at/index.php/tripleC/article/view/898/1022>. Acesso em: 21/07/2023.
- HARRINGTON, Anne. 'I Asked Them To Forgive Me': The Remorseful Hiroshima Pilot. **The New York Times**, 6 de agosto de 2020. Disponível em: <https://www.nytimes.com/2020/08/06/magazine/hiroshima-claude-eatherly-antinuclear.html>. Acesso em: 20/08/2020



- MBEMBE, Achille. **Necropolítica**: biopoder, soberania, estado de exceção, política da morte. São Paulo: N-1 edições, 2018.
- NETO, Mario. **Medo do Invisível**: o terrorismo e o temor nuclear em desenhos animados estadunidenses de super-heróis. Vitória: Milfontes, 2023.
- NOELLE-NEUMANN, Elizabeth. **La espiral del silencio**: opinión pública – nuestra piel social. Barcelona: Paidós, 1995.
- PEREIRA, Mateus; ARAÚJO, Valdei. **Esquerda e direita, conceitos superados?**. Outras Palavras. 26/04/2019. Disponível em: <<https://outraspalavras.net/estadoemdisputa/esquerda-e-direita-conceitos-superados-1/> Acesso em: 12/09/2023.
- PEREIRA, Mateus; ARAUJO, Valdei. Vozes sobre Bolsonaro: esquerda e direita em tempo atualista. In: KLEM, Bruna; PEREIRA, Mateus; ARAUJO, Valdei (Org.) **Do Fake ao Fato des(atualizando) Bolsonaro**. Vitória: Editora Milfontes, 2020.
- RUSSELL, Bertrand. **War Crimes in Vietnam**. New York: Monthly Review Press, 2011.
- SARTRE, Jean-Paul. **Existencialismo é um humanismo**. Petrópolis: Vozes, 2014.
- SIMON, Zoltán Boldizsár. Two Cultures of the Posthuman Future. **History and Theory**, vol. 58, n. 2, 2019.
- SKOLL, Geoffrey. **Social Theory of Fear**: Terror, Torture, and Death in a Post-Capitalist World. New York: Palgrave Macmillan, 2010.

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