Navigating the web of global catastrophic risks: ted talks as a gateway to understanding

Navegando na web de riscos catastróficos globais: ted talks como porta para a compreensão

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ABSTRACT
Amidst a backdrop of Global Catastrophic Risks (GCRs), this study investigates the potential of TED Talks as a vehicle for disseminating scientific knowledge. Combining discourse analysis with insights from The Global Risks Report 2020, we analyze the multidimensional challenges and interrelated nature of GCRs. Our findings affirm TED Talks as a valuable platform for fostering awareness and understanding of GCRs. In a world marked by uncertainty, TED Talks offer a bridge between experts and the public, enhancing our collective preparedness.

Keywords: Global Catastrophic Risks (GCRs), TED talks, scientific knowledge, awareness.

1 INTRODUCTION
In recent years, humanity has faced a critical juncture, compelled to confront an array of Global Catastrophic Risks (GCRs) that have the potential to disrupt our way of life on a global scale. These risks, encompassing economic, environmental, geopolitical, social, and technological dimensions, have been spotlighted in both academic discourse and public forums. The profound implications of GCRs, such as the strain on health systems, disruptions in production chains, surges in unemployment rates, growing social inequalities, and the exacerbation of political crises, have prompted scholars and thinkers to deliberate on the future of civilization itself. Moreover, the pressing question arises: how can society equip itself with the knowledge and tools to grapple with these multifaceted challenges?
One notable facet of this discourse is the emergence of platforms dedicated to the dissemination of scientific knowledge to the masses. Among them, TED Talks, with its wide-reaching impact on the public internet, has captured the imagination of researchers and academics alike. As a space where experts from diverse domains deliver succinct, engaging presentations, TED Talks have become a valuable avenue for the transmission of knowledge. This research endeavors to investigate the efficacy of the TED Talks platform as a conduit for conveying scientific insights pertaining to GCRs. Through a qualitative examination of TED Talks and scholarly literature, we aim to assess whether TED Talks serve as a dependable medium for promoting awareness and understanding of GCRs, a central concern in our rapidly evolving world.

Against the backdrop of these inquiries, it becomes evident that the prospect of societal collapse is no longer the purview of speculative fiction but a matter of critical importance. It is no longer sufficient to view GCRs in isolation; rather, we must acknowledge the complex interplay among these risks, which can set off a chain reaction of global challenges. As we delve deeper into our investigation, we will explore the various facets of GCRs, their manifestations, and their interconnectedness. By doing so, we hope to contribute to a more comprehensive understanding of the looming threats to civilization and the role of platforms like TED Talks in fostering awareness, resilience, and proactive responses in an increasingly uncertain world.

2 CURRENT SCENARIO AND GLOBAL CATASTROPHIC RISK

In recent years, the global community has grappled with the imperative to adapt to a new global crisis and emergency triggered by Covid-19. This crisis has exposed humanity to a cascade of consequences stemming from a single Global Catastrophic Risk (GCR), including the strain on healthcare systems (VERELST, ELISE and BEUTELS, 2020), disruptions in supply chains (RIZOU, GALANAKIS, ALDAWOUD and GALANAKIS, 2020), a surge in unemployment rates, exacerbation of social inequalities, and deepening political crises (BLOTFIELD, HOFFMANN and LLANOS, 2020). The magnitude and severity of these challenges have brought GCRs to the forefront of the research agenda for smart
cities. This emphasis is well-founded, given that cities, despite occupying just 2% of the Earth's geographic area, house over 55% of the global population and account for 80% of greenhouse gas (GHG) emissions, consuming 80% of the world's resources (YIGITCANLAR et al., 2018; OECD, 2012).

The current zeitgeist suggests that society as we know it faces a looming collapse. The specter of GCRs—events with the potential to inflict significant harm or even dismantle human civilization on a global scale—has united the academic community in an endeavor to map their causes and fathom humanity's future. However, a pressing concern is that the impending impacts of GCRs are unfolding at a pace that exceeds humanity's capacity to organize an effective response.

When contemplating the ramification of Global Catastrophic Risks (GCRs), it becomes evident that there is a pressing need for society to proactively engage with this critical issue. It is imperative that individuals and communities assume both individual and collective responsibility in the quest for viable solutions. In this context, the dissemination of scientific knowledge emerges as a pivotal avenue for fostering democratic access to high-quality information and enabling full-fledged citizenship participation. Therefore, the identification and assessment of digital platforms dedicated to sharing scientific knowledge becomes indispensable for the advancement of an informed society and, by extension, the mitigation of Global Catastrophic Risks.

One prominent exemplar of this contemporary dissemination approach is TED Talks, a platform that has gained substantial prominence on the public internet in recent years. Acknowledging its significance, TED Talks has garnered the interest of researchers and scholars keen on exploring its potential as a tool for sharing knowledge with a broader audience. In this context, our research endeavors to investigate whether the TED Talks platform can be considered a reliable means of disseminating scientific knowledge regarding Global Catastrophic Risks. To accomplish this objective, we conducted a qualitative research study, structured into three distinct phases.

The initial stage seeks to augment our understanding of the scientific knowledge available on Global Catastrophic Risks by conducting a systematic
review of the literature present in Scopus and Web of Science databases. The subsequent phase is dedicated to investigating the knowledge related to Global Catastrophic Risks accessible via the TED Talks Platform. Finally, the third phase centers on comparing the knowledge acquired to ascertain the role of the TED Talks Platform in disseminating Scientific Knowledge about Global Catastrophic Risks.

As a result, we are able to validate the TED Talks platform as an effective vehicle for sharing scientific knowledge. All five categories identified by the World Economic Forum (WEF) were found within the TED Talks corpus, which forms the basis of this study. The TED Talks platform emerges as a potent and vital tool, empowering scientists to communicate their research findings to a wide audience, thereby facilitating the democratization of knowledge and enabling full-fledged citizenship.

However, a prevailing concern is that the impending exacerbation of Global Catastrophic Risks may unfold at a pace surpassing humanity's ability to respond (LIU, LAUTA and MAAS, 2020), as evident in the case of global warming, whose impacts are already discernible in various regions worldwide (BOSTROM, 2002, 2009, and 2013; YIGITCANLAR et al., 2018).

Nonetheless, the same technology enabling the widespread dissemination of knowledge also amplifies the proliferation of fake news. The propagation of fake news, characterized by disinformation devoid of authenticity and designed to deceive, is now prevalent in the media landscape, particularly on social media platforms (RECUERO and GRUZD, 2019).

Fake news, exponentially amplified by the internet, has evolved into a global phenomenon with detrimental consequences for society. It has given rise to concerning movements such as the anti-vaccine movement, flat-earthers, and climate change denialists (LAZER et al., 2018). Paradoxically, the same technology that enables the widespread dissemination of knowledge also fuels the proliferation of fake news. Media outlets now liberally employ fake news, a form of disinformation characterized by its lack of authenticity and intent to deceive, particularly on social media platforms (RECUERO and GRUZD, 2019).
In light of this, the imperative arises to map digital platforms dedicated to sharing scientific knowledge as a direct countermeasure to fake news. This endeavor is essential not only for fostering an enlightened society but also for mitigating Global Catastrophic Risks. Among these platforms, TED Talks stands out as a prominent example of this innovative dissemination approach, which has emerged on public internet networks in recent years. With more than 18 million subscribers on its YouTube channel, TED Talks is a significant presence in the digital landscape. This magnitude has piqued the interest of researchers and academics who seek to investigate and validate its potential as a tool for overcoming language barriers and facilitating access to scientific knowledge (COMPAGNONE, 2015; MIRANDA, 2016; TED, n.d.). The objective of this study is to evaluate whether the TED Talks platform can be deemed a reliable instrument for popularizing scientific knowledge pertaining to Global Catastrophic Risks.

3 METHODOLOGY

This systematic review was conducted with the aim of enhancing our understanding of Global Catastrophic Risks, as documented in the Scopus and Web of Science databases, and subsequently correlating these risks with those outlined in the World Economic Forum’s Global Risks Report 2020 (WEF, 2020). To address this objective, our research posed the following central question: ‘What threats have the potential to precipitate the collapse of our current societal structure?’ Following the research stages delineated by Whittemore and Knafl (2005), we systematically mapped the Global Catastrophic Risks identified across thirty scientific articles selected as the primary corpus for this study.

In response to our research question, it became evident that numerous threats loom over human civilization, each possessing the capacity to usher in its downfall. These threats encompass a wide spectrum, including high structural unemployment or underemployment, environmental degradation, man-made disasters, interstate conflicts with regional repercussions, rapid and massive outbreaks of infectious diseases, and large-scale cyberattacks. These threats align closely with the categories delineated by the WEF: economic,
environmental, geopolitical, social, and technological. Notably, environmental risks featured most prominently, with citations in 25 of the selected articles. These risks emphasized major natural disasters and extreme weather events, often exacerbated by the consequences of global warming. Geopolitical risks, such as wars involving weapons of mass destruction, and social risks, including food crises, also recurred frequently in the studies examined.

Additionally, it is noteworthy that the research objectives across these articles were multifaceted. Some sought to map and assess the degree of risk associated with Global Catastrophic Risks, along with their potential consequences. Others focused on developing mitigation strategies in the event of such disasters. Among these strategies were innovative approaches, including the cultivation of food within greenhouses (1), the utilization of red maple leaves for food production (4), data storage on the moon (11), policies to limit nuclear weapons (9), and the establishment of aquatic refugees within nuclear submarines (17).

In conclusion, this systematic review underscores the shared concern within the scientific community regarding Global Catastrophic Risks, aligning closely with the World Economic Forum’s perspective. Nevertheless, given the gravity and urgency of this issue, as well as its universal relevance, the relatively modest volume of publications on the subject appears incongruous.

4 THE LIMITATION OF THE KNOWLEDGE

In addition to the inherent language barrier posed by technical-scientific discourse, which inherently restricts the dissemination of scientific knowledge (MUELLER, 2002), the limited availability and accessibility of such publications, often residing in obscure scientific journals and databases with prohibitively high subscription fees, further compound the challenge of accessing this invaluable human resource. Scientific knowledge occupies a ‘strategic place [...] not only for capitalist accumulation but also for the functioning of the current State and society’ (BAUMGARTEN, 2009, p. 15).

In direct response to these language and accessibility barriers, new avenues for disseminating scientific knowledge have emerged on public internet
networks. Digital lectures on platforms like TED and podcasts featuring interviews and discussions among scientists, both freely accessible online, represent vital components of a broader movement aimed at democratizing knowledge.

For individuals without a specialized background, navigating original research texts written by scholars for their peers can be a daunting task. In the absence of the requisite technical expertise, individuals often require assistance to decipher and comprehend scientific studies (MUELLER, 2002; CAMARGO, BARBARA, and BERTOLDO, 2008). Mueller (2002) aptly characterizes this process of simplifying and translating ideas from scientific texts into more accessible language as the 'popularization of science.'

According to Hilgatner (1990, in MUELLER, 2002), scientists themselves view the popularization of scientific knowledge as a necessary albeit challenging endeavor. Access to science is fundamental for fostering an informed and democratic society. However, the true test lies in 'expressing complex concepts that demand specialized language in simple and understandable terms, without sacrificing essential nuances in the process' (MUELLER, 2002).

The proliferation of fake news, a phenomenon that has directly influenced presidential elections in numerous countries, has unfortunately led ordinary citizens to embrace and promote false information, such as the anti-vaccination movement. This issue has found significant traction in digital media, particularly on the internet (LAZER et al., 2018). Leveraging the same powerful digital medium, the popularization of scientific knowledge has a vital role to play. Encouragingly, we are witnessing positive outcomes across various digital platforms, with TED standing out as a prime example.

TED, the largest and most widely recognized platform for lectures, has been at the forefront of disseminating expert insights for over 35 years. It has consistently delivered speeches from experts across diverse fields, covering an array of topics, and catering to audiences that are both broad and diverse (CAMPAGNONE, 2015).
5 TED TALKS

The acronym TED stands for Technology, Entertainment, Design, and it originated in 1984 as an event organized by Richard Saul Wurman, the proprietor of a publishing company. Initially, the event was conceived as a one-time gathering where select attendees could partake in lectures, without any intention of it becoming a recurring occasion (CAMPAGNONE, 2015; MIRANDA, 2016). However, it wasn’t until 1990, in Monterey, California, that Richard and his partner Harry Marks resurrected the concept, transforming the TED Conference into an annual event. Over the years, it attracted a steadily growing and diverse audience, united by a shared sense of curiosity. Notably, these events were initially exclusive to invitees (TED.com).

In 2001, the Sapling Foundation, a non-profit organization founded by new media entrepreneur Chris Anderson, acquired TED, with Anderson becoming the official curator (CAMPAGNONE, 2015; TED.com). The list of presenters also evolved to encompass scientists, philosophers, musicians, business leaders, religious figures, philanthropists, and more. For many attendees, TED became a cornerstone of intellectual and emotional enrichment each year (TED.com).

The watershed moment arrived in June 2006 when the first six TED Talks, consisting of audio and video podcasts with a maximum duration of 18 minutes, were shared online. By September of the same year, these talks had already surpassed one million views. Such was the popularity of TED Talks that in 2007, the TED website was revamped to focus on these talks, offering a global audience free access to the profound insights of some of the world’s most eminent thinkers, leaders, and educators (TED.com).

By 2009, TED Talks had amassed an impressive 100 million views. It was during this time that TEDx was introduced, a program designed to extend the spirit of TED to locally organized events, independently managed ‘by passionate individuals who aim to explore new ideas and disseminate the latest research in their local communities, sparking meaningful conversations among their peers’ (TED.com).

In 2012, TED Talks marked a significant milestone by reaching one billion video views. These brief talks, watched worldwide, sustained an average rate of
17 views per second, amassing over three billion hits annually. Presently, TED, with its mission to disseminate ideas, spans a wide array of topics, ranging from science to business to global challenges, and is available in over 100 languages. Simultaneously, independently organized TEDx events serve as catalysts for idea-sharing within communities across the globe (TED.com).

Given this remarkable journey, albeit relatively recent, TED has garnered substantial interest from researchers and academics who seek to explore and comprehend this influential platform's potential as a tool for the popularization of knowledge, particularly scientific knowledge.

6 DISCOURSE ANALYSIS (DA)

Discourse Analysis (DA) is a field within linguistics and communication that seeks to interrogate the meanings inherent in various forms of discourse production, with a particular focus on how ideological constructs manifest within text. Discourse Analysis is not confined to a single approach; it encompasses numerous styles, each rooted in different theoretical traditions. Nevertheless, they all share the common goal of exploring the central role of discourse in shaping social realities (CAREGNATO and MUTTI, 2006; SOUZA, 2006).

As Orlandi (1999) aptly describes, "Discourse Analysis, as the name implies, does not concern itself solely with language or grammar, although these aspects are of great interest. It is concerned with discourse—speech. Etymologically, the term 'discourse' carries the notion of a course, a path, a journey, of movement. Discourse, therefore, is a dynamic word, a practice of language. Through the study of discourse, one can examine the act of speaking itself."

The process of discourse analysis aims to uncover the essence of a discursive realm, which can encompass both verbal and non-verbal elements, provided that their materiality yields interpretive meanings. These elements may be interwoven within textual series (oral or written), images (photographs), or non-verbal communication (e.g., body language) (CAREGNATO and MUTTI, 2006, p. 680).
Michel Pêcheux, a French philosopher who engaged in debates surrounding Marxism, psychoanalysis, and epistemology, played a pivotal role in the founding of Discourse Analysis during the 1960s. He emphasized the intricate connection within discourse between language, subjectivity, and history or language and ideology (CAREGNATO and MUTTI, 2006; SOUZA, 2006; SILVA and ARAÚJO, 2017). This perspective underscores the significance of understanding how language interfaces with ideology (MELLO-LIMA and ARRAIZA, 2019, p. 75).

In the realm of DA, the focus is on meaning rather than textual content. According to Caregnato and Mutti (2006), the core of DA is encapsulated in the formulation: ideology + history + language. Here, 'ideology' pertains to the subject’s positioning when engaging in discourse, reflecting the process of constructing an image rooted in the unconscious—the system of ideas forming one’s representation. 'History' represents the socio-historical context, while 'language' signifies the materiality of the text, generating 'clues' regarding the intended meaning (p. 681). Consequently, in DA, language extends beyond the text. According to Pêcheux, language serves as the materialization of speech, with speech production always closely tied to its socio-historical context (PÊCHEUX, 1993; CAREGNATO and MUTTI, 2006). This principle applies universally, including within political discourse driven by political ideology. For instance, 'a speech is always delivered based on given conditions of production: for example, whether a legislator belongs to a political party in government or opposition, or whether they represent a particular interest group' (PÊCHEUX, 1993, p. 77). This same perspective is applicable across various contexts.

In light of these principles, this research adopts DA as a methodology to investigate whether the speeches presented in TED Talks, selected as the study corpus, contribute to the popularization of scientific knowledge pertaining to Global Catastrophic Risks.

Within the Global Catastrophic Risks category, environmental risks emerge as the most frequently addressed by researchers and speakers, appearing in 83% of scientific articles and 56% of TED Talks within the analyzed corpus. This alignment reflects a shared understanding, guided by The Global
Risks Report 2020, which has propelled environmental concerns to the forefront over the past decade. These concerns have been primarily driven by the pressing challenges posed by global warming.

The second most prominent category is social risks, which also garnered substantial attention. Risks associated with food crises, involuntary migration, and the rapid, widespread dissemination of infectious diseases are examples of global risks with the potential to precipitate societal collapse.

It is noteworthy that the consequences of the pandemic have illuminated a crucial reality: the collapse of society may not hinge on a singular factor but rather result from a chain reaction of interconnected global risks. Geopolitical Global Catastrophic Risks align with this perspective and have been discussed both in scientific articles and TED Talks. The risk of a world war remains one of the primary existential threats. While Nuclear War is a prominent concern, political conflicts involving weapons of mass destruction, including biological weapons such as viruses engineered in laboratories, and technological threats such as armies of nanorobots, also loom large, with the potential for devastating impacts on humanity.

In contrast, global economic risks receive less attention in scientific articles and are only timidly explored in TED Talks. This modest frequency could be attributed to these risks being indexed under more specific keywords.

7 FINAL CONSIDERATIONS

Upon scrutinizing the scientific documents and expert speeches constituting the research corpus of this dissertation, coupled with insights from The Global Risks Report 2020, a conspicuous realization emerges: the potential collapse of human civilization is unlikely to be attributed solely to a single factor but rather to an intricate interplay of factors, each setting off a cascade of global predicaments.

Economic, environmental, geopolitical, social, and technological risks collectively constitute the spectrum of Global Catastrophic Risks capable of precipitating the collapse of human civilization. Remarkably, all five categories, as outlined by the World Economic Forum (WEF), find representation within the
TED Talks corpus scrutinized in this study. This validation underscores the role of TED Talks as a platform for disseminating scientific knowledge pertaining to Global Catastrophic Risks.

This collective mobilization aligns seamlessly with the concept of smart cities, particularly in terms of sustainability. Smart cities epitomize the notion of densely populated territories with minimal environmental footprints (TREUDE, 2021). Moreover, they prioritize the development of innovations aimed at addressing the challenges faced by urban centers, particularly in the context of the Anthropocene epoch and its attendant catastrophic risks to human civilization (YIGITCANLAR, 2018; CARRILLO, 2021).
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