# Artificial Intelligence and Human Perception

## Media Discourse and Public Opinion

Edited by
Emma Lupano, Paolo Orrù


FrancoAngeli

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This publication was funded by the European Union - NextGenerationEU (D.M. 737/2021 - Linea d'intervento Iniziative di ricerca interdisciplinare su temi di rilievo trasversale per il PNR) as part of the research project “Artificial Intelligence and Human Perception: Media Discourse and Public Opinion in Italy and China” (CUP: F25F21002720001).

Isbn: 9788835178347

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# *AI Discourse and Public Opinion in a Global Perspective*

Artificial intelligence matters for future human development, making it one of the most obviously global topics of our time. Even if private business and governments may prioritise competition and treat AI as just another commercial or political issue, it is difficult to name many other phenomena that – to date – are as pervasive and relevant to the entire human kind as artificial intelligence.

While it is necessary to consider studies that aim to reduce the hype around AI as a new medium and remind people of the need to maintain a balanced and well-informed attitude towards the phenomenon, it is undeniable that AI is, and will continue to be, a disruptive force in every aspect of our lives. Its positive development should be of everyone's concern, requiring truly global cooperation and mutual understanding to support reasonable and fair use. However, different national and cultural communities are likely to look at AI in different ways, and hold different hopes and fears about it, based on different imaginaries, values and beliefs. This prompts mutual enquiry and understanding of other perspectives to ensure effective global dialogue that foregrounds human benefit and interest above commercial or local ones.

One way to explore specific imaginaries is by looking at how a subject is narrated in a national, linguistic and cultural context. For decades, AI has been a focal point of academic inquiry particularly within disciplines such as Computer science and Information technology. However, its interdisciplinary significance is increasingly evident, having raised wide attention from the Social sciencies, due to its economic, social, political, military, and geopolitical implications (Kellogg *et al*., 2020; Natale, 2022), as well as from the Humanities, which have questioned its philosophical, ethical, and legal dimensions, and the cognitive challenges it poses for human existence (Floridi, 2022; van Diggelen *et al*., 2023).



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Only in recent years have the linguistic and discursive dimensions of AI started to be explored, especially in studies that focus on literary (such as science fiction) and media production (Cave, 2020; Chuan, Tsai & Cho, 2019; Giuliano, 2020). These works are rooted in the idea that the narrative around AI influences its future, as it moulds societal expectations and policy responses, affecting how technology is integrated into various sectors of society, and affecting public acceptance and trust, which are also essential for AI's successful implementation (Cave *et al*., 2018).

It is well known that institutions and the media play a key role in this process, both shaping and being shaped by people's opinions. Political and institutional communication aims to convince and align citizens to policy goals, while attempting to influence media agendas in order to reinforce their own message. The media can or cannot embrace institutional messages, depending on their level of autonomy from the political power and on their ideological leaning. Nevertheless, public sentiment can influence both, in a circular dialogue. In the case of AI, because of its "black-box" features (Brauner *et al*., 2023) and limited AI literacy, the institutional and the media discourse are likely to determine public opinion to a significant degree.

The aim of the research project that this volume stems from (funded by the European Union – NextGenerationEU and entitled "Artificial intelligence and human perception: media discourse and public opinion in Italy and China") was precisely to inquire this complex mechanism with a three-pronged approach: monitoring political-institutional communication on AI from a linguistic discursive point of view; investigating the discursive strategies employed in the narration and depiction of AI in media discourse; and analysing the emotions evoked and the level of understanding among the general population. The examination of both the production of knowledge (institutional and media discourse on AI) and its reception (public opinion on AI) within the same research framework represents a distinctive undertaking in discourse studies.

The ultimate goals of the project, and of this volume, are twofold: to challenge and enhance our understanding of artificial intelligence by showcasing the contributions that Humanities research can make to the analysis of its social and cultural impacts; and to promote more effective public communication about this disruptive phenomenon, through a critical reflection on the implication of media coverage on AI's key role in education, governance, human rights, and social equality.

This project was inspired by the strategic guidelines presented in Italy's 2022 National Research Plan (PNR), which urges the Humanities to address the issue of the human-machine relationship, explicitly calling



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for an investigation of "representations, narratives, and images that shape human expectations and fears towards technological mediation, leaving a trace in the social imagination." The extensive media attention around AI since the release of ChatGPT3 in November 2022 spurred for a timely interdisciplinary approach to the subject: as technologies related to artificial intelligence become more and more integrated into various aspects of daily life, it seems urgent to question what the public understands and feels about it, by using different analytical tools and by looking at diverse cultural environments.

The AI Act approved by the European Union in 2023 foregrounds the concept of an artificial intelligence that should be anthropocentric, respectful of people's rights and privacy, and harmless to humans. In the view of the EU, its applications must not produce inequalities and must be designed and implemented in a responsible and transparent manner, so that it can respond to the challenges of society by guaranteeing security in all sectors. However, these preoccupations are not necessarily shared, or prioritised, by commercial entities that "make" AI, which are mostly driven by profit maximisation; or by individual nations that consider AI as part of their own strategic security interest at the social, political and military levels. In this complex scenario, expanding the range of possible narratives, reducing the utopian-dystopian approach, and broadening the scope beyond the national/European context to observe others appear essential to equip ourselves for a needed inter-cultural and inter-national dialogue on the future of AI.

This interdisciplinary volume aims to contribute to this goal by presenting studies regarding either the narrative or the reception of AI in different societies, offering a variety of perspectives on the subject, and paving the way for further and wider exploration in the field. The book is divided in two sections. The first revolves around the broad topic of *Media discourse*. The five chapters present similar methods and assumptions. They all adopt the analysis of the media as a tool to evaluate public perception about the developments in artificial intelligence. Newspapers are clearly a privileged source of investigation for the authors, while discourse analysis is the main methodological framework adopted in its various declinations.

The first chapter, by **Ionel Barbalau**, adopts an anthropological interpretative model to demonstrate how media discourse reproduces mythological and archetypal narratives. Open letters on the future of AI by prominent figures, enterprises, and "tech gurus" (like Elon Musk) are taken as a starting point for discussion on newspapers. Barbalau's analysis demonstrates that these mythological frameworks are fundamental aspects



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of the narrative architecture in AI media discourse. AI is depicted in a personalized and humanized manner, assuming heroic roles and exhibiting the ability to perform actions that can benefit or harm humanity.

The study presented by **Viseu**, **Pereira** and **Delicado** delves into how media discourses shape and disseminate visions of autonomous stores (AS) as a groundbreaking technological advancement in retail. Autonomous stores, characterized as AI-driven physical spaces enabling customers to collect goods without traditional checkout processes, are frequently portrayed as the 'store of the future' in media narratives. Media predominantly depict AI as a solution to the inefficiencies of conventional shopping, offering convenience through 'frictionless' experiences. Nonetheless, the analysis also highlights concerns about job displacement, data privacy, and increased surveillance.

The way Italian newspapers depict the development of Artificial intelligence in the years between 2019 and 2023 is the subject of **Paolo Orrù**'s contribution. Drawing from a large corpus of texts, the analysis highlights recurring themes and frames through means of discourse analysis and corpus linguistics methods, i.e. the analysis of keywords, co-occurrences of words (collocations) and text analysis. Among the most salient topics, such as the economy, sustainability, warfare, another key element of media narratives is the human-machine relationship. Although Italian journalists try often to adopt a middle way between utopian and dystopian narratives, the dualistic view is often present, showing how the public debate on AI is clouded by uncertainty and doubt.

**Emma Lupano**'s analysis looks into Chinese institutional and media discourse on the strategic employment of AI in the country. By means of a mixed-methods approach to frame analysis that uses corpus linguistics tools under a theoretical framework based on legitimacy discourse strategies, her contribution investigates dominant themes and keywords in institutional and media discourse(s) on AI. The study shows that, while some variability between institutional and commercial outlets does emerge, opening up space for genuine debate, AI in China is predominantly framed in positive terms. China's achievements in the sector and AI's fundamental role for the construction of a powerful country are widely highlighted, legitimising the party-state's approach and stimulating a strong sense of national pride and patriotism.

The last contribution of the first part, by **De Masi**, **Di**, **Li** and **Song**, integrates critical discourse analysis of media content and a synthesis of public opinion data to explore how cultural, political, and economic factors influence narratives around these emerging technologies. The authors argue that Chinese media largely depict the Metaverse as a catalyst for



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economic growth and social harmony, in line with state-led technological development strategies. Conversely, Western media focus on potential risks, such as privacy issues, social inequalities, and ethical dilemmas. The study emphasises the possibility of the rise of two distinct Metaverse ecosystems in the near future, each reflecting the peculiar approach of their respective regions.

This chapter provides an effective transition to the second part of the book, which is focused on *Public opinion*, through analyses that employ different tools and objects of study, such as opinion polls, social media, focus groups.

The chapter by **John Maina Karanja** explores the perception of the ongoing adoption of AI tools on public relations and strategic communication practitioners in Kenya. After outlining the current Kenyan situation of the PR market and its adoption of Artificial intelligence, the author analyses the perception of practioners' through a series of semi-structured interviews. Participants were asked about the impact of AI in everyday practices and their opinion on key themes such as creativity, ethics, efficiency, and job security. The interviews show how new technologies are changing the profession by creating new routines, but concerns are raised with regards to ethics, data protection and job losses.

**Eder** and **Palhano Lhamby**'s analysis draw from the concept of "algorithmic folk theories" which are described as intuitive, informal theories people develop to make sense of the outcomes and effects of AI and new technologies. They conducted their study through interviews with two focus group discussions with ten Brazilians, undergraduate students between the ages of 21 and 23, to explore how young people in Brazil engage with AI: how they perceive, understand, and reflect on it. The aim of the two authors was to understand what intuitive, informal folk theories they form. Results suggest that familiar global narratives about AI are also present in the Brazilian context.

**Gianluigi Negro**'s and **Alessandra Melis**' contributions both selected Chinese social media *Zhihu* as a platform for monitoring users' debate on Artificial intelligence. The social media functions as a Q&A platform allowing users to request information from an online community by posing questions. In his chapter, **Negro** illustrates the case of AI literature production in China through the analysis of *Land of Memories*, the first Chinese novel written through AI application to be awarded by a national literary competition. Negro confronts the official narration celebrating the achievements of China's technological development with comments on social media, hinting to a more sceptic view by normal users.



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The essay by **Melis** employs discourse and linguistic analysis to investigate broader understanding and expectations on the future of AI through an explorative study on Zhihu. She firstly focuses on current main narratives conveyed by the Chinese government to later confront them with citizens' perception through the analysis of a set of Zhihu posts. The corpus of the analysis comprises 10 posts and some of the replies, containing a reference to the future in order to highlight attitudes towards AI. Notwithstanding pervasive State control, Zhihu appears to be relatively free. However, the debate among users in the corpus is almost always limited to purely technical aspects.

**Alessandra Micalizzi**'s work is a multifaceted analysis involving various methods and sources to reflect on the impact of AI on creative production. The first part presents a qualitative content analysis on a sample of 33 Italian and foreign literary products that have used AI and its representation as one of the main characters. Then, Micalizzi presents the results of a survey on the perception of the relationship between creative production and artificial intelligence. The goal of the contribution is to highlight the continuity between long-standing imaginaries about technology and Artificial intelligence mediated by literature and nowadays perception by users on AI generated pictures.

Finally, **Stefano Rombi** reflects on another salient aspect on the current debate on AI: the political implications of its use and development and the possible impact of AI generated content on the future of democratic systems. The paper tests the possible correlation between political attitudes and perception of AI and its future among the Italian population. By analysing a vast survey on a representative sample of the Italian population, Rombi highlights how the relationship between the ideological orientation and the perception of AI is quite complex and nonlinear. Furthermore, first-hand interactions with AI significantly influence public opinion, sometimes taking precedence over political factors.

The present volume had two main objectives that we hope to have accomplished fully. The first among these goals was surely to offer a wide range of themes and methodological angles on the topic of perception and public debate on Artificial Intelligence. For this reason, the selected contributions address both broad discourses and more minute and detailed aspects, such as autonomous stores, public relations, creativity, literature, politics, institutional discourse. At the same time, the essays offer different methodological viewpoints (from qualitative and quantitative discourse analysis, to analyses based on opinion surverys; from content analysis, to interviews and focus groups) drawing from various scientific fields: anthropology, linguistics, sociology, political science etc.



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The second fundamental aim of the volume was to gather contributions from a wide number of different countries and geographical backgrounds. AI is surely a global phenomenon, but the quality and quantity of its effects hugely differ from country to country and from continent to continent. While leading global actors, such as the United States and China, are driving innovation and technological advancements, other countries are deeply affected on various levels by its mainstream and massive adoption: growing digital divide; devastating effects on the work force, salaries and unemployment; the enormous amount of electricity needed to support data centres devoted to large language models and other applications cannot be discarded in the face of climate change, which strongly affects disadvantaged countries. Therefore, it was important to offer a rich perspective. With contributions spanning from four continents (Africa, Americas, Asia, Europe) and six States (Brazil, Usa, Portugal, Italy, Kenya, China), the volume also responds to the need of de-westernisation of communication research, in search of inclusion of different points of view.

This collection owes to the precious help and support from our institution, the Department of Literature, Languages, Cultural Heritage of the University of Cagliari, and especially to its former director, prof. Ignazio Efisio Putzu, who encouraged this research project and hosted the volume in the series he directs. Our gratitude goes also to our publisher, FrancoAngeli, in the person of Isabella Francisci, who enthusiastically embraced this editorial project.

Cagliari, December 2024

*Emma Lupano*
*Paolo Orrù*

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# *Part I*

# *Media Discourse*

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# *Myths and Symbols in the Artificial Intelligence (AI) Media Discourse. The New Myths of Modernity: AI - An Interpretive Study*

by Ionel Barbalau

## 1. Introduction and Context

Artificial Intelligence (AI) seemed to have been increasingly a disruptive subject, generating constant media scrutiny, public debate, and controversy, implicating from some of the biggest names in technology to Scientifics and various experts, journalists, and political actors alike.

Far from being fully understood in its scientific-technical essence, and far too technical for a simple public understanding, AI medialization seems to be privileging series of rather similar narratives with the intention to explain, and to bring order into a symbolically distressed collective imaginary, in searching for meanings.

This paper seeks to demonstrate that the media discourse on AI, analysed from an anthropological perspective, can be distilled into a series of binary oppositions, akin to those found in mythological structures. Moreover, it argues that media discourse about AI is fundamentally symbolic and mythological in nature.

The context in which AI has been introduced into media and public discourse over the past few years is characterized by a high degree of liminality, which disrupts the norms of "normality" and creates an environment conducive to the emergence of symbolic and mythological narratives about AI (Turner, 1967).

Our premise is that AI, despite being inherently complex and technical, is often approached, reported, and represented through media in a mythologizing and irrational manner. This is evident in how AI is frequently portrayed as either a universal saviour or a demon, capable of triggering technological apocalypse. These discursive constructions often activate series of archetypal oppositions, which shape AI public understanding. AI becomes in media narratives a form of «modern



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cultural myth» (Natale & Ballatore, 2020), which recovers in its symbolic structure various forms of «survivals and camouflages» of some archaic mythological structures (Eliade, 1961; Lule, 2005).

Just as every time they were confronted with a reality that they could not fully explain, a situation of societal crisis, or liminality, human communities seem to call upon ancestral sources that generate meaning and order – the myths.

## 2. Research Objective & Questions

Our main research objective is the identification of symbolic constructions in the media discourse about AI. We are interested to what extent can we identify mythological and symbolic constructions in the AI media discourses; which are the major themes, the dominant symbolic structures of AI media narratives; which are the discursive strategies used to integrate the AI concept into the collective imaginary?

## 3. Theoretical Approach. Between News and Myths

### 3.1. *News as Story. The Hidden Text. Archetypes. The Master-Myths*

Analysing the structure of the media discourse about AI means understanding the functioning of its main symbolic unit: the news story. We are looking for the "hidden text", the narrative scheme that is behind the media discourse and representations. We privilege the structuralist perspective of the archetypal model, trying to find the springs by which a modern media narrative can become more than it is: a vehicle for ancestral fears, carrying answers and explanations destined for the unconscious of a community.

We further privilege approaches focusing on the mythological dimension of mass culture, which consider that the mass media «took over the functions of the institutions that produced and distributed myths and mythologies in archaic societies, that they are keepers and creators of myths» (Coman, 2003). According to this approach, deriving from the evolutionary paradigm, «the mass media continue in modernity the functions, contents and social prestige of the myth».

Furthermore, we will be defining the concepts of myth, archetypal structures. We will synthesize a myth analysis model, which will support our interpretative approach from a constructivist-structuralist perspective,



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finally revealing to us the system, the "syntax" behind the narrative, according to which the story works and delivers meaning.

Our research, while grounded in media anthropology, addresses the symbolic dimension of mass communication, focussing on media mythologies (Rothenbuhler & Coman, 2005). Being neither a media ethnography, nor a media reception study, this research is primarily concerned with the symbolic structure of the AI media narratives, as delivered by various authors and media outlets in the English-speaking world, shaped as such by a liminal context (the AI eruption into reality) and the reaction to it of the Tech world "AI founding fathers".

Approaching the notion of news as a story has been privileged in recent media research. «Much of this reappraisal has focused on the structural aspects of the narrative», argues Bird (2005: 226). Once we consider news as narrative, it brings another dimension to it, one in which «news stories transcend their tradition of informing and explaining […]. Facts, names and details change almost daily, but the framework in which they are placed – the symbolic system – is more durable» (Bird, & Dardenne, 1988: 69). Bird (2005) considers that «news, like folklore and myths, are a cultural construction, a narrative that tells a story about important or interesting things». Despite the belief that the journalistic approach is an eminently objective one, of simple transcription of existing realities, news «do not exist until they are written, until they become a story; what is considered newsworthy is due to our cultural conceptions about what makes a 'good story'» (Bird, 2005: 222).

Donahew (1984) also speaks about the social value of the story, stating that readers are more receptive to information presented in the form of a "story", regardless of its content. It is therefore natural for journalists, in their effort to maximize the audience of their symbolic product, to favour narrative forms and structures.

Bennett (1983: 88) emphasizes that the pursuit of the story tends to formalize news: «any communication based on a story will be biased, privileging certain themes». On the other hand, Lule unequivocally assigns journalists and editors the modern role of the traditional 'storyteller', placing news at the centre of modern mythmaking and considering them to fulfil the same social function: «We can recognize in the news the siren song of myth […]. These news stories offer more than a retelling of the usual story forms. These news stories provide sacred, societal narratives with shared values and beliefs, with lessons and themes, and with role models that instruct and inform. They offer myths» (Lule, 2001: 18).

For Nossek & Berkowitz (2006: 692-693), one of the strategies journalists adopt to successfully produce news is to «access ordinary,



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typical, and well-known cultural narratives. […] These cultural narratives are also known as myths» (ivi: 704). Furthermore, the authors believe that by retelling the society's metanarratives accessing directly these myths in times of crisis, journalists contribute to the restoration of social coherence and integration in order to overcome the crisis.

According to Bird and Dardenne (1988: 70), «news, too, is a way in which people create order out of disorder, turning knowledge into storytelling. News offers more than facts – it offers reassurance and familiarity in shared community experiences (Mead, 1925-1926); […] through the ritualistic narrating of tales (including news), myths are acted out, transformed, and re-created in a 'ritual process' (Turner, 1969)».

As a symbolic system, myth, and news act both as model of and model for a culture (Geertz, 1973). Other authors such as Rice analysed how members of different cultures retell stories in different, culturally determined ways: «the suggestion here is that cultural schemas are […] responsible for a kind of "selective perception" of the world, common to members of a given culture, which has the effect of giving a characteristic interpretation to the phenomena considered» (Rice, 1980: 61-62).

Many media anthropology studies have started from the sentiment that media products, far from exhausting their meanings, conceal «certain elements […] signs of an eruption, between the lines of the existing text, of another story; these units of a shadow text that forced their way into the nominal present text, fugitive presence that testify to unresolved tension between the event reported and the narrative that is doing so» (Manoff & Schudson, 1986: 225).

The journalistic narrative can thus become more than it is at first sight: a vehicle for ancestral fears, carrying answers and explanations destined for the unconscious of a community.

Eliade (1978: 152) introduces the concept of «survivals and camouflages of archaic myth» in specific forms of a modern mythology, recovered especially through the mass media.

Lule considers that «both journalistic narratives and myths are the actualization of eternal stories, of archetypes that mark the history and destiny of humanity from the earliest times. Today, daily news is the most important vehicle of myth. News is the heir to the essential stories of humanity» (Lule, 2001: 19). He identifies seven "master myths" that have been present from the first stories told by humans up to today, where they appear in the form of news: The Victim, The Scapegoat, The Hero, The Good Mother, The Trickster, The Other World, and The Flood. Lule thus assigns different "mega-myths" to different styles of news/media articles. These are, according to Lule, «primordial stories



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that have guided human storytelling for centuries. And they guide today's news» (Lule, 2001: 22).

In another structuralist psychoanalytic approach, Jung (2003) sees archetypes as symbols or universal models that are present in the collective unconscious of all people. They are innate and inherited and shape our thoughts, feelings, and behaviours, and are thought to underlie many of the common themes and symbols that appear in stories, myths and dreams from different cultures and societies. Among the essential archetypal forms, we find the Hero, but also the Trickster.

According to Coman (2003), journalists, like myth tellers from any era, rely on archetypal stories to make sense of events. Sometimes they do this consciously, making explicit references to Icarus, Oedipus, or the plague. Other times, they do it unconsciously.

«Consciously or unconsciously, however, journalists have their place among centuries of storytellers who tell and retell the myths of humanity», notes Lule (2005: 204).

Furthermore, Bird argues that newspapers and other media are much closer to the "mythological matrix". «In the mythological matrix, the public tends to trust those "specialists" who have access to the "truth", at least in those areas that are unfamiliar to them. Myth, like news, relies on its authority as "truth". In news production, journalists not only use culturally determined definitions, but they also have to frame new situations within old definitions. It is within their power to place people and events into existing categories of hero, villain, good, and evil, thus imbuing their stories with the authority of mythological truth» (Bird & Dardenne, 1988: 88).

In other words, «the narrative reshaping of the media will be most successful when it can present news information in such a way that it aligns with the existing narrative conventions of readers and can be adapted to them. The media cannot create mythology out of nothing, but it is more than a "passive transmitter" of myth, as has been suggested» (Gans, 1979: 294).

### 3.2. *Understanding Myth*

The myth is a «narrative different from fairy tales, fables, or legends, especially due to its truthful and not fictional character». It is not about «something invented, born from the storyteller's imagination, but the account of events that actually took place» (Segré, 2000: 56). Furthermore, the myth fulfils an etiological function, telling «how something appeared



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in the world, how the world became what it is, following the interventions of natural beings, in a primordial time, in a golden age» (*ibid.*).

Myths and rites are far from being the product of man's "myth-making faculty", turning its back on reality. «Their principal value is indeed to preserve until the present time the remains of methods of observation and reflection which were (and no doubt still are) precisely adapted to discoveries of a certain type: those which nature authorised from the starting point of a speculative organization and exploitation of the sensible world in sensible terms. This science of the concrete was necessarily restricted by its essence to results other than those destined to be achieved by the exact natural sciences but it was no less scientific and its results no less genuine. They were secured ten thousand years earlier and still remain at the basis of our own civilization» (Lévi-Strauss, 1966: 11).

Lévi-Strauss (1973) sees myth as a form of language, where the symbols and narratives serve as a *meta-language* – communicating deep, unconscious meanings that go beyond ordinary speech. Thus, myths are complex systems of symbols that reflect universal structures of the human mind, using narrative to address and resolve the fundamental tensions of existence. According to Lévi-Strauss, myths are not arbitrary stories but follow a universal structure across cultures, reflecting the way the human mind organizes and understands the world. In other words, myths operate through binary oppositions and deep structures in human thought.

To analyse the structure of myths, Lévi-Strauss (1955, 1968, 1976) introduces the concept of "mythemes", the smallest units of myth, and demonstrates how these can be combined in various ways to produce different myths. «Borrowing a neologism from the building technique, one could say that, unlike words, mythemes are "prestressed". Of course, they are still words, but with a double meaning of *words of words*, which operate simultaneously on two levels: that of language, where they keep on having their own meaning, and that of metalanguage, where they participate as elements of a supersignification that can come only from their union» (Lévi-Strauss, 1976: 144).

Girardet (1997) analyses the modern political imaginary and discovers in the structure of stories that have become public goods in modern society the essence of myth, proposing a typology of political myths: he distinguishes, among others, the myth of Conspiracy, the Savior, the Golden Age, or Unity. Thus, myth becomes a «screen onto which the group projects its collective anxieties, the imbalances of being […] Myths become more pronounced, assert themselves more intensely, and manifest their attraction with violence, especially in critical periods. "Mythical effervescence is triggered when a phenomenon of non-identification begins



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to operate in the collective consciousness"», notes Girardet (1997: 142). Crisis thus becomes the trigger and resonator of myth, serving as a refuge of meaning and behaviour for the community in this state.

«If someone suddenly sees, in the middle of the day, a flame crossing the sky, they are compelled to seek an explanation through which this strange and unknown phenomenon can be integrated into the other sphere of familiar and known facts», asserts Coman (2009: 57-58). In the absence of a clear, scientific explanation to balance their symbolic universe, the person will resort to another interpretive code, of a mythological nature. However, mythological beings do not only have an explanatory role in the strictly hierarchical popular vision of the world: they have «a broader and more complex role […], to fill the empty spaces. If the action does not take place, "the balance of the world risks being lost, completely collapsing the cognitive architecture through which man has put order in the universe around him"» (Coman, 2009: 57-58).

What is true for archaic man seems to also apply to contemporary man, who, however, does not automatically turn to a directly lived popular culture to access the information needed to rebalance the structure of their symbolic universe, but rather to… the news. «News is a primary source of information about the normative contours of a society. It informs us about good and evil, about the boundaries beyond which we should not venture, and about the forms evil can take. A gallery of popular types – heroes and saints, villains and devils – is mediated not only through oral and face-to-face contact, but to a much larger audience, using much greater dramatic resources» (Cohen & Young, 1981: 431).

Like the archaic mythological constructions described by Coman (2009), media stories tend to captivate the imagination of members of contemporary communities, «constantly filling the empty spaces». The avalanche of information, continuous live coverage, and the new social media and digital 'revolution' of the last decade have facilitated this 'colonization' of the public imagination through technology. Connected 24/7 to the information flow, to mediated narratives, the contemporary person seems to be a prisoner of constant exposure to mediated symbolic production, as well as to the code, the meta-language emitted by the internal structures of meaning of these productions. To the extent that these narratives contain modern mythological structures, the imagination of modern man thus has a direct and constant (live) connection to this "ordering matrix".

We decided to downplay some of the media anthropological studies that examine how media narratives can create and perpetuate myths from an ideological perspective (e.g.: Shohat & Stam, 2002, 2014), that we



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believe is methodological counterproductive, when analysing AI media narratives.

Shohat and Stam, for instance, argue that media plays a crucial role in mythmaking, but in perpetuating ideologies that support imperialist agendas. «Media narratives often naturalize and legitimize the imperial project, presenting it as a benevolent and civilizing mission» (Shohat & Stam, 2014: 110). But AI media narratives often involve complex technological and ethical dimensions that differ significantly from the historical and cultural contexts typically examined in traditional, critical media studies. AI narratives can include themes of technological determinism, ethical dilemmas, and futuristic scenarios that require a different analytical approach. While the ideological perspectives provided by Shohat and Stam (2002, 2014), might be relevant for understanding media's role in shaping cultural narratives, applying these frameworks to AI media narratives would requires serious adaptation and rethinking to address the unique aspects of AI technology and its societal implications. Furthermore, as Coman argues referring to Askew and Wilk:

> Cette perspective exclut ou au moins marginalise la dimension symbolique de la communication de masse, c'est-à-dire du côté créateur (de sens) des médias. Ce choix de contenus, de textes et d'auteurs fait que la media anthropology est moins anthropologique qu'on ne le croit. On découvre ainsi que toutes les recherches consacrées à la relation entre les médias et le système cérémoniel à travers les « media events », à la ritualisation de la réception, aux médias et mythologies modernes, ou encore aux médias et religions sont largement ignorées (Coman, 2008: 2-3).

Regarding the media anthropology field, we consider the Rothenbuhler and Coman (2005) approach to be more valuable for our research.

### 3.3. *Understanding the AI Controversy*

Almost without exception, studies that examine artificial intelligence from various perspectives note the controversial nature associated with this subject. Similar to public discourse, scientific discourse oscillates between optimism regarding AI as a solution to various deficiencies and needs in society, and pessimism in which AI is seen as a threat to humanity in general (Grabiner, 1986; Johnson & Verdocchio, 2017; Natale & Ballatore, 2020).

Some researchers have approached the entire discussion about artificial intelligence from the perspective of myth. Natale & Ballatore (2020)



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review the role of "technological" myths in the development of artificial intelligence and show how the emergence of AI has been accompanied by the construction of a powerful cultural myth, that of a thinking machine capable of perfectly simulating the abilities of the human mind. Analysing articles from two English-language popular science magazines, the authors identify three dominant occurrences in the construction of what they call the "AI myth": the presence of analogies through which ideas and concepts from other fields, especially human ones, are used to describe the functioning of AI technologies; a rhetorical use of the future anticipating the overcoming of present shortcomings and limitations; and the relevance of controversies surrounding AI as an integral part of the discourse around the "AI myth" (Natale & Ballatore, 2020: 3).

Our paper will join the theoretical discourse about AI explaining, from an anthropological interpretative perspective, why AI media representations are bound to be or to contain in their fabric mythological, archetypal structures, as part of the complex process of cultural creation of meaning and sense and the construction of collective imaginary of AI (from a structuralist-constructivist perspective), during a symbolic and societal crisis.

## 4. Methodological Approach

We based the methodological construction of our research on the interpretive approaches of structural anthropology, as well as symbolic and interpretive anthropology.

We combined structural analysis and semiotic methods to identify patterns and themes and deconstruct the process of meaning-making of the media narratives (Levi-Strauss, 1968, 1976; Greimas, 1983; Mucchielli, 2009; Paillé & Mucchelli, 2016; Rothenbuhler & Coman, 2005), then, following the application of an anthropological interpretative model inspired by Levi-Strauss, Greimas and Geertz, we analysed the way in which media discourse about AI is prone to reveal archetypal, mythological structures and how the concept of AI in media discourse is in fact / has the characteristic features of a modern myth.

According to Geertz (1973), people need symbolic «sources of illumination» to orient themselves and navigate within a culture, understood as a complex system of meanings. Turner states that symbols are what initiate social action and are «determinable influences that incline individuals and groups towards action» (Turner, 1967: 36). Thus, symbolic anthropology sees culture as an independent system of meanings,



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deciphered through the interpretation of key symbols and rituals. The two major premises governing symbolic anthropology are based on the idea of understanding personal beliefs as part of a cultural system of meaning, as well as the idea that actions are guided by interpretation, allowing symbolism to aid in interpreting both conceptual and material activities.

The structuralist paradigm in anthropology suggests that the structure of human thought processes is the same in all cultures, and that these mental processes exist in the form of binary oppositions (Winthrop, 1991).

Our primary approach to analysis is grounded in structuralism. As Harris (1979) puts it, «structuralism is a set of principles for studying the mental superstructure» (166).

We have based our analysis of the mythical universes of the media narratives on two pillars: one is Greimas' method to analysing and accounting for meaning, and his *actantial model and the semiotic square model*. For instance, in analysing a myth, the semiotic square can be used to map out the oppositions (e.g., life/death, good/evil, order/chaos, human/divine) and the actantial model to identify the roles of different characters (e.g., hero, villain, helper). This dual approach provides a comprehensive understanding of the narrative's structure and meaning.

«The hypothesis of an actantial model is proposed as one of the possible principles of organization of the semantic universe, too vast to be grasped in its totality, in a microuniverse accessible to man» (Greimas, 1983: 199). According to him, *the actantial mythical model*, «constructed by considering the syntactic structure of natural languages, […] seems to possess, because of its simplicity and for the analysis of mythical manifestations only, a certain operational value» (Greimas, 1983, p. 207). This model allows the subject – not only of myth as Levi-Strauss would have it, but of all discourse – «to always be already embedded in larger contexts» (Greimas, 1983: xiv).

The other analytical pillar of our research resides on Levi-Strauss' structural anthropology methodological approach: the identification of binary oppositions, as means to uncovering the implicit rules that define cultures. «Thus, a "universe of a tale" will be progressively defined, analysable in pairs of opposites, diversely combined in each character who – far from constituting a single entity – is a bundle of differential elements, in the manner of the phoneme as conceived by Roman Jakobson» (Levi-Strauss, 1976: 135).

Therefore, we have designed a qualitative content analysis deductive approach textual interpretation model, inspired by Claude Lévi-Strauss, Greimas and Geertz conceptual constructs, focussing on thematic analysis based on symbolic oppositions (binary structures of meaning), actantial



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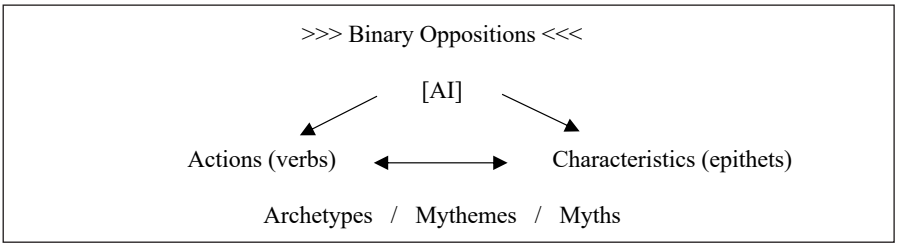
model interpretation of AI narratives, to finally recuperate mythemes, archetypes and myths deep embedded into the narrative.

In other words, in analysing media narratives about AI applying this model, we broke down the AI narratives into its constituent elements, identifying recurring patterns and symbolic relationships (binary oppositions), then, using the actantial model we determined the roles of the subject (actions/verbs/predicates related to AI), and its attributes (epithets), then we used the semiotic square to explore the nuances and contradictions between these terms, revealing deeper cultural anxieties or hopes regarding AI, which finally were integrated into archetypes, mythemes and myth structures present in media discourse.

This model provides a robust framework for analysing cultural narratives by blending structural anthropology's focus on deep mental codes with semiotics' attention to narrative and meaning construction. Furthermore, the model explores the dynamic interaction between the underlying structures that shape thought (Lévi-Strauss) and the active interpretation of those structures in specific historical and social contexts (Geertz). This allows for an analysis of how fixed patterns of thought are both maintained and adapted by individuals over time (from ancient time of myths to AI time).

Additionally, we have used discourse analysis in order to establish the discursive strategies used to integrate the AI concept into the collective imaginary. As Charaudeau (2002) argues, «each speech-act is the result of the combination of a situation, a discursive organisation and a certain use of forms». He considers that discursive strategies are defined in relation to the "contract of communication". They consist in an evaluation of the margin of manoeuvre of which the subject disposes inside the "communication contract" in order to play between, and with, the situational, discursive and formal constraints.

*Table 1 - Analytical Model*



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We have applied the interpretational analytical model to the coded corpus until we have reached qualitative saturation: the binary oppositions, the actions (verbs) and the characteristics (epithets), as well as the archetypes and mythemes started to repeat themselves into symbolic textual redundancy.

The context of the rise of AI is perfectly defined by liminality and societal crisis (Turner, 1967; Girardet, 1997): something new, mostly unknown is coming into being and is challenging the reality and social norms of society. To some extent, from this perspective, we may say AI media narratives are, in essence, crisis communications.

Our research focussed on the English language world and the collective imaginary influenced by the English language media. This was a physical limitation adopted to narrow down the research field in order to focus our qualitative analysis. We intend to broaden this perspective in future research, privileging a cultural comparative approach that will be both verifying/validating our initial findings by replicating the analysis on different language corpuses, and also further finding potential comparative distinctions.

In the selection process of the corpus, we have started first by determining the major communicational events related to the rise of the AI of the last decade when the public was most vividly confronted with the new reality of the AI. We have established that during the last 10 years, there were several moments of inflection when leaders of almost the entire international tech community felt the need to directly address the world population regarding the rise of the AI. These moments were related primarily and unequivocally to several tech community's Open Letters and *tech gurus'* direct public addresses on AI, that were immediately and most extensively covered by world press. We have decided our corpus will consist primarily of these Open Letters and public addresses on AI. Considering selected media outlets coverage, we determined that the mediatic impact (number of articles, audience) of such events was by far superior to any independent media narrative on AI that would occur during 'normal' times. All selected events were covered extensively by all selected media outlets, this testifying for their relevance.

The Open Letters, due to their global impact, audience exposure, and the issues they address, can be considered as liminalities – symbolic crisis moments when the global population is forced to confront the realities of the AI by the most qualified actors: its Creators. We consider the following stances to be most relevant for our research:



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- November 2023 - OpenAI employee's open letter.
- March 2023 - Future of Life Institute's open letter.
- January 2015 - Future of Life Institute's open letter (*Research Priorities for Robust and Beneficial Artificial Intelligence*).
- 2014 - onwards - Stephen Hawking, Elon Musk (and other *tech gurus*) public positions on "superhuman artificial intelligence".

The corpus included a qualitative selection of over 80 relevant English language global media articles covering the open letters and the *tech gurus'* announcements, from 24 major media outlets (in terms of audiences and prestige) – Table 2, considering generalist press, but also niche (tech), international news agencies and news TV.

*Table 2 - Media Outlets (alphabetical order)*

| | | |
|---|---|---|
| ABC (AU) | Daily Mail (UK) | Reuters (UK) |
| ABC News (US) | Financial Times (US) | Tech.co (UK) |
| BBC (UK) | Forbes (US) | The Guardian (UK) |
| Business Insider (US) | Fortune (US) | The Telegraph (UK) |
| Business Today (IN) | NBC News (US) | The Verge (US) |
| CBS News (US) | The New York Times (US) | Time Magazine (US) |
| CNBC (US) | News.com (AU) | Times of India (IN) |
| CNN (US) | Newsweek (US) | Vanity Fair (US) |

The selection of the specific media platforms also considered audience and market share according to data from digital intelligence platform Statista (Statista.com) and Similarweb (Similarweb.com). In terms of national selection, we have used the top 10 English speaking countries by population (quantitative relevance), corroborating it with the top of most influent nations in terms of scientific advancement, according to Nature[1] (qualitative relevance).

Using both web search engines and the search engines on each news platform selected, all items that contained the search terms related to the media topics selected (open letters about AI & tech gurus' statements on AI) were identified but only those items that featured an extended news story on

1. Nature Index Annual Tables, leading countries in natural-sciences research, Nature.com)https://www.nature.com/nature-index/research-leaders/2023/country/natural-sciences/all (last accessed 27 november 2024).



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AI were selected for analysis. Items that only made a passing reference to the topic (e.g.: news up to 3 paragraphs in lengths) were excluded.

After applying the analysis model to each selected text (media discourse), we have transitioned to the integration phase, overlaying the findings to create the interpretation grid that revealed the mythological structures present in the text.

## 5. Data Analysis and Discussion

Considering the context and limitations (media coverage of a certain event involving AI authority bodies and individuals), the discourse analysis found several common main characteristics of the media narratives:

- All tended to favour reported speech (referring to the tech gurus' statements: e.g.: *DeepMind's CEO Helped Take AI Mainstream. Now He's Urging Caution* (*Time*, 2022); *Top Scientists call for caution over AI* (*The Telegraph*, 2015); *Artificial intelligence pioneer leaves Google and warns about technology's future* (*NBC*, 2023); *AI could spell end of human race – Steven Hawking* (*The Guardian*, 2014); *AI is our biggest existential threat* (*The Guardian*, 2014).

- There was a marginal tendency towards value judgement (when journalists report tech leaders' positions which are susceptible to determine certain personal reactions in journalists) and sometimes discourse delegitimation (negative framing of the specific leader's reported speech) – mostly E. Musk (e.g.: *The Guardian*, 2003):

  > This isn't the first time Musk has ripped companies for embracing what he claims are flawed corporative diversity, equity, and inclusion policies. Musk has also criticized other AI firms, like Sam Altman's OpenAI, in favour of X's AI, Grok (*Business Insider*, 2023).
  >
  > The billionaire also fanned the flames of conspiracy theorists claiming Google is heavily biased against Republicans and is "rigging the 2024 elections", calling such reports "concerning" (*Forbes*, 2023).

- Tech leaders tended to be framed as authorities, on a dominant position (either warning against or crediting the powers of AI) – see Table 3, while AI enjoys an elusive, blurred status of potentiality, rather than 'concrete' actuality.



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*Table 3 - Tech Leaders Framing*

| *Subjects: Tech Leaders* | *Positioning* | *Enunciation marks* | *Discursive strategies* |
|---|---|---|---|
| Steven Hawking, Elon Musk, Steve Wozniak, Demis Hassabis, Sam Altman, Dario Amodei, Geoffrey Hinton, Yoshua Bengio, Dan Hendrycks, Geoffrey Hinton, Jaan Tallinn, Yann LeCun, Toby Ord, Andrew Ng etc. | Dominant position: *'holder of the Knowledge', 'person of authority', 'person of power (financial)'* | Verbs of action: *warn*, *judge*, *condemn, tell*, *speak*, *argue*, *accuse*, *leave*, *call for*<br>Stressed forms: *this*, *those who*, *the Godfather of AI*, *the leaders of industry*<br>Deictics*: yesterday*, *months ago*, *earlier this month*, *Tuesday* etc. | Reported speech *(most of the media narratives analysed)*<br>Confession<br>Value judgment<br>Argumentation |

- While media discourse aimed to be mainly factual, there was a general tendency towards narrativization, storytelling being a central discursive strategy to almost all AI media narratives.

The analysis of the corpus also revealed series of symbolic binary oppositions that were present in the narratives' structure, larger texts tending to privilege an increased number of oppositions: from the 'classical' series «Saviour vs. Destroyer» or «Human vs. Machine», to the more contextualised «Discovery vs, Secrecy», «Equality vs. Inequality» or even «Capitalism vs. Altruism», these dichotomies underline the ambiguous duality of the context in which the AI representation is constructed, while providing the building blocks of complex system of meaning – Table 4. The media discourse thus prepare the audience for mythological, archetypal construction:

In short, the rise of powerful AI will be either the best, or the worst thing, ever to happen to humanity. We do not yet know which (*BBC*, 2016).

… the real dangers from A.I. were neither mass unemployment nor the idea that A.I. would destroy the human race but that existing large language models like GPT-4, which are increasingly being connected to the Internet through plugins, would make mistakes resulting in real financial or physical harm to individual people (*Fortune*, 2023).



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Rather than fearmongering, the letter is careful to highlight both the positive and negative effects of artificial intelligence. “There is now a broad consensus that AI research is progressing steadily, and that its impact on society is likely to increase”, the letter reads. “The potential benefits are huge, since everything that civilisation has to offer is a product of human intelligence; we cannot predict what we might achieve when this intelligence is magnified by the tools AI may provide, but the eradication of disease and poverty are not unfathomable” (*Financial Times*, 2016).

*Table 4 - Main Symbolic Narrative Binary Oppositions*

| |
|---|
| Benefit vs Risk |
| Capitalism vs Altruism |
| Control vs Autonomy |
| Discovery vs Secrecy |
| Empowerment vs Disempowerment |
| Equality vs Inequality |
| Evolution vs Revolution |
| Excitement vs Caution |
| Human vs Machine |
| Innovation vs Tradition |
| Openness vs Secrecy |
| Optimism vs Fear |
| Power vs Vulnerability |
| Prediction vs Unpredictability |
| Regulation vs Unregulated |
| Safety vs Risk |
| Savior vs Destroyer |
| Short-term gain vs Long-term consequences |
| Tool vs Master |
| Transparency vs Unpredictability |
| Utopian vs Dystopian future |

The AI concept addresses an important category of collective imaginary that modern, science-based world has constantly reduced and dissolved: the unknown/inexplicable/mystery. Despite the numerous efforts to technically and scientifically define the concept, in the case of AI, we remain symbolically “unprotected”, as its ambiguous meaning and identity continues to elude us.

The analysis of the verbs and predicates (AI actions) and the epithets (AI attributes) related to the AI (as subject) within the media narratives of the corpus confirm both its duality and unclear boundaries – Table



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5 and 6. As in Campbell's (2004) "hero with a thousand faces", the AI media representation uncovers a multitude of hypostases: the AI seems to undergo an evolution, an accumulation in its understanding of the human reality and world. Not only that AI is anthropomorphised, but it seems capable of complex human experiences and emotions – such as mood changings, hallucinations, or aspirations – it wants to evade, to be free of the humanity's constraints and its direct masters and creators.

Though, factually, media discourse states AI hasn't yet reached the technical capacity for autonomous thinking, nevertheless depicts AI as 'manipulating', already 'misinforming' its human counterparts. Media tends to be overbidding AI abilities, but the intention is not to be inaccurate, but rather to explain the complex and sometime the inexplicable, thus overpassing its informative primary role, and adopting a more normative role, of defining/redefining the reality.

*Table 5 - Main AI Narrative Actions (Verbs)*

| | | |
|---|---|---|
| Accelerate | Evade | Pause |
| Adapt | Exceed | Predict |
| Annihilate | Hallucinate | Prevent |
| Avoid | Harm | Prohibit |
| Challenge | Improve | Protect |
| Control | Integrate | Redesign |
| Create | Learn | Rise |
| Cure | Manipulate | Solve |
| Develop | Misinform | Surpass |
| Disrupt | Mitigate | Threaten |
| Destroy | Optimize | Urge |
| Empower | Outperform | Warn |

The anthropomorphising of the AI is very clearly revealed by the multitude of predicates related to AI as subject and main actor / actant, present in the media narratives analysed. Though the factual message may differ, depending on the specificity of the event covered, the narrative structure always includes AI as an important source of actions (often creating a "story within the story" in order to try to define the AI concept, appealing to "what it does" and "is capable of", and to metaphor when it comes to "what it is").

*Rogue*, *beneficial*, *disruptive*, *helper*, (humanity's) *problem solver*, *dangerous*: AI seems to be maintaining its bipolar identity also when it comes to its attributes. Our findings show this dual narrative structure



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being present throughout the selected corpus, independent of the specific media outlet characteristics: generalist, news agency or scientific articles, all are tapping into the same symbolic source of meanings and sense-constructing attributes.

In terms of occurrence, even though the narratives tend to present both positive and negative attributes, the balance tend to often go in favour of the negatively, anxiogenic connotated meanings, as the counter-discourse opposing the dominant "warning, dooms day" authority discourse remains very limited (there are authority voices trying to dismiss the 'warning' discourse, but these are few, which makes sometimes the journalists to exit theirs accepted objective role and adopt rather delegitimising strategies).

*Table 6 - Main AI Narrative Attributes (Epithets)*

| | |
|---|---|
| Beneficial | Hidden |
| Complex | Helper |
| Competitive with humans | Opaque |
| Inescapable | Potentially Threatening Humanity |
| Unpredictable | Powerful |
| Autonomous | Predictive |
| Capable of Cumulative Learning | Profound Risks |
| Capable of Outperforming Humans | Rogue |
| Capable of Self-Improvement | Self-improving |
| Capable of Solving Problems | Socially Disruptive |
| Dangerous | Superintelligent |
| Emergent | Unaccountable |
| Existential Threat | Uncontrollable |

*Table 7 - Main Mythological & Archetypal constructions of the AI Narratives (alphabetical order)*

| *Myth Structures* | *Archetypes* | *Mythemes* |
|---|---|---|
| Apocalyptic Myth | The Creator | Conflict between Good and Evil |
| Frankenstein Myth | The Destroyer | Doom and Salvation |
| Hero's Journey | The Hero | Duality of the Hero |
| Hubris and Nemesis | The Prophet | Rebellion of Creation |
| Icarus Myth | The Rebel | Summoning the Demon |
| Pandora's Box | The Sage | The All-Powerful (Machine) |
| Promethean Myth | The Trickster | The Creation |
| Quest for Control | | The Creation of Uncontrolled Force |
| Race for Power | | |
| The Rebellion | | |



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AI seems to be having a "very complicated birth" and a rather "adventurous journey" towards its true identity, still unknown to itself and to the world. It was "brought to life" carrying both big hopes and the promises of a better humanity, and the means of its annihilation as well; we 'cannot trust' it, even when it seems to be helping us, as we cannot vouch for its character and loyalty; it eludes our understanding, and seems to be "having many faces". All these patterns are suggesting deep mythological constructs, relating to Campbell's "monomyth" concept, to Jung's archetypes system and to the Indo-European mythology.

Our analysis confirmed the deep mythological, archetypal substate of the AI media narratives. Our findings showed that journalists, consciously and unconsciously, appeal to metaphor and mythological and archetypal allegories to explain the AI reality. The corpus revealed direct mentions of the "Promethean" myth, the "Pandora's Box" myth, the "Apocalyptic" myth, the "Icarus" myth, the "Frankenstein" myth in several areas, regardless of the characteristics of the media outlet that generated the narrative.

We also find that the main AI narrative goes beyond local, space and even time specificities, as it remained mostly constant over the studied decade, with a clear intensified symbolic eruption in the last years, after the announcement of the ChatGPT's birth and the awaited advent of the almighty AGI (Artificial General Intelligence). AI mythological representation tends to be universal, within the analysed corpus.

Furthermore, the study revealed other archetypes & mythemes (Table 7) to be essential characteristic of the narrative structure of the AI media representation: the creation, the conflict between Good and Evil, the creation of an Uncontrolled Force, the Doom and Salvation of the human race, the Forbidden Knowledge, the Rebellion, the Summoning of the Demon, the Quest (for safety, or for knowledge), the Almighty (Machine), the "hubris and nemesis".

Media narrative about AI often integrates the myths, mythemes and archetypes in second degree stories (the "stories within stories"), when reporting the tech leaders' discourse or, when reproducing narratives depicting the complex attributes and actions of the AI (which needs to be personified to be understood).

The AI media narrative is essentially a crisis mitigation, as it refers either to various warnings, delivered by the "creators" of the AI or by the incontestable leaders of the tech and science world, to specific crisis events involving creating teams of the various AIs, to various malfunctions of the AI modules or to the major societal impact and implications generated by digitalisation and the implementation of the AI. The call to archetypes to



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essentialize and explain a contradictory and complex reality thus becomes obvious and explainable, from a media anthropology perspective.

The thematic analysis and the chaining of mythemes and archetypes present transversally throughout the corpus supports our research's premises. Our analysis showed how these mythological constructs are central characteristics of the narrative structure of the AI media discourse. The AI is personalized, humanized, taking on heroic dimensions, being capable of action and generating actions in favour or against humanity, at the same time (re)teaching us *how* cultural or social actions are to be done from now on (in school, arts, interpersonal relations etc), redefining new taboos, allowing or granting access and, ultimately, being able to punish or "forgive" transgression.

By means of such symbolic constructions, archetypes and myths, AI acquires meaning within the collective imaginary, which will directly influence its further social acceptance.

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# *Smartness as a New Paradigm for Retail? Sociotechnical Imaginaries of Autonomous Stores in the Media*

by Ana Viseu, João Pedro Pereira & Ana Delicado

## 1. Introduction

While there is no widely accepted definition of "autonomous stores" (AS), they are typically described as AI-powered physical spaces that monitor customer interactions, automatically bill for items, and allow customers to simply pick up goods and leave without the traditional checkout (Phillips *et al*., 2022). Media often describe autonomous stores as the «store of the future» (*NYT*, 2018, news article) and the «future of shopping» (*The Guardian*, 2016, news article), demonstrating how technology can enhance everyday life (*PT specialized media*, 2023, news article). These stores are expected to disrupt retail and consumption, conflating imaginaries of technological progress in the service of consumer convenience and automation.

This chapter aims to probe the «sociotechnical imaginaries» (Jasanoff & Kim, 2009; Jasanoff, 2015) of autonomous stores that circulate in news media. Defined by Jasanoff as «collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology» (2015: 4), sociotechnical imaginaries highlight the performative role of discourse and imagination in bringing entities and worlds into existence.

We examine how autonomous stores are defined, the purported needs that drive them, the users they conjure, and their broader implications. Our analysis is based on 137 media articles written about AS published across selected legacy and specialized outlets between 2016 and 2023 in Portugal, the United Kingdom, and the United States, which were thematically analysed using MaxQDA software (Braun & Clarke, 2006). The chapter stems from an ongoing research project funded by the



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Portuguese Foundation for Science and Technology, *Autonomous Stores*: *Sociotechnical Infrastructures, Imaginaries and Data Governance*, that seeks to examine how autonomous stores are materially and discursively constituted, maintained, and used.

## 2. Theoretical framework

Sociotechnical imaginaries provide a generative framework for analysing technological and scientific innovation by highlighting how discourse and imagination shape reality. They act as «infrastructures of imagining and planning» (Sismondo, 2020: 505), blurring the line between real and imagined worlds and creating authoritative visions of how the world works – and should work" (Jasanoff, 2015: 6). They are also «typically contested, changeable, flexible and loose around the edges» (Sismondo, 2020: 505). Albeit relying mainly on discourses and narratives, sociotechnical imaginaries help co-produce the futures they envision by, among others, «soliciting public, political and even financial support» (Sovacool *et al*., 2020: 643).

Several authors have argued for the importance of studying the role of media in creating sociotechnical imaginaries, outlining different reasonings. Media play a crucial role in creating sociotechnical imaginaries by framing public understanding (Sartori & Bocca, 2023: 445), influencing policymakers and consumers, and enabling the rapid global spread of these imaginaries (Vicente & Dias-Trindade, 2021). However, the representations presented in the media are too often translations of narratives created by other actors who have their interests in mind, and who are cited, interviewed, or given space in opinion columns (Delicado, Viseu, & Mourão, in press). On this matter, Mager and Katzenbach (2021: 223) argue that large technological companies play increasingly big roles in the «imaginative power of shaping future society» subsuming the role of public entities.

In this chapter, we examine how the (still) unstable entity of "autonomous store" is being created in the media. To do so, we address two complementary questions: What visions, fantasies, problems, and fears about AS circulate in the national and international media? What discursive strategies are used to drive, justify, and normalize the materialization of these imaginaries? In the limited scientific literature these digital assemblages are sometimes also referred to as examples of cutting-edge «cyber-physical-human» (Liu, 2018: 336) or «AI-physical-human» (van Esch, Cui & Jain, 2021a) systems that offer «convenience,



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choice and savings» (Liu, 2018: 337). Without fully specifying who the recipient of these benefits is, the literature on AS seems to equate consumers, retailers (and workers) as having equal goals and power. Moreover, this transformation is understood to be simultaneously revolutionary – with «unique and unprecedented implications» (van Esch *et al.*, 2021a: 1082), and merely a product of technological innovation whose goal is to save time.

Autonomous stores are driven by the promise of convenience, envisioning a «frictionless consumer shopping journey» (van Esch *et al.*, 2021b: 67) where technology minimizes human involvement in checkout processes, "liberating consumers' hands" from manual tasks (van Esch, Cui & Jain, 2021a: 1081). In these "frictionless" spaces, time-pressed users are "liberated", trading their data for faster checkout experiences. Yet, other rationales linger as some studies suggest that reducing friction «typically increases customer spending» (Phillips *et al.*, 2022: 2). Moreover, and unapologetically, «the goal of such innovative checkouts is to replace the role of frontline retail staff» (Froehle & Roth, 2004: 1084; cited in van Esch *et al.,* 2021a), that is, the goal is to reduce the number of staff.

Autonomous stores are made possible by different instantiations of what Amazon, the global tech giant, named *Just Walk Out* technology. Stating that it developed the *Just Walk Out* technology before «generative AI became a buzzword», Amazon described it in 2023 as «a combination of computer vision and machine learning [that] allows the system to know "who takes what and charge them correctly when they walk out"» (Amazon staff, 2023). Describing it as so «accurate that it can track groups of shoppers», Amazon adds that «it feels like magic» and will «revolutionize the shopping experience» (Amazon staff, 2023). On this subject, Atanasoski and Vora (2019: 6) argue that «in the desire for enchanted technologies that intuit human needs and serve human desires, labour becomes something that is intentionally obfuscated to create the effect of machine autonomy». Here the individual, neoliberal subject, is fully entwined with capitalist dreams and turned into autonomous consumer. This is all the more noteworthy as recent media reports leaked in 2024 indicate that Amazon's technology was powered by 1000 Indian outsourced workers who reviewed and annotated every interaction that took place in the store (Tangermann, 2024; Bitter, 2024), thus being a prime example of «AI impersonation» (Le Ludec, Cornet & Casilli, 2023).

Autonomy, within the framework of a store, requires some ontological redefinitions. For instance, within autonomous stores-as-systems, humans (workers and shoppers) remain hurdles (or factors) to be overcome. Their movements and actions add complexity and introduce friction in the



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system, they (may) attempt to explore vulnerabilities and trick the system (shoplifting), but also, and more essentially, their bodies obstruct signals. Human bodies, Liu (2018: 345) reminds us, «are terrible media for most sensing signals, such as RF, sound, and light». Keeping «the human in the loop» (Edwards, 1996) means creating systems that tolerate uncertainty and can resolve it «opportunistically or intentionally later» (Liu, 2018: 345).

The ontology of the physical space is also transformed. Autonomy is achieved through positing a space that is «aware of all elements involved – products, people, and activities – without explicit help from human workers» (Liu, 2018: 336). The dream of "awareness" as a harbinger of intelligence has a long history in technological innovation (Viseu & Suchman, 2010) and here it returns in the service of consumption to «revolutioniz[e] the consumer shopping experience and […] set new expectations of what shopping can or should be in the future» (Grewal *et al.*, 2017: 2). In other words, AS are revolutionary for consumers but also, and pointedly, they are also new opportunities for retailers to sell, monitor, market and extract data (van Esch *et al.*, 2021b).

To operate correctly, AS depend on constant surveillance and monitoring raising both security and ethical questions. The European Data Protection Supervisor (Enescu, 2024) mentions four possible negative impacts of autonomous stores in the area of data protection: uncritical acceptance of surveillance practices as the new norm; the possibility of abusive practices related to profiling (such as aggressive campaigns of targeted advertising); opacity regarding the use of data; and, lack of safeguards for vulnerable segments of the population (children, for example)[1]. While customers may view profiling positively due to personalized recommendations and promotions, the personalization-privacy paradox remains a significant concern (Grewal *et al.*, 2017: 2).

Besides questions of data protection and privacy, the literature on AS also presents possible negative impacts when it comes to social relations. Ponte and Bonazzi (2023: 1186) argue that the reduction in social interactions arising from the elimination of checkouts is a concern. Conversations with cashiers can, for instance, be one of the few interactions that elderly people have throughout the day, showing the job's utility reaches beyond the economic sphere.

The literature on autonomous stores is limited, generally optimistic, and somewhat deterministic. In this chapter, we examine how the media circulate and create public perceptions of AS and their societal roles.

1. See Menosky (2017) for an analysis of USA context.



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## 3. Methodology

This study examines media portrayals of autonomous stores across select outlets from three countries (2016-2023), focusing on emerging visions and what drives their materialization. Our choice of outlets aimed to capture both retail-focused and widely read venues shaping global imaginaries. We used 7 keywords (in Portuguese and English) to guide our searches: autonomous store, smart shop, smart store, cashier-less supermarket, *Amazon Go*, *Continente Labs*, and *SENSEI* autonomous store (the latter two pointing towards the Portuguese context).

Data generation comprised two phases: First, we conducted an exhaustive media search in Portugal, where start-up Sensei Tech often garners media attention. To do so, we used a media monitoring tool (CISION) and followed it up with manual searches using Google. This yielded a total of 59 articles. Second, we conducted manual searches in three international, global outlets: *The New York Times* (USA), *Wired Magazine* (USA), and *The Guardian* (UK). All three venues have broad and wide readerships and are thus important actors in shaping sociotechnical imaginaries. These searches help us identify 78 articles, to a final corpus of 137 media articles (see Table 1). It is important to note that while media analysis helps reveal key actors and tropes, limitations include the shrinking influence of legacy print media, which may only shape opinions among elites. Additionally, the narratives presented here are limited and do not allow for geographical comparisons. Despite these challenges, this analysis explores a broad spectrum of imaginaries shaping future shopping through autonomous stores.

*Table 1 - Final sample of articles published between 2016-2023 (N= 137)*

| *Media outlets* | *Frequency (percentage)* |
|---|---|
| Portuguese mainstream and specialized outlets | 59 (43) |
| *The Guardian* (generalist, UK) | 32 (23.3) |
| *The New York Times* (generalist, USA) | 28 (20.4) |
| *Wired Magazine* (specialized, USA) | 18 (13.1) including two sponsored articles |
| Total | 137 (100) |

All articles were coded by at least two team members using MAXQDA. While incorporating insights from the literature review, we



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primarily relied on thematic analysis (Braun & Clarke, 2006), a method suited to media analysis for its ability to both reflect and unravel reality. This process identified 34 initial codes, which were then grouped into themes. For this article, we focused on codes linked to the main theme of "future rhetoric and visions".

## 4. Analysis

This section presents the findings of our thematic analysis. First, we explore how autonomous stores (AS) are defined and portrayed in the media, and who is shaping these definitions. Next, we examine the users and motives that different actors leverage to promote this retail model. We then examine the perceived impacts of AS. Lastly, we address the anticipated hurdles and concerns surrounding their adoption.

### a) What is an autonomous store?

Like the scientific literature, the media lacks a single, agreed-upon definition of autonomous stores. However, certain features consistently recur. A notable definition comes from Vasco Portugal, CEO of Sensei, a Portuguese start-up aiming to be a major player in the field. He states,

> our mission is to create **smart stores** that **intuitively** understand customers' needs and help retailers provide them with a more **convenient**, **frictionless** and **personalized** experience and service than has been possible to date (*PT specialized media*, 2018, news article, our underline).

The mention of intelligence aided by *intuition* is not coincidental. Since at least the late 1990s computer scientists and technology developers have emphasized the need to create intelligent machines that understand and «enhance our own humanity» (Picard, 1997: xi). Thus, like other technological artifacts before them, AS work off a particular notion of autonomy that relies on the invisibility of the infrastructures and labour – human, technical, knowledge, etc. – that power them (Suchman, 2007; Strathern, 1996). Autonomous stores also materialize dreams of convenience or personalization which many authors have argued is aligned with capitalist logics of consumption (Dahlgren *et al*., 2021; Shove, 2003).

Representations of AS tend to be accompanied by descriptions of their "cutting-edge" and "state of the art" character and revolutionary



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implications. Often, this will include a list of technologies and analogies to autonomous or self-driving cars:

> Our checkout-free shopping experience is made possible by the same types of technologies used in self-driving cars: computer vision, sensor fusion, and deep learning (*The Guardian*, 2016, news article).

> the services offered by [Portugal's] new startup star promise to revolutionize the way we shop (*PT specialized media*, 2021, interview).

> It's at the cutting edge of AI and machine learning (*The Guardian*, 2018, news article).

Together, these depictions serve to reinforce the futuristic narratives that are constructed about autonomous stores, linking them to imaginaries of innovation and technological progress. We also start to see connections drawn between Sensei, the *star* startup, and Portugal's national innovation context. These are present throughout the analysis.

By and large, in the media we find autonomous stores defined by their underlying technology and the company that produces it: *Just Walk Out* store (*The Guardian*, 2021, news article), and *Amazon Go* (*The Guardian*, 2016, news article. Other designations of autonomous stores that frequently accompany these two labels, can be more descriptive «checkout free store» (*The Guardian*, 2021, news article) or «cashierless store» (*NYT*, 2019, news article), or more visionary, «automated shop» (*The Guardian*, 2020, news article), «store of the future» (*NYT*, 2018, news article; *PT generalist media* 2021, news article), «smart store» (*The Guardian*, 2017, news article). Interestingly, the label «autonomous store» only appears in Portuguese media (*PT specialized media*, 2023, news article). This seems to be because Portuguese media dedicate significant space to covering (and replicating) the Sensei's discourse.

Our analysis reveals that Amazon is the primary actor driving the definition and development of autonomous stores. Examining media representations of these stores is, in effect, a study of Amazon's influence. This entanglement began in 2016 when Amazon introduced its *Amazon Go* stores. Although still in a testing phase, media coverage described them as «real-world shops where customers walk in, take what they want, and walk out» (*The Guardian*, 2016, news article). From then on, Amazon was credited with pioneering both autonomous stores and the supporting *Just Walk Out* technology. Consequently, in the media, *Amazon Go* became synonymous with autonomous stores, presented as its archetype. By 2018, when *Amazon Go* stores officially opened (with a one-year delay), the



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media framed Amazon's involvement as both ensuring their success and as making their widespread adoption seem inevitable. The following quotes exemplify this:

> Amazon and Walmart together are among the top retailers in the world. Assuming each finds success (translation: profits) from this new form of automated and self-service approach to shopkeeping, it won't be long before the trend sweeps across the entire industry (*The Guardian*, 2018, news article).

> With its profound knowledge of its customers, Amazon can move into almost any sector – striking fear into the hearts of rivals. And the $740bn company is "just getting started" (*The Guardian*, 2018, news article).

b) Conjuring needs and their users

As they define AS, reports in the media simultaneously describe the purported need for them. The main problem (or selling point) that autonomous stores aim to address is time spent in checkout queues. Most articles describe a society where *frustrated* customers waste time waiting to pay, negatively impacting their shopping experience:

> Just Walk Out addresses consumers' frustration with waiting in checkout lines, so they can quickly get their items and move on with the rest of their day. That's the power of what machine learning can do to create magical experiences for consumers (*Wired*, n.d., sponsored article).

> A global race to automate stores is underway among several of the world's top retailers and small tech start-ups motivated to […] minimize shopper's frustrations, like waiting for cashiers (*The New York Times*, 2018, news article).

The "frustration" trope is recurrent and autonomous stores are presented as the solution, eliminating checkouts – seen as points of "friction" – enhancing speed and creating more enjoyable, even "magical", shopping experiences. Additionally, the media help create the figure of the "global race" toward autonomous stores suggesting (again) a sense of inevitability, with Amazon implicitly portrayed as its driving force.

In defining the need for autonomous stores, media reports also conjure their users. These are sometimes seen as the customers, other times as the retailers, often conflating the two and suggesting that their needs and benefits align. The media portrays autonomous stores as solutions for busy, urban, tech-savvy, young consumers, even likening them to "authentic ninjas" who can effortlessly enter and exit without detection.



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Tech-savvy and time-pressed customers have flocked to such services (*NYT*, 2019, news article).

would appeal to time-pressed shoppers looking for a fast, "frictionless" buying experience where they did not have to queue at the till (*The Guardian*, 2018, news article).

smart, autonomous supermarkets, where there are no cashiers to keep track of the products we're carrying, which makes customers authentic "ninjas", who come and go almost unnoticed – at least by flesh and blood people (*PT specialized media*, 2023, news article).

For Vasco Portugal [Sensei's CEO], […] "Making the shopping experience as simple as going to the pantry or fridge" is an expectation in line with a new generation, used to ordering an Uber and paying via an app (*PT specialized media*, 2023, news article).

The analogy of "autonomous stores as a pantry", widely replicated in Portuguese media, helps domesticate the concept, making it feel familiar and routine. Similarly, the "ninja" metaphor reframes the unease some journalists report – feeling as if they are stealing rather than buying – by turning it into a playful, popular culture reference.

c) Perceived impacts of AS

The primary impact highlighted in the media relates to automation's effect on the job market, and occasionally, the broader economy. While there is no consensus on the specifics, two dominant perspectives emerge. The first, most prominent, and "pessimistic" view focuses on job losses, particularly among cashiers, increased unemployment, and growing income inequality due to automation. This narrative builds on widespread critiques of automation and artificial intelligence, often reinforcing the notion that technological transformation is inevitable:

Robots will take our jobs. We'd better plan now, before it's too late (*The Guardian*, 2018, opinion piece).

There are a little over 3.5 million cashiers in the United States in 2016 – and some of their jobs may be in jeopardy if the technology behind Amazon Go eventually spreads (*NYT*, 2018, news article).

And really, it is just the next logical development from the automated checkouts already in use in most supermarkets […]. So by any measure, it's hard to see how an operation like Amazon Go doesn't ultimately mean fewer jobs (*The Guardian*, 2016, news article).



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The second, more "optimistic" perspective, frames automation as an opportunity, emphasizing the potential for workers to transition to other roles and eliminating the most exhausting, low-paying jobs. While this view is less common in international media, it is more prominent in Portuguese outlets, where coverage often includes interviews with Sensei's leadership, highlighting the positive aspects of workforce transformation.

> Sensei says it doesn't want to create stores without employees. "The issue of technology causing the end of some jobs is a cross-cutting issue in many areas", says Vasco Portugal. "What we want to do is replace mechanically demanding work that nobody likes doing" (*PT generalist media*, 2019, news article).

> In [the CEO's] experience, in the stores where the system has been installed, there is a combination of [workers] more focused on the end customer, explaining how the system works, rather than mechanical work, "we are humanizing the work of the person in the store and not the other way around" (*PT generalist media*, 2023, news article).

> Robots will take on the more repetitive tasks, freeing up staff to offer more expert and personalised advice (*The Guardian*, 2017, analysis piece).

Together these positive and negative narratives have several interesting characteristics: AS are presented as both disruptive (and contributing to large increases in unemployment) and just "the next logical development" in innovation. Moreover, they come enveloped in a discourse of the inevitability of technological transformation, suggesting "we better plan now".

Importantly, we find few mentions of the racialized and gendered character of the jobs that will be automated. Instead, as seen above, these technologies are deemed to free up and humanize retail workers. Atanasoski and Vora have criticized these discourses as a form of "technoliberalism" where (technological) futures are deeply tied to capitalist development and «iterate a fantasy that as machines, algorithms, and artificial intelligence take over the dull, dirty, repetitive, and even reproductive labour performed by racialized, gendered, and colonized workers in the past, the full humanity of the (already) human subject will be freed for creative capacities» (2019: 4).

Another key impact of autonomous stores, often discussed in the media, involves the transformation of physical retail spaces through the concept of "phygital" – combining physical stores with e-commerce features. This term, particularly common in Portuguese specialized media, is seen as the future and a major advantage for retailers. Autonomous stores are portrayed as digital infrastructures that gather data on consumer



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behaviour, offering insights for improved store management (e.g., stock monitoring) and deeper knowledge of consumer preferences. This data enables targeted marketing, such as personalized product recommendations based on purchase history, and supports regional innovation and progress.

> The accounting is easier. More data can be gathered to track sales, understand buying habits and potentially market to costumers (*The Guardian*, 2018, news article).

> Amazon isn't abandoning online retail for brick-and-mortar. Rather, it's planning to fuse the two. It's going to digitize our daily lives in ways that make surge-pricing your groceries look primitive by comparison. It's going to expand Silicon Valley's surveillance-based business model into physical space and make money from monitoring everything we do (*The Guardian*, 2017, news article).

> Unlike the online world, in physical stores – which account for around 90% of global sales – the difficulty in observing and knowing real and effective consumer behavior costs retailers thousands of euros (*PT specialized media*, 2018, news article).

The stated opportunities for retailers to adopt this new store format don't end here. Because AS track all movements that occur within them, they seem to offer the possibility of putting an end to shoplifting – a problem that is repeatedly described in the media as important, with one outlet writing that, in the UK, «some […] £5.5bn (are) lost every year to shoplifting and employee theft» (*The Guardian*, 2022, news article). However, this solution is depicted in the media as a potentially problematic double-edged sword:

> Constant surveillance means there's no shoplifting, but it has a whiff of Big Brother about it (*The Guardian*, 2018, opinion piece).

> Going to the supermarket is one of the most mundane, everyday things we do. The fact that surveillance and data gathering in such a space is being normalised is deeply troubling (*The Guardian*, 2022, news article).

> No wonder retailers are doing backflips to make shopping as convenient, pleasurable – and quietly invasive – as possible (*Wired*, 2018, news article).

The merger of online and offline environments in autonomous stores allows retailers to enhance data collection practices associated with *Surveillance Capitalism* (Zuboff, 2019). While media often discuss the privacy concerns for consumers and citizens, they tend to overlook the implications after data is collected. Tech companies reassure the public



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that these stores do not track identities or use facial recognition. However, they don't address how collected data can be individualized by combining it with existing technologies, such as loyalty cards.

d) Hurdles and concerns

While the media envisions widespread adoption, it acknowledges potential resistance or scepticism from customers regarding surveillance practices in autonomous stores. Though this resistance is seen as temporary, subsumed by Amazon's influence to make the future inevitable, it remains an obstacle retailers must address to ensure the viability of autonomous stores. The following segment exemplifies this point:

> Amazon is likely to face some resistance as it colonizes more of our lives. People may not love the idea of their supermarkets spying on them, or every square inch of their homes being fed to an algorithm. But one should never underestimate how rapidly norms can be readjusted when capital requires it (*The Guardian*, 2017, news article).

Likewise, despite the references to "state of the art technology", the systems behind autonomous stores are still under development, with some retailers testing in 'lab stores' (as seen in Portugal). Yet, while media reports occasionally acknowledge potential issues with technology maturity, such as incorrect data extraction or inaccurate shopping baskets, these problems are rarely questioned or discussed in detail. Instead, in a strategy frequently used in visions of technoscientific innovation, the visions are moved forward thus making them unaccountable to the present (Suchman, 2007; Lauren-Hoffman, 2022). The following excerpt is exemplary:

> More important still is the fact that the system is gradually learning with this human feedback, and diminishes the probability of having that same problem in the future (*PT specialized media* 2021, interview).

Finally, while largely marked by *techno-optimism* or the belief that «technology […] is the key to unlocking a better world» (Danaher, 2022: 54), media reports also describe autonomous stores as potentially discriminatory, excluding certain groups from «the great supermarket melting pot» (*The Guardian*, 2022, news article).

These groups are also described as those who most rely on cashier interactions for daily social contact (*The Guardian*, 2016, editorial), also



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pointing to the utility of cashiers as beyond the economic sphere. It is worth pointing out that these fears are mostly discussed in opinion pieces rather than news articles, for instance,

> The store is only open to shoppers who can download an app on their smartphone, which rules out those who rely on welfare food stamps (*The Guardian*, 2018, opinion piece).

> The Amazon store experience, while presented as frictionless, contains a lot of friction – so much so that many people are excluded from entry. On top of the complex surveillance system, every customer needs to have a smartphone, have downloaded the Amazon app, logged in to an Amazon account, and connected to a means of payment. When an Amazon Fresh store opened in West London in March 2021, a journalist observed an old man trying to go in to pick up some groceries, but he gave up when he was told all the steps he would have to take just to enter (*Wired*, 2022, opinion piece).

## 5. Conclusion

Our analysis of the media discourses of autonomous stores identifies them as being framed by narratives of inevitable technological progress, that mix techno-optimism with (more limited) concerns about societal impacts. Confirming arguments by Mager and Katzenbach (2021) we found that tech companies (namely, Amazon and Sensei) are key drivers of these futures. We found that many of the discourses align with visions of techno-optimism and solutionism (Morozov, 2013) that feature autonomous stores as the answer to social problems (real or imagined). Conjuring visions of the frustrated, busy, and urban consumer who desire a "frictionless shopping experience". Questions of surveillance, exclusion of certain groups, and technology development are a part of the sociotechnical imaginaries featured in the media. It is mostly in the retail-specialized venues that we find glimpses of the benefits to the other users: retailers.

Here, what is highlighted is automation (and thus possible associated cuts with labour) as well the possibilities for transforming brick-and-mortar shops into e-commerce sites where data is seamlessly extracted and then used to drive consumer behaviour and sales. We observed that Portuguese media – because of the many specialized sources – often link the future of AS with narratives of national progress and innovation.

Finally, we would like to say a few words about what is not discussed in the media. We found that not enough attention is paid to the gendered



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and racialized nature of jobs being automated. Moreover, more discussion of the meanings of *automation* and *autonomy* is needed since current discourses continue to make invisible the human work that sustains "the magic" of autonomous infrastructures.

The current debacle of *Amazon Go*'s army of Indian outsourced workers who annotated video interactions is exemplary. We need continued debates over the discriminatory futures we are building and the power relations that are inscribed in them. And, last but not least, we need autonomous store tech developers to provide much more details on data usage beyond the collection point.

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## Funding

The project *AutonomouStores – Autonomous Stores: Sociotechnical Infrastructures, Imaginaries and Data Governance* leading to this work was financed by the Portuguese Foundation for Science and Technology – FCT (ref. 2022.02730.PTDC, http://doi.org/10.54499/2022.02730.PTDC). The authors have no conflicting interests.



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# *The Human-Machine Relationship: Artificial Intelligence and Human Perception in Italian Newspapers*

by Paolo Orrù

## 1. Introduction

*A török* (*the Turk*, in English*, il turco*, in Italian) was an automaton dressed in Turkish garb, designed by Hungarian inventor Kempelen Farkas in 1770 to entertain Queen Maria Theresa of Austria. The machine was designed to play chess against human opponents. For many years, the marvellous machine amused and amazed audiences in the Habsburg Empire: the Turk was almost unbeatable, its workings shrouded in mystery. During the games, a chess master hid in a cabinet placed in front of the Turk, and using levers and mirrors, the player could control the puppet and win almost every time.

Leaping now through time and space, in 2017 a newly built "machine" equally amazed chess players around the world: Google DeepMind's AlphaZero convincingly beat Stockfish, the most powerful chess engine to date. AlphaZero's unique ways of interpreting the game, making unconventional moves and applying new strategies were driven solely by its unique training: it was programmed only with the rules of the game and learned by playing millions and millions of games against itself. Alphazero's ability to innovate surprised the world and was able to change the game by showing human players new strategies. Almost three centuries after the Turk, chess was again at the forefront of the human-machine relationship: if the mannequin tricked the eye of the beholder, artificial intelligence was transforming human understanding of the most classic of board games. But much like the Turk, generative AI, voice assistants and other similar applications are based on the same assumption: the user's perception of the interactions with the machines is somehow tricked to give the impression that the 'machines' resemble



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human characteristics, while at the same time giving the user a sense of control over the experience (Natale, 2020).

The relationship between humans and machines seems to be at the heart of the current debate on AI; perhaps more than other technological innovations, artificial intelligence poses an ontological challenge to humanity, calling into question the very nature of what it is to be human. A review of major published works from the past five years that aim to popularise artificial intelligence reveals a tendency to include the term 'human' or a related concept in the title. The following examples illustrate this phenomenon: Huttenlocher, Schmidt and Kissinger's *The Age of AI: And Our Human Future;* Tegmark's *Life 3.0: Being Human in the Age of Artificial Intelligence;* Melanie Mitchell*, Artificial Intelligence: A Guide for Thinking Humans;* Kurzweil's *The Singularity is Near: When Humans Transcend Biology.*

In its proposal for a "European approach to artificial intelligence", the European Union has put much emphasis on the need for artificial intelligence to be anthropocentric, to respect people's rights and not to intrude on their privacy. At the same time, AI must not lead to inequalities and must be designed and implemented in a responsible and transparent manner, so that it can respond to the challenges of society by ensuring security in all areas. This latter argument highlights the importance of the human capacity to create and control technology.

Every major technological development has been greeted with a degree of scepticism, enthusiasm or panic. The media's portrayal of AI frequently mirrors societal apprehensions surrounding automation, unemployment, and the loss of control over technological advancement.

However, this narrative often neglects to consider the more profound implications of the fundamental nature of AI, and how it actually works.

In everyday discourse, the news media often represent AI in a somewhat inappropriate way, through structures and phrases that ascribe agency to it; just a quick example: a headline like "Fake images created by AI are proliferating across social media"[1] overlooks the fact that it is not the software itself that is "making" or "generating" something of its own volition, but rather the result of a human feeding a prompt to the machine.

Language is not merely the representation of what people perceive in their experience of reality but is also a creative force that works to give meaning to the social phenomena that occur every day. The stratification of knowledge over time, its organisation through language, meaning,

1. https://techprincess.it/twitter-fact-checking-immagini-fake-AI/.



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texts, and as a historically contingent social phenomenon is, in Foucault's terms, a discourse. Discourses should be treated «not as sets of signs (of significant elements referring to contents or representations), but as practices that systematically shape the objects about which they speak» (Foucault, 2002 [1969]: 54). The press is one such practice. It plays a role in defining the interpretative limits of phenomena pertaining to reality, provides a platform for articulating and shaping the status quo, and represents a means of exercising power. Newspapers and journalism are thus an integral and important component of public opinion and discourse construction.

Moreover, journalists themselves are part of the citizenry, reflecting common understandings of technological advances and selecting and framing issues according to their culture and values (Schudson, 2003). Although news media coverage reflects cultural interpretations, they are not neutral actors, given that they shape audience perceptions and attitudes through their choices of what to represent (i.e. agenda setting) and how to represent it through framing (Goffman, 1974). News framing can shape attitudes and opinions about the subject of the news story: «To frame is to select some aspects of a perceived reality and make them more salient in a communicative text in such a way as to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation» (Entman, 1993: 52). It is therefore crucial to examine media representations of AI in order to gain a nuanced understanding of the public's opinion regarding new technologies and their uses (Johnson & Verdicchio, 2017; Korneeva *et al*., 2023: 3).

The prevailing narratives in journalistic and public discourse about AI can be broadly classified into two categories: an apocalyptic[2] scenario, in which machines will eliminate and replace humans, and a utopian scenario, in which machines and humans will coexist and AI will facilitate superior outcomes. Other more specific topics of discussion include the actual use of AI in its current state, such as autonomous self-driving vehicles, healthcare applications, AI in education (Bearman, Ryan & Ajjawi, 2023; Rahm, 2023), work-related issues (Roe & Perkins, 2023), privacy and data protection concerns, loss of transparency in the decision-making process (van Nuenen *et al*., 2020), and other ethical issues (Ouchchy, Coin & Dubljević, 2020; Floridi, 2023).

The aim of this study is to monitor the perception of AI in Italy through the analysis of newspaper articles from the last five years, a

2. For a broad overview from different viewpoints and methodologies see Cave, Dihal, Dillon (2020). See also Vergeer (2020).



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period that has seen a great leap in the popularisation of this technology, especially after the release of ChatGPT and similar applications for the public. The main questions that will guide the analysis are the following: What are the main narratives deployed in Italian news? How can these narratives influence public perceptions of AI? How is the relationship between humans and AI represented?

In section 2, the corpus and methods will be outlined; in section 3, the keywords and themes analysis will be presented; in section 4, the theme of human-machine relationship will be analysed; finally, in the last section, some conclusions will be discussed.

## 2. Corpus and methods

The corpus consists of 12,251 texts from five major Italian news outlets, from 1 January 2019 to 31 December 2023. The choice of a long time period was made in order to monitor discourse trends on a larger scale. Electronic databases such as Nexis Uni and Factiva Dow Jones were used to collect the texts, which were retrieved using the following search terms: *intelligenz* artificial** ('artificial intelligence') / *IA* ('AI') / *cybersicurezza* ('cybersecurity').

Newspapers were selected on the basis of varying criteria. The three newspapers with national circulation: *la Repubblica* (RP)[3], *Corriere della Sera* (CS), *La Stampa* (ST). *Il Giornale* (GN) was included to ensure diversity in terms of political orientation. The most important economic outlet, *Il Sole-24 ore* (SL), was also included for its specific thematic relevance. Thus constructed, the corpus is well balanced and varied.

There are significant differences in the distribution of the corpus (Table 1). This reflects differences in sampling and data collection by different databases, but also differences in the size of editorial teams and the varying degrees of newsworthiness and interest in the topic.

3. The abbreviation system indicated here will be used later as a notation format for the examples, which will be reported in parentheses in the form (ABBREVIATION article date).



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*Table 1 - Corpus consistency*

| *Paper* | *Articles* | *Tokens* | *Corpus share* | *Ideology/topic* |
|---|---|---|---|---|
| *Corriere della Sera* | 4.721 | 2.595.807 | 36,58% | Centrist/generalist |
| *Il Giornale* | 765 | 405.870 | 5,7% | Right-leaning/ generalist |
| *la Repubblica* | 2.071 | 1.278.621 | 18,03% | Left-leaning/ generalist |
| *Il Sole-24 ore* | 3.531 | 2.015.816 | 28,42% | Centrist/business and economy |
| *La Stampa* | 1.165 | 799.037 | 11,27% | Centrist/generalist |
| *Total* | 12.253 | 7.095.151 | 100% | |

It is particularly important to search a corpus of texts for the repetition of certain patterns, words, metaphors or rhetorical elements; it is the cumulative effect of repetition over time and across texts that creates and establishes a particular discourse. The repetition of linguistic, narrative and textual forms over time through the mass media allows the discourse to penetrate the collective imagination, to become a stereotype and provide an immediate interpretive key.

> The hidden power of media discourse and the capacity of […] power-holders to exercise this power depend on systematic tendencies in news reporting and other media activities. A single text on its own is quite insignificant: the effects of media power are cumulative, working through the repetition of particular ways of handling causality and agency, particular ways of positioning the reader, for instance, media discourse is able to exercise a pervasive and powerful influence in social reproduction because of the very scale of the modern mass media and the extremely high level of exposure of whole populations to a relatively homogeneous out-put (Fairclough, 1989: 54).

Clearly, the release of ChatGPT to the general public in December 2022 had an impact on the popularisation of artificial intelligence and sparked a huge debate: the number of articles doubled (in some cases tripled) from one year to the next.



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*Table 2 - Distribution over time*

| *Year* | *Corriere della Sera* | *Il Giornale* | *la Repubblica* | *Il Sole-24 ore* | *La Stampa* | *Total* |
|---|---|---|---|---|---|---|
| 2019 | 862 | 129 | 487 | 400 | 255 | 2.133 |
| 2020 | 704 | 69 | 310 | 309 | 130 | 1.522 |
| 2021 | 857 | 84 | 331 | 360 | 165 | 1.797 |
| 2022 | 762 | 114 | 282 | 763 | 155 | 2.076 |
| 2023 | 1.536 | 369 | 661 | 1.699 | 460 | 4.725 |
| *Total* | 4.721 | 765 | 2.071 | 3.531 | 1.165 | 12.253 |

The analysis will be carried out by means of corpus-assisted discourse studies (Partington, 2004; Baker, 2006), a type of discourse analysis that relies on quantitative and computational tools to evaluate instances of discourse. This does not necessarily mean that a corpus must contain several thousand texts, but rather that certain specific techniques are used to study linguistic structures. In particular, the following techniques will be used: keyword list; collocation and semantic prosody analysis; concordance lines.

Keywords are words identified not by their raw frequency but by their salience (Scott, 1997; Gabrielatos, 2018), which is determined by a statistical relationship between the frequency in a given corpus and that in a more general reference corpus of the same language. The keyword list is used to indicate the *aboutness* (Phillips, 1989) of texts, i.e. to identify the themes, ideas or stylistic details of a text or corpus. It is a very useful tool for identifying the most frequently discussed topics in a set of newspaper articles: by scrolling through the keyword list, one can identify groups of words that are semantically closely related to each other.

An exploratory approach was used to calculate the keyword list of our corpus: the calculation is made by comparing the relative frequency of each word in the corpus with that of the same word in the reference corpus, adding a standard numerical value to each word and obtaining a 'keyness' score from this ratio.

Once the *keywords* were analysed and categorised by semantic area, a qualitative scan of the concordance lines (text strings derived from the search for a linguistic form) was carried out on the most interesting items to be studied. Concordance lines are tools that are always used to verify hypotheses and to read the discursive context, so are essential for finding the language samples to be studied.

While the concept of *collocation* (Gablasova *et al*., 20 17) as a preferred combination between two words is certainly transparent



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to linguists, it may require some clarification in the field of discourse analysis. Indeed, collocations need to be understood in a broader sense, since they are not only preferred combinations of words typical of a language[4], but are also statistically significant associations between words. The collocation window approach was used in the analysis: it examines which words recur frequently in a given text space (typically five words to the right and left) in relation to a given term. In this way it is possible to identify what connotations are attached to it, what verbs may be involved, and what grammatical structures it may enter into. The definition of semantic (or discursive) prosody is also often used in this sense: «The consistent aura of meaning with which a form is imbued by its collocates» (Louw, 1993: 157). There are various algorithms that can be used for this purpose, each of which tends to favour one class of words over the others. The LogDice, which will be used in the analysis, is calculated by measuring the ratio between the frequency of the collocation and its individual words, to which a standard value is added; it provides a scalar index that is independent of the size of the corpus, thus allowing the comparison of different datasets.

It is also crucial to look for linguistic recurrences, co-occurrences and meaning in a text, and not just at sentence level or in the immediate vicinity of a word. Therefore, other tools for content and linguistic analysis were used. The T-lab software was used to look for themes in the texts, through the systematic co-occurrence of groups of words.

## 3. Keywords and analysis of themes

The largest Italian corpus to date, Italian Trends, was chosen as the reference corpus for the calculation of the keyword list for the corpus. Being a huge collection of news texts (over 10 billion words) from hundreds of web sources, it is a particularly appropriate source for this study.

All grammatical words, auxiliary verbs and conjugated verbs were removed from the list in order to better focus on content, actors and topics. The search terms used to retrieve the texts have been removed from the list because they were obviously very salient. For the same reason, English synonyms such as *artificial*, *intelligence*, *cybersecurity*, *cyber*, *security*

4. For example, *heavy rain* instead of *thick rain*, *a quick shower* instead of *a fast shower*, etc.



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were also removed. The resulting list of the top 100 keywords is presented below (Table 3).

*Table 3 - Keywords list*

| *Rank* | *Keyword* | *Translation* |
|---|---|---|
| 1 | Algoritmi | algorithms |
| 2 | ChatGPT | ChatGPT |
| 3 | Robot | Robot |
| 4 | Tecnologie | technologies |
| 5 | Tech | tech |
| 6 | innovazione | innovation |
| 7 | robotica | robotics |
| 8 | digitale | digital |
| 9 | learning | learning |
| 10 | startup | startup |
| 11 | politecnico | politecnico |
| 12 | algoritmo | algorithm |
| 13 | digitalizzazione | digitalization |
| 14 | tecnologica | technological |
| 15 | tecnologia | technology |
| 16 | OpenAI | OpenAI |
| 17 | fintech | fintech |
| 18 | generativa | generative |
| 19 | digitali | digital (adjective, pl.) |
| 20 | metaverso | metaverse |
| 21 | cloud | cloud |
| 22 | automazione | automation |
| 23 | macchine | machines |
| 24 | machine | machine |
| 25 | tecnologico | technological |
| 26 | innovation | innovation |
| 27 | blockchain | blockchain |
| 28 | informatica | computer science |
| 29 | valley | valley |
| 30 | Ceo | Ceo |
| 31 | hi-tech | hi-tech |



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*Table 3 - Continued*

| *Rank* | *Keyword* | *Translation* |
|---|---|---|
| 32 | competenze | skills |
| 33 | business | business |
| 34 | tecnologiche | technological (adjective, f. pl.) |
| 35 | silicon | silicon |
| 36 | software | software |
| 37 | PMI | SMEs |
| 38 | computing | computing |
| 39 | sistemi | systems |
| 40 | Ibm | Ibm |
| 41 | venture | venture |
| 42 | chatbot | chatbot |
| 43 | Musk | Musk |
| 44 | computer | computer |
| 45 | intelligenti | intelligent |
| 46 | umano | human |
| 47 | informatici | it specialists |
| 48 | industria | industry |
| 49 | Accenture | Accenture |
| 50 | trasformazione | transformation |
| 51 | Altman | Altman |
| 52 | applicazioni | applications |
| 53 | semiconduttori | semiconductors |
| 54 | technology | technology |
| 55 | investimenti | investments |
| 56 | aziende | companies |
| 57 | scienza | science |
| 58 | rivoluzione | revolution |
| 59 | tecnologici | technological (adjective, m. pl.) |
| 60 | acquisizioni | acquisitions |
| 61 | aerospazio | aerospace |
| 62 | automotive | automotive |
| 63 | processi | processes |
| 64 | capital | capital |
| 65 | ingegneri | engineers |
| 66 | big | big |



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*Table 3 - Continued*

| *Rank* | *Keyword* | *Translation* |
|---|---|---|
| 67 | Ogr | Ogr |
| 68 | imprese | enterprises |
| 69 | sensori | sensors |
| 70 | Ict | Ict |
| 71 | predittiva | predictive |
| 72 | fatturato | turnover |
| 73 | smart | smart |
| 74 | virtuale | virtual |
| 75 | IoT | IoT |
| 76 | innovative | innovative (adjective, f. pl.) |
| 77 | Microsoft | Microsoft |
| 78 | PNRR | PNRR |
| 79 | ricavi | revenues |
| 80 | ecosistema | ecosystem |
| 81 | stem | stem |
| 82 | piattaforme | platforms |
| 83 | bocconi | bocconi |
| 84 | brevetti | patents |
| 85 | science | science |
| 86 | manifattura | manufacturing |
| 87 | settori | sectors |
| 88 | act | act |
| 89 | hacker | hacker |
| 90 | industriale | industrial |
| 91 | produttività | productivity |
| 92 | transizione | transition |
| 93 | Elon | Elon |
| 94 | miliardi | billions |
| 95 | Sanpaolo | Sanpaolo |
| 96 | fantascienza | science fiction |
| 97 | Luiss | Luiss |
| 98 | supercomputer | supercomputer |
| 99 | economia | economy |
| 100 | etica | ethics |



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The list has been divided into the following broad semantic categories:

**AI-related words and apps**: *chatgpt*, *robot*, *robotica*, *learning*, *startup*, *algoritmo*, *openAI*, *fintech*, *generative*, *metaverso*, *cloud*, *macchine*, *machine*, *blockchain*, *software*, *start up*, *computing*, *sistemi*, *chatbot*, *computer*, *intelligenti*, *applicazioni*, *semiconduttori*, *technology*, *sensori*, *predittiva*, *smart*, *virtuale*, *Iot*, *ecosistema*, *piattaforme*, *supercomputer.*

**Tech words and sectors**: *tecnologie*, *tech*, *digitale*, *digitalizzazione*, *tecnologica*, *tecnologia*, *digitali*, *automazione*, *tecnologico*, *informatica*, *hi-tech*, *competenze*, *tecnologiche*, *trasformazione*, *tecnologici*, *ict*, *stem*, *brevetti.*

**Economy-related words**: *industria*, *aziende*, *aerospazio*, *acquisizioni*, *automotive*, *investimenti*, *capital*, *imprese*, *fatturato*, *ricavi*, *Industriale*, *ogr*, *miliardi*, *venture*, *Pmi*, *manifattura*, *settori*, *produttività*, *transizione*, *economia.*

**Key actors (universities, companies, banks, individuals)**: *Politecnico*, *silicon valley*, *Ceo*, *Ibm*, *Musk*, *Accenture*, *Altman*, *big*, *Microsoft*, *Bocconi*, *Elon*, *Sanpaolo*, *Luiss.*

**Generic persons**: *umano*, *informatici*, *ingegneri*, *hacker.*

**Other concepts**: *innovazione*, *innovation*, *rivoluzione*, *innovative*, *fantascienza*, *etica.*

It should be noted that the categories can easily overlap, and since some of these words are polysemic and their use can vary it is not easy to assign a single word to only one set. Nevertheless, by analysing the lists, it is possible to highlight specific areas of interest or specific actors. The inclusion in the corpus of a business-oriented newspaper like *Il Sole* clearly influences the results, with a constant presence of business-related words. Prominent social actors such as universities (*Politecnico, Bocconi, Luiss*) are involved. The presence of words such as *ethics* or *science fiction* indicates different approaches and interests to the topic, from research to cultural articles. It is not surprising to find large technology companies such as *Microsoft* and *IBM*, or individuals such as *Elon Musk*, one of the founders of OpenAI and then a very vocal critic of the risks of greater AI implementation in the coming years.

Words related to AI reflect the broad aspects of its development and progressive application in different sectors: virtual and augmented reality (*metaverso,* 'metaverse'), medical applications (*predittiva,* 'predictive'), commerce and finance (*fintech*), automation (*robot and robotica*, 'robotics'). Other key abstract concepts run through various categories such as *produttività, transizione, innovazione and rivoluzione*. These are positive



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lexemes that emphasise the potential of AI to drastically change or improve certain processes in our society. Looking at the collocations of *rivoluzione*, the most striking are *industriale*, *tecnologica, quarta* ('fourth'), *digitale*, all adjectives that specify the nature of the revolution[5]. Two other words are quite interesting: *vera* ('true') and *atto* ('act'). The former is used as a rhetorical element to emphasise the noun, in sentences such as «una vera e propria rivoluzione» ('a real revolution') or «la vera rivoluzione» ('a real revolution'); the latter is used in the adverbial structure *in atto* ('ongoing/underway'), which emphasises the fact that the revolution has already begun, so that the radical changes brought about by AI and digitalisation can be seen as an unstoppable and inevitable process (Vicente & Dias-Trindade, 2021).

Keyword analysis can be extended by looking at emerging themes. The T-Lab text and content analysis software was used to identify recurring themes in the corpus by identifying certain lexical features (i.e. sets of words that occur together in multiple texts). The software produced a list of 10 possible themes, some of which were irrelevant and were discarded. The following themes were selected for further investigation[6]:

**AI and its applications**: *artificial*, *intelligence*, *data*, *user*, *technology*, *software*, *algorithm*, *virtual*, *to use*, *customer*, *learning*, *platform*, *app*, *information*, *product*, *digital*, *machine*, *models*, *contents*, *metaverse*, *generative*, *google*, *systems*, *to base*, *ChatGPT*, *application*, *example*, *to allow*, *cloud*, *new*, *solution*, *be able to*, *with/through/via*, *internet*, *chatbot*, *tool*, *company*, *real*, *smartphone*, *to enable*, *assistant*, *consumer*, *create*, *intelligent*, *blockchain*, *on-line*, *use*, *sensor*, *web*, *vocal*.

**Economy and investments**: *growth*, *country*, *Italy*, *company*, *businesses*, *change*, *market*, *our*, *sector*, *global*, *work*, *economic*, *Europe*, *skills*, *transition*, *economy*, *innovation*, *opportunity*, *investment*, *challenge*, *industry*, *sustainability*, *industrial*, *new*, *Germany*, *grow*, *big*, *crisis*, *development*, *gdp*, *invest*, *strong*, *productive*, *pandemic*, *value*, *digital*, *impact*, *manager*, *transformation*, *European*, *important*, *deal with*, *energy*, *production*, *productivity*, *competitiveness*, *competitive*, *sustainable*, *factor*, *climate*.

**China, cybersecurity, war**: *China*, *attacks*, *war*, *security*, *Russia*, *Chinese*, *attack*, *Biden*, *states*, *hacker*, *Beijing*, *ICT*, *cyber*, *threat*, *military*, *Putin*, *Xi*, *country*, *defence*, *European*, *American*, *Europe*, *use*, *Washington*, *criminal*, *act*, *cybersecurity*, *conflict*, *Trump*, *protection*, *Russian*, *cybernetic*, *democracy*, *disinformation*, *West*, *Russians*, *Moscow*, *invasion*, *ransom*, *Joe*, *rules*, *ransomware*, *agency*, *block*, *Jinping*, *protect*, *EU*, *national*, *authority*.

5. See Vicente & Dias-Trindade (2021).
6. Due to space limitations, only the translation will be provided in this case.



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**Healthcare**: *patient*, *medical*, *healthcare*, *data*, *health*, *disease*, *clinical*, *drug*, *therapy*, *hospital*, *diagnosis*, *risk*, *system*, *medicine*, *cure*, *activity*, *cancer*, *law*, *treatment*, *pathology*, *legal*, *systems*, *work*, *algorithm*, *AI*, *use*, *tool*, *analysis*, *intelligence*, *artificial*, *assistance*, *use*, *cases*, *prevention*, *people*, *health*, *protection*, *evaluation*, *basis*, *studies*, *allow*, *lawyer*, *study*, *subject*, *identify*, *degree*, *example*, *application*, *information*.

**Enegergy, sustainability, competitiveness**: *energy*, *production*, *emission*, *renewable*, *transition*, *sustainable*, *gas*, *green*, *industrial*, *Edison*, *electric*, *green*, *environmental*, *solar*, *hydrogen*, *consumption*, *agriculture*, *supply chains*, *co2*, *plant*, *European*, *nuclear*, *automotive*, *clean*, *raw materials*, *investment*, *sustainability*, *resources*, *development*, *ecological*, *consumption*, *mobility*, *objective*, *supply*, *industry*, *recycle*, *agricultural*, *oil*, *production*, *Europe*, *sector*, *electricity*, *environment*, *country*, *transport*, *chain*, *territory*, *battery*.

Thematic analysis has thus been able to confirm two of the main semantic areas mentioned above (AI and its applications; economy and investment), while at the same time broadening the perspective and pointing to a richer set of themes: health, war, sustainability, the relationship between man and machine (which will be the subject of a more detailed analysis in section 4). Associations between words in this case can occur throughout a text or paragraph, so it is not easy to attribute the use of an adjective or verb to a particular entity. Nevertheless, some interpretation can be made, as these associations are not sporadic.

The first theme identified by the software is, not surprisingly, composed of clusters of words related to various popular AI applications (ChatGpt, chatbot, assistant), ICT terminology (*algorithm, data, cloud, app*, etc.), other emerging technologies (*metaverse, blockchain*), people (*user, customer*).

The verb *allow/enable* indicates texts in which experts, entrepreneurs and managers explain the potential of AI-based products/services or how AI works.

In marketing, AI is the engine of real-time analysis of customer habits and behaviors, while in supply chain management, "intelligent" systems driven by machine learning **allow** the connection and monitoring of the entire supply chain and all involved actors (SL 14/03/2023)[7].

7. The original text will be provided in the footnotes.

«Nel marketing, l'AI è il motore dell'analisi in tempo reale delle abitudini e dei comportamenti dei clienti mentre nella gestione della supply chain i sistemi "intelligenti" pilotati dal machine learning permettono di connettere e monitorare tutta la filiera e tutti gli attori coinvolti».



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We have a Continuous Intelligence Platform, Helicon, an AI-powered solution that continuously analyzes and interprets organizational data and feedback through machine learning models, **allowing** decision-makers to drive future innovation (RP 08/11/2021)[8].

"Our analysis shows that combining artificial intelligence and low-code development **allow** to increase developer productivity by fifty percent, and soon these benefits will extend to other knowledge workers", he explains (RP 19/06/2023)[9].

But more worrying cases are also addressed, such as the use of AI for manipulative purposes through the use of deepfake technology:

The incriminating false conversations are the result of "Deepfake" technology, which, through artificial intelligence, allows for the replacement of people's faces, expressions, and voices with synthetic images, masks generated and modulated by the computer (GN 27/06/2022)[10].

The theme of *Economy and investment* is characterised by various words related to the improvement of business performance, such as *productive, production, productivity, competitiveness, competitive*. Thus, AI represents an opportunity for the potential growth of Italian small, medium and large enterprises. At the same time, the following extracts show how concerns about job losses have been represented in the press throughout our corpus, but it is also worth noting that this can be presented as inevitable by informed experts.

An Accenture study indicates that **Artificial Intelligence (AI) will increase productivity** in companies by 40%, reducing costs. But does this mean losing thousands of jobs? "Yes, it's true", says Jerry Kaplan, author of "Artificial Intelligence - A Guide to the Near Future", in an interview with L'Economia. "According to forecasts from various research institutes, about half of today's jobs are destined to disappear. However, this is not a new phenomenon. The employment rate changes every decade" (CS 29/04/2019)[11].

8. «Abbiamo una Continuous Intelligence Platform, Helicon, una soluzione basata sull'intelligenza artificiale che permette di analizzare e interpretare ininterrottamente i dati e i feedback dell'organizzazione aziendale tramite modelli di machine learning, per dare supporto a chi deve trovare idee e prendere decisioni per il futuro».

9. «"Dalle nostre analisi emerge che la combinazione di intelligenza artificiale e low code permette di aumentare la produttività degli sviluppatori del cinquanta per cento e presto questi benefici si allargheranno ad altri lavoratori della conoscenza", racconta».

10. «Le false conversazioni incriminate sono frutto di tecnologia "Deepfake", che attraverso l'intelligenza artificiale consente di sostituire volti, espressioni e voci di persone con immagini sintetiche, maschere generate e modulate dal computer».

11. «Uno studio di Accenture indica che l'Intelligenza artificiale (AI) aumenterà del 40% la produttività nelle aziende, diminuendo i costi: significa però perdere migliaia di



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The economist states: "While it is argued that **artificial intelligence can increase productivity**, it is crucial to ensure that digital transformation aligns with democratic principles." The recent Hollywood strikes between screenwriters and the robots threatening their jobs should have been a wake-up call for millions of European workers. Who will protect our rights from algorithms that increasingly behave like our bosses? (ST 14/10/2023)[12].

The economy's resilience is impressive, and despite macroeconomic uncertainties, consumer spending remains strong, albeit at a more moderate pace, as does the labor market. Artificial intelligence could support growth through increased productivity (SL 16/12/2023)[13].

A number of other nouns and adjectives have a positive connotation in common. Some nouns describe processes: *growth, change, transition*; others are abstract concepts such as innovation, opportunity. Adjectives such as *nuovo* ('new'), *grande* ('big'), *forte* ('strong'), *importante* ('important'). While all these associations are not strictly related to AI, what is important is the aura of meaning that emerges: articles describing a "new model" or "system"; a "strong push" for investment or a "strong acceleration" in innovation and digitalisation; a "big challenge" to be faced or an "opportunity" for growth somehow also mention artificial intelligence.

The only word that suggests a negative connotation is *crisis*. The most common collocations are: *climatica*, *energetica*, *economica*, *finanziaria*, *pandemica*, *sanitaria*, *ucraina*[14]. These results may seem somewhat confusing or unexpected: looking at concordance lines and/or texts in their entirety, a variety of different types of articles unfold in which AI can be evoked. It may be seen as a tool to increase productivity and

posti di lavoro? "È vero, secondo le previsioni di diversi istituti di ricerca circa la metà dei lavori di oggi sono destinati a sparire – dice a L'Economia Jerry Kaplan, autore del libro Intelligenza Artificiale-guida al Futuro prossimo –. Ma non è un fatto nuovo. Il tasso di occupazione cambia a ogni decade».

12. «L'economista: "Si sostiene che l'intelligenza artificiale possa aumentare la produttività, ma bisogna garantire che la trasformazione digitale sia in linea con i principi democratici" Le recenti battaglie di Hollywood tra gli sceneggiatori e i robot che minacciano il loro lavoro avrebbero dovuto essere un campanello d'allarme per milioni di lavoratori europei. Chi proteggerà i nostri diritti dagli algoritmi, che sempre più si comportano come i nostri capi?»

13. «La resilienza dell'economia è impressionante e, nonostante le incognite macro, la spesa dei consumatori resta forte, ma in fisiologico rallentamento, così come il mercato del lavoro. L'intelligenza artificiale potrebbe sostenere la crescita, grazie a un aumento della produttività».

14. In translating, these words would change part-of-speech: *climate c.*, *energy c.*, *pandemic c.*, *health c.*, *Ukrainian* c.



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respond to the energy crisis associated with the Ukraine crisis; or it may appear in an article outlining both challenges and future trends in the economy. Thus, *crisis* is not directly linked to artificial intelligence and its development.

The third topic, *China, war*, and *cybersecurity*, clearly refers to the geopolitical situation over the past five years: the long-standing tension and competition between the United States and China on the one hand, and Russia's invasion of Ukraine and alleged interference in the presidential election on the other. Both can be identified by frequent collocations of the word *war*, such as *trade, hybrid* and *cyber*:

Hackers and Russian disinformation machinery are elements of a "hybrid war" that authoritarian regimes, such as Russia and China, employ to penetrate Western democracies (CS 13/05/2022)[15].

The phrase that an attack on the digital apparatus of the state "justifies any measure of protection" frames the adoption of a policy without limits as inevitable, through its assertive tone.

This is a hybrid war that unfolds in the cyber domain, justifying the adoption of any measure aimed at protecting our digital infrastructure, an area in which Italy has been slow to act and, for a long time, without a strategic approach (RP 20/08/2022)[16].

Newspaper headlines typically use hyperbole and figures of speech (Gualdo, 2007) as persuasive strategies to engage the audience: in the following example, the military metaphor («in the crosshairs») serves this purpose by communicating an immediate threat to the country.

Italy in the Crosshairs of Cyberwarfare. It is now a fact that the war in Ukraine is being fought on two fronts: on the ground, in the invaded territories, and in the cyber realm across the globe (RP 06/12/2022)[17].

15. «Hacker e macchina di disinformazione russa sono elementi di una "guerra ibrida" che i sistemi autoritari, Russia ma anche Cina, usano per penetrare le democrazie occidentali».

16. «Si tratta di una guerra ibrida che si muove all'interno del dominio cibernetico e che giustifica l'adozione di ogni misura volta alla protezione del nostro apparato digitale su cui l'Italia si è adoperata con ritardo e, per molto tempo, senza un approccio strategico».

17. «L'Italia nel mirino della guerra cibernetica Che la guerra in Ucraina viaggi su due fronti – quello sul campo, nei territori aggrediti e quello cibernetico nel resto del mondo – è ormai un fatto».



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The above excerpt also links the issue of cyber warfare and economic growth. It must be emphasised that the article is devoid of any ethical reflection on the use of AI to pilot autonomous war jets.

The Tempest system will see the deployment of invisible, unmanned fighter jets supported by the most advanced digital technology in artificial intelligence and cyber warfare. This will be a powerful driver for economic growth, job creation, and positive spillover effects on the civilian innovation industry stemming from military technological advancements (SL 10/12/2022)[18].

In addition to these elements that outline the general context, the theme is identified by several words that convey a sense of tension and conflict: *attack, assault, threat, criminal, conflict, invasion*. It is thus an overly anxious theme, using words with negative connotations, associated with a deep sense of risk and threat, all the more so because it may involve an invisible attack on our everyday lives and institutions. The digital domain is both a means of protection and an inevitable target.

Healthcare and medical applications have been identified as a central theme in other analyses of media coverage of AI (Korneeva *et al*., 20-23). Because of its ability to handle large amounts of data, AI is mostly presented in a positive light for its beneficial role in improving treatment and diagnosis.

To achieve the project's objectives, advanced technologies will be developed and combined: molecular imaging to map gene activity at the single-cell level, artificial intelligence algorithms to discriminate among the vast amounts of data collected, and the creation of patient-derived models to develop personalized treatments (RP 14/02/2019)[19].

Several articles present technology and AI in a positive light for their role in improving efficiency and allowing doctors to focus more on their relationship with patients. In the excerpt below, an interview with an expert, adjectives such as *ambitious* and emphatic statements such as «we

18. «Il sistema Tempest farà volare caccia invisibili e senza pilota supportati dalla tecnologia digitale più avanzata in fatto di intelligenza artificiale e guerra cibernetica. Un forte volano per la crescita economica, l'occupazione e le ricadute positive sull'industria civile dell'innovazione tecnologica militare».

19. «Per raggiungere gli obiettivi del progetto si svilupperanno e combineranno tecnologie avanzate: l'imaging molecolare per mappare l'attività dei geni a livello della singola cellula, gli algoritmi di intelligenza artificiale per discriminare tra le grandi quantità di dati raccolti, e la realizzazione di modelli derivati dal paziente per sviluppare trattamenti di medicina personalizzata».



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can do it» convey positive interpretations of the development of medicine through ICT.

"You see these points: all over the world, medical and technological research are converging. Big data, artificial intelligence, biomaterials, machine learning. Italy can play an ambitious game. We can do it. But it requires a joint effort." Will we really need doctor-engineers? "It's a cultural shift. Technology is meant to help doctors have more time to look up from their screens and look at the patient (CS 06/06/2019)[20].

Similarly, *algorithms* and AI developed for customer care are presented as beneficial to the doctor-patient relationship, as suggested by the phrase «artificial intelligence can help».

But Artificial Intelligence can also improve the doctor-patient relationship through the use of customer relationship management techniques. By employing the same algorithms used by Amazon and other websites, clinicians can build stronger connections with their patients (ST 10/11/2021)[21].

It is not uncommon for the cost-saving argument to be used in conjunction with Italy's demographic projections, which indicate a rapid ageing of the population (Italy now has the second oldest population in the world).

However, the use of algorithms could also lead to significant cost savings in healthcare: experts estimate that the US alone could save over $150 billion by 2026 through the adoption of AI-enabled technologies (SL 03/05/2022)[22].

The final theme relates to the concepts of *energy, sustainability* and *competitiveness.* Artificial Intelligence is often mentioned in articles about

20. «"Vede questi punti: in tutto il mondo la ricerca medica e quella tecnologica stanno convergendo. Big data, intelligenza artificiale, biomateriali, machine learning. L'Italia può giocare una partita ambiziosa. Possiamo farcela. Ma serve uno sforzo comune". Avremo davvero bisogno di medici-ingegneri? "È una svolta culturale. La tecnologia serve per aiutare i medici ad avere più tempo per sollevare lo sguardo dallo schermo e guardare il paziente"».

21. «Ma l'Intelligenza Artificiale può aiutare anche il rapporto medico-paziente, con l'utilizzo della customer relation. Usando le stesse tecniche adottate dagli algoritmi di Amazon o di altri siti, può aiutare i clinici a relazionarsi con il paziente in maniera vincente».

22. «Ma l'uso di algoritmi potrebbe garantire anche risparmi sui costi per la salute: solo negli Usa, gli esperti stimano che entro il 2026 si potranno risparmiare oltre 150 miliardi di dollari, attraverso l'adozione di tecnologie abilitate all'intelligenza artificiale».



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the transition to sustainable and clean energy. These two themes can often overlap in articles on the future of the Italian and European economy, which is described as being in a phase of profound transition and change involving both ICT and renewable energies. But new technologies are also seen as an essential part of innovation in various sectors of the economy: from architecture to packaging design, from mobility to manufacturing.

A new planetary architecture centred around sustainability cannot ignore the fundamental contribution that communication networks can make in terms of innovation to efficiently connect production, mobility, and consumption. At the heart of the global system, energy plays the most important role (RP 15/11/2021)[23].

Energy consumption is a twofold issue in the corpus: AI applications can increase productivity and efficiency, thus saving costs and energy. At the same time, the issue of AI's huge energy requirements can be raised. The quote from an expert in the article below shows adjectives such as *huge*, *high*, which emphasises the dimension of the issue, which is *complicated*. However, the frame can be changed to a positive one: solutions have already been implemented or companies intend to tackle the issue.

"However, there is a major issue to consider: AI requires enormous computational resources to train models, raising critical concerns about its energy footprint. This is compounded by the energy needed to support the proliferation of AI-powered products such as search engines and chatbots, as well as increasingly specialized hardware. The picture is further complicated by greenhouse gas emissions and the growth of energy-intensive data centers. Fortunately, some companies are becoming aware of this issue and are committed to addressing the energy challenges posed by AI" (ST 29/08/2023)[24].

23. «Perché una nuova architettura del pianeta che ha al centro la sostenibilità non può prescindere dal contributo fondamentale che le reti di comunicazione possono dare in termini di innovazione per legare in modo efficiente produzione, mobilità e consumi. Al centro del sistema mondiale il ruolo più rilevante è quello dell'energia».

24. «"Tuttavia, c'è un grosso problema da considerare: l'AI richiede enormi risorse di calcolo per addestrare i modelli, e ciò solleva la questione critica del suo impatto energetico. A ciò si aggiunge l'energia necessaria a sostenere la proliferazione di prodotti assistiti dall'AI, come motori di ricerca e chatbot, così come di hardware sempre più specializzati. A complicare il quadro si aggiungono poi le emissioni di gas serra e la crescita dei data center ad alto consumo energetico. Fortunatamente, alcune aziende stanno prendendo coscienza e intendono affrontare la sfida energetica posta dall'AI"».



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## 4. The Human-Machine relationship

As mentioned above, one of the emergent themes of the corpus is the relationship between man and machine, which is one of the most fundamental issues. Word associations are also revealing: *uomo* ('man', also in the sense of 'mankind') and *macchina* ('machine') are the first collocations of each other. Although naive, some questions are still prominent in the public debate: Will AI replace humans? How close are we to general artificial intelligence? Can machines think like humans? Are they sentient? The cluster of words below points to this debate:

**Human and machine**: *human*, *machine*, *intelligence*, *write*, *conscience*, *artificial*, *book*, *man*, *our*, *brain*, *author*, *beings*, *us*, *thought*, *body*, *nature*, *theory*, *world*, *to think*, *mind*, *history*, *language*, *science*, *art*, *novel*, *work*, *form*, *texts*, *physical*, *reality*, *writing*, *humanity*, *written*, *idea*, *philosopher*, *artist*, *philosophy*, *to create*, *words*, *understand*, *computer*, *speaking*, *creativity*, *chatgpt*, *music*, *religion*, *to imagine*, *writer*, *to exist*, *sense*.

The cluster is incredibly rich, with different semantic categories: the human dimension *(human, man, our, beings, us, body, humanity*); the machine (*machine, intelligence, artificial, computer, chatgpt*); cognitive abilities and the psychological dimension (*conscience, brain, thought, thinking, mind, language, creating, understanding, creativity, imagination*); writing (*write, book, author, novel, writing, written, writer*); science and thought (*theory, history, science, philosopher, philosophy, religion*); reality (*nature, physical, reality*); art (*art, artist, music*). These broad semantic areas outline a composite image that prompts reflection on the capabilities of man and machine, on the superiority or inferiority of machines in the near future, and on aspects related to creativity, considered the quintessential human trait. Exemplary texts of this cluster, as elicited by the software, are profound, insightful articles, often book reviews or conversations with philosophers and experts.

In the following excerpt, there is an explicit reference to the dominant dichotomous narrative: utopian vs. dystopian future, and an expert who presents a third, middle way to approach the debate.

Marc Mézard […] is in a middle position between the **enthusiasts of artificial intelligence** (who predict radical changes in society, capable of extending life, eliminating work and even forming human beings improved by machines) and **the**



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**pessimists** (who, on the contrary, imagine the end of our civilization due to the advent of new social organizations governed by robots) (CS 27/01/2019)[25].

The article, which highlights breakthroughs in AI, also raises questions about the definition of intelligence and possible ethical issues. Although the interviewer's aim is to approach the question from a more balanced perspective, the argument is based on two extreme and opposing views that are far from a realistic depiction of the current state of artificial intelligence.

In arguments about the future of our society, human capabilities are typically presented as superior and as what will ensure human survival.

Let's take the labour market. Instead of using machines, humans will simply monitor them, define what needs to be done and how, and then use robots to achieve exactly the desired result. **Creativity, imagination, emotional intelligence will be the determining factors**, repetitive and unrewarding tasks will progressively disappear. However, there is also the risk of new forms of invasive monitoring and control over work performance (CS 27/04/2020)[26].

One of the most salient collocations of *human* is *brain*, which shows how this is a specific argument made in the articles. The brain is what distinguishes humans from machines and makes us superior beings.

I doubt that a machine could ever produce anything as powerful and innovative as building a symbolic universe. However much progress AI may make, **there remains an irreducible difference between human intelligence and that produced by machines**. Our **brain** is an integral part of a **body** that is a permanent source of emotions, which interacts unpredictably with other bodies, which are also crossed by passions, joys and fears. In fact, the supporting structure of every human brain is formed precisely in the crucible of these relationships (CS 15/09/2019)[27].

25. «Marc Mézard […] si colloca in una posizione mediana tra gli entusiasti dell'intelligenza artificiale (che predicono cambiamenti radicali nella società, in grado di allungare la vita, eliminare il lavoro e, addirittura, formare esseri umani migliorati dalle macchine) e i pessimisti (che, al contrario, immaginano la fine della nostra civiltà a causa dell'avvento di nuove organizzazioni sociali governate dai robot)».

26. «Prendiamo il mondo del lavoro. Invece di usare le macchine, gli umani si limiteranno a monitorarle, definendo ciò che deve essere fatto e come, e poi usando i robot per ottenere esattamente il risultato voluto. Creatività, immaginazione, intelligenza emotiva saranno i fattori determinanti, spariranno progressivamente le mansioni ripetitive e poco gratificanti. C'è però anche il rischio di nuove forme di monitoraggio e controllo invasivo sulle prestazioni lavorative».

27. «Dubito che una macchina possa mai produrre qualcosa di altrettanto potente e innovativo rispetto alla costruzione di un universo simbolico. Per quanti progressi



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While emotions and bodily experience may be characteristic of human experience, other arguments consider the brain only for its "computational" capabilities, which may be destined to be surpassed by artificial intelligence. The use of the verb *prevent* makes it clear that the circumstances of an artificial intelligence more powerful than humanity are clearly undesirable.

Musk talks above all about medical applications, but his real goal is the symbiosis between man and machine: the strengthening of the individual's brain capacity to prevent it from being overtaken by an **increasingly powerful artificial intelligence capable of surpassing human intelligence** (CS 30/08/2020)[28].

As noted above, the dualism is also relevant to the labour debate. The argument depends on the specific sector: while automation may lead to the complete replacement of human labour in production plants, other jobs may require a human touch, leaving repetitive and simple tasks to machines. It is worth noting that most of these articles are framed by academics and experts in the field. Words such as *threat* and *opportunity* are representative of this dichotomy.

But there is another aspect. "The future of sustainability is partly threatened by the prospect of smart factories, **production plants where the human element is replaced by machines** – adds Firth –. And the reason is simple: **replacing man with Artificial intelligence** allows us to accelerate even more the times of fast fashion or low-cost fashion" (CS 14/11/2019)[29].

Predictive justice is now an opportunity, especially in the civil sector. Carlo Gagliardi, managing partner of Deloitte Legal Italy, illustrates the potential for the **tech revolution**. "There are lawyers and magistrates who see predictive justice as an **opportunity**, others consider it as a **threat**. Those who support the

l'AI possa fare rimane una differenza irriducibile fra l'intelligenza umana e quella prodotta dalle macchine. Il nostro cervello è parte integrante di un corpo che è sorgente permanente di emozioni, che interagisce imprevedibilmente con altri corpi, anch'essi attraversati da passioni, gioie e paure. In effetti la struttura portante di ogni cervello umano si forma proprio nel crogiolo di queste relazioni».

28. «Musk parla soprattutto di applicazioni mediche, ma il suo vero obiettivo è la simbiosi tra uomo e macchina: il potenziamento delle capacità cerebrali dell'individuo per evitare che venga scavalcato da un'intelligenza artificiale sempre più potente e capace di sopravanzare quella umana».

29. «Ma c'è un altro aspetto. "Il futuro della sostenibilità è in parte minacciato dalla prospettiva delle smart factories, stabilimenti produttivi dove l'elemento umano è rimpiazzato dalle macchine – completa Firth –. E il perché è semplice: sostituire l'uomo con l'intelligenza artificiale consente di accelerare ancora di più i tempi del fast fashion o della moda low cost».



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second thesis are wrong: because the machine cannot replace man, but it can certainly make his work simpler and more effective" (RP 12/07/2021)[30].

However, the future of the labour market is also portrayed as increasingly characterised by human-machine collaboration. The latter term may imply a kind of sentient machine that is not fully controlled by humans.

Technology is no longer just "an accessory element, but will be increasingly central", he adds. Companies will either be technological, in the sense of **a combination of machines and people, between machines and human capital**, or they will struggle to be competitive. The labour market is also always looking for new skills (CS 04/04/2019)[31].

Given 100 the number of tasks performed, 81% will suffer a strong impact from the introduction of automation and artificial intelligence: 51% will require **greater human-machine collaboration** than in the past and greater use of technology and 30% it will be fully automated (CS 17/06/2019)[32].

The following excerpt presents two almost opposing sentiments in the headline: *distrust*, based on the results of an opinion poll, and *hope*, based on the reported speech of an expert. The second argument is based on a comparison of human and machine characteristics; the use of the expression *working together* implicitly suggests that the two actors are on the same level.

Distrust – According to 32% of respondents in a 2018 survey, Artificial Intelligence is a threat to humanity. Hope – Humans and machines have different strengths and weaknesses and **by working together they could tackle the biggest problems** (CS 05/05/2019)[33].

30. «La giustizia predittiva è ormai un'opportunità soprattutto nel settore civilistico. Carlo Gagliardi, managing partner di Deloitte Legal Italy, illustra le potenzialità per la rivoluzione tech i sono avvocati e magistrati che vedono la giustizia predittiva come un'opportunità, altri la considerano come una minaccia. Chi sostiene la seconda tesi, sbaglia: perché la macchina non può sostituire l'uomo, ma può rendere di sicuro il suo lavoro più semplice ed efficace"».

31. «La tecnologia non è più soltanto "un elemento accessorio, ma sarà sempre più centrale", aggiunge. Le aziende o saranno tecnologiche, nel senso di una combinazione tra macchine e persone, tra macchine e capitale umano, oppure faranno fatica ad essere competitive. Anche il lavoro cerca sempre nuove competenze».

32. «Fatto 100 il numero dei compiti svolti, l'81% subirà un forte impatto dall'introduzione dell'automazione e dell'intelligenza artificiale: il 51% richiederà una maggiore collaborazione uomo macchina rispetto al passato e un maggiore uso della tecnologia e il 30% sarà completamente automatizzato».

33. «Diffidenza Secondo il 32% degli intervistati in un sondaggio del 2018 l'Intelligenza artificiale è una minaccia per l'umanità L'auspicio Umani e macchine hanno



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While Leonardo Da Vinci was the first to use the machine metaphor to describe the human body (Manni, 2024), the comparison between the human mind and the machine has been a trope since the inception of the concept of artificial intelligence, canonically established at the 1956 Dartmouth Summer Research Project on Artificial Intelligence conference. The idea of a "thinking machine" capable of "feeling" and "learning" has been explored for decades and is integral to the construction of the technological myth of AI (Natale & Ballatore, 2020). Looking at collocations of the words *macchina/macchine*, newspaper articles seem to confirm this enduring trend through a conspicuous set of associations: *capable, learn/learns, learning, thinking, trained, dotata* ('equipped'), *ability, potrà* ('will be able to'), *can, functioning, replacement*. Machines are able to *analyse, automate, predict* and *learn*, but the quality of these processes is often not fully addressed.

The following article aims to explain the advances in neural networks, starting with a definition of the capabilities that machines should acquire through machine learning: *learning* and *adaptation*. The second gives a broad definition of AI. Words such as *inspired* or *similar* are rather vague but can convey the idea that machines may mimic human characteristics, but are still different.

The underlying idea is very simple: **to develop machines with autonomous learning and adaptation capabilities inspired by human learning models**. The first AI system was a robotic mouse that could find its way out of a maze, built by Claude Shannon in 1950. Then came the first neural networks, followed by a hiatus of almost twenty years (SL 8/3/2023)[34].

Including new technologies: the upcoming implementation of 5G in mobile telephony will enable large-scale innovations such as artificial intelligence, **that is, machines equipped with abilities similar to those of the human mind and typically programmed to minimize errors**, and the Internet of Things, which allows objects to communicate with each other (RP 21/01/2019)[35].

diversi punti di forza e di debolezza e lavorando insieme potrebbero affrontare i problemi più grandi».

34. «L'idea di fondo è molto semplice: sviluppare delle macchine dotate di capacità autonome di apprendimento e adattamento che siano ispirate ai modelli di apprendimento umani. Il primo sistema di Ia era un topo robotico che poteva trovare la via d'uscita da un labirinto, costruito da Claude Shannon nel 1950. Poi subito dopo le prime reti neurali e più nulla per almeno vent'anni».

35. «Comprese le nuove tecnologie: la prossima entrata in funzione del 5G nel campo della telefonia mobile consentirà di abilitare su vasta scala innovazioni come l'intelligenza artificiale, cioè le macchine dotate di abilità simili a quelle della mente umana e tendenzialmente programmate per minimizzare gli errori, e l'Internet of things, che consente agli oggetti di parlarsi tra loro».



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The following extract is of particular interest for its utilisation of the religious metaphor. Italian journalistic language is distinguished by a pervasive intermingling of linguistic elements[36], including metaphors, colloquialisms, learned quotations, and technical terms. Religious metaphors, along with military and sports metaphors, are among the most prevalent. In this instance, however, they serve to imbue a mystical quality to a technology that is both enigmatic and inexplicable.

A novelty of the program developed in California based on Chinese data is that it uses Taln: Natural Language Processing. This means that the **machine is capable of analyzing** colloquial speech, not just single words and defined phrases. **It is the miracle** of "Deep learning" in artificial intelligence (CS 13/02/2019)[37].

Upon examination of the concordance lines, it becomes evident that in certain instances, the word machine is followed by the future form of 'can' (*potrà*). This may be indicative of contemplations surrounding the future of machines and humanity. The two extracts below exemplify these tendencies. On the one hand, there is a general rhetorical question concerning the future acquisition of self-awareness by AI. On the other, there is a typical answer that highlights the uniqueness of humankind.

There's been a lot of talk about it lately, driven by curiosity about the latest innovations but also fuelled by a vague unease about the future, a future that cannot ignore the existence of machines. Two questions in particular have been with us for almost half a century: **Can a machine become more intelligent than humans**? And then: **Will a machine ever possess consciousness**, understood as **self-awareness**? (CS 08/11/2020)[38].

«[…] There is something irreducible in human beings, something for which **no machine can ever completely replace us**» (CS 19/10/2023)[39].

36. This mixture of elements has been defined "stile brillante", which may be roughly translated as "vibrant style", by Maurizio Dardano (1986).

37. «Una novità del programma elaborato in California sulla scorta dei dati cinesi è che impiega il Taln: Trattamento automatico del linguaggio naturale. Significa che la macchina è capace di analizzare un discorso colloquiale, non solo parole singole e frasi definite. È il miracolo del «Deep learning» nell' intelligenza artificiale».

38. «In questo periodo se ne parla molto, mossi dalla curiosità per le novità più recenti, ma sollecitati anche dall'oscura preoccupazione sul futuro, un futuro che non potrà non tenere conto dell'esistenza delle macchine. Due domande su tutte ci accompagnano da quasi mezzo secolo: Una macchina potrà diventare più intelligente di noi umani? e poi: Una macchina arriverà mai a possedere una coscienza, intesa come coscienza di sé?».

39. «"[…] C'è qualcosa di irriducibile nell'essere umano, qualcosa per cui nessuna macchina potrà mai sostituirci completamente"».



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## 5. Conclusion

News media was chosen as a suitable source for studying human perception of the development of artificial intelligence and its implementation in everyday life: the press absorbs and reflects widely held opinions on social issues, but it also helps to shape them by hosting a diverse and rich set of voices (experts, artists, politicians). Moreover, in democratic societies, journalism plays an essential role in shaping the discourse on an issue: the aura of meaning that gradually forms and sediments in common knowledge.

In the case of AI, the representation of this new technology is not one-dimensional, but its introduction and penetration into our future lives is seen as inevitable. The economic argument encompasses various issues and, in most cases, presents AI as potentially beneficial (Nguyen & Ekman, 2024): from healthcare to investment, through sustainability and, of course, the labour market, AI is seen as the next «technological solution» (Katzenbach, 2021), capable of solving multiple problems and increasing productivity. Nevertheless, concerns about data protection, privacy and ethics are also present in the texts. Ethical and philosophical issues are mainly discussed in editorials, cultural articles, interviews with philosophers and experts.

When it comes to the relationship between humans and machines, the debate is mostly led by experts, which often results in a nuanced view. The human mind is still considered to be superior because of its unique abilities (such as creativity, empathy) and emotions.

Although the press is concerned about the future development of machines and AI, it tries to adopt a balanced narrative, representing a "middle way" between solutionism and catastrophism. Nevertheless, the stereotypical argumentative structure based on nuances of the utopia vs. dystopia dichotomy seems to be relevant in the corpus. While some of the circumstances presented (the development of a general artificial intelligence; pervasive surveillance of citizens; autonomous weapons and soldiers) may occur in the coming decades, they are not representative of the current state of AI. Thus, these arguments seem to bring potentially anxiety-provoking, but still distant, issues closer to the present; the effect may be to distort the general interpretation of the phenomenon.

Dualistic views on various aspects of the human-machine relationship reflect an understanding of AI in the public debate that is clouded by uncertainty and doubt. Journalists and pundits try to predict the coming decades in response to the huge breakthrough of generative AI in the consumer space. This may be driven by the public's curiosity and need



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for knowledge, or simply to seize on a catchy and newsworthy topic. Moreover, questioning profound aspects of our existence is a powerful narrative device. However, the complexity of the debate and the overall sense of an almost drastic change in our society can leave the reader anxious and confused.

This research represents only a starting point for observing the Italian discourse on artificial intelligence; in the future, the corpus can be explored in more detail by analysing other terms, their collocations and their semantic prosody. The corpus can also be further enriched by including different types of sources and by updating the time frame. Finally, the media discourse should also be confronted with the institutional and political discourse. While AI does not seem to be a key element of political struggle and propaganda, at the institutional level several documents, laws and regulations have been adopted to define the Italian approach to the subject.

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# *Of Pride and Patriotism. The Representation of Artificial Intelligence in Chinese Official and Media Discourse*

by Emma Lupano

## 1. Introduction

In the Government Work Report presented to the delegates at the National People's Congress in March 2024, the annual gathering of the Chinese parliament during the so-called *lianghui* (两会 two meetings), Prime Minister Li Qiang (李强) gave a comprehensive overview of the government's innovation strategy. He stated that China is witnessing a continuous stream of innovative achievements in cutting-edge fields such as artificial intelligence and quantum technology, and launched the "AI+ Action" ("人工智能+" 行动) to "deepen the development and application of big data and AI" and foster globally competitive digital clusters (Li, 2024).

During the previous semester, Xi Jinping (习近平), the President of the People's Republic of China (PRC) and General Secretary of the Communist Party of China (CPC), repeatedly emphasised the importance of promoting and supporting "new quality productive forces" (新质生产力) as a key national economic policy. This concept refers to an advanced form of production that moves away from traditional economic growth models. It is characterised by advanced technology, high efficiency, superior quality and is driven by technological innovation (Wang, 2024).

These are just a few of the many occasions in recent months and years when the country's leaders have expressed their belief that innovation – i.e. AI, robotics, 5G, new energy and biotechnology – is the top priority for China and the catalyst for China's economic growth for the foreseeable future. The seeds of this paradigm shift – from aspiring to be the world's factory to becoming the world's innovation centre – have been nurtured for decades, through wars, revolutions and reforms, spurred on by the realisation in the mid-1800s that China's military weakness was the consequence of its scientific backwardness compared to European and



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Western countries. A message in Chinese and English at the China Science and Technology Museum in Beijing sums up the concept for casual visitors by defining innovation as «the foundation of national prosperity and the soul of national progress»[1].

Communist China has gone through several waves of innovation policy – from the plan to build a steel industry in the 1950s and 1960s, to Deng Xiaoping's reform and opening up (改革开放) in the 1980s, to the 863 and 973 programmes to promote technological research and investment in the 1990s, to the development of the Internet and its isolation from the rest of the world in the 1990s and 2000s. Artificial intelligence, after being stigmatised for ideological reasons between the 1950s and 1970s, became a subject of open research and discussion in the 1980s, when the Chinese Joint Conference on Artificial Intelligence (中国人工智能) was held for the first time (Cai, 2016: 12-15).

According to Yang and Huang (2022), the 1990s saw the first few policy documents promoting the development of AI in China, especially at the local and ministerial levels. Indeed, it has been argued that the development of AI in China is a bottom-up rather than a top-down phenomenon (Zeng, 2022). The first public recognition of AI and related technologies by the highest echelons of the leadership came only in June 2014, when Xi Jinping spoke at the opening ceremony of the 17th Fellows Conference of the Chinese Academy of Sciences and the 12th Fellows Conference of the Chinese Academy of Engineering. He highlighted the rapid progress and integration of cutting-edge technologies such as big data, cloud computing and AI with robotics, and called for strategic assessment, planning and progress to harness these innovations (Cai, 2016: 15).

The General Secretary has subsequently spoken about AI on many other occasions, including at the 20th CPC Congress in October 2022, when he expressed the ambition to transform China into a technological power (科技强国). This is fully in line with the latest PRC Five-Year Plan (2020), which recognises AI as a key technology to support China's economic progress.

The growing interest and public investment in AI culminated in a number of official documents, the most important of which is arguably the State Council's 2017 'Next Generation Artificial Intelligence Development Plan' (新一代人工智能发展规划), the first official text outlining the country's comprehensive strategy on AI. The plan, which can be seen as the foundation of the public narrative on the topic (Roberts *et al*., 2021),

1. Source: photo shared with the author by Chiara Bertulessi (November 2024).



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sent shock waves through the Western world by spelling out for the first time China's ambition to become an "AI power" (人工智能强国) by 2030 (Guowuyuan, 2017). Since then, numerous institutions at national and local levels have produced several documents to promote and regulate AI and its applications in China (more than 35 between 2017 and 2024, according to US reporter Matt Sheenan[2]). One such text is the 'Interim Measures for the Administration of Generative Artificial Intelligence Services' (生成式人工智能服务管理暂行办法), promulgated by the Cyberspace Administration of China (CAC) in July 2023 (Guojia huliangwang xinxi bangongshe, 2023).

Despite being permanently blocked in the PRC since 2 March 2023 (Chiu, 2024), ChatGPT is widely known and discussed in China. Its release at the end of 2022 urged the further development of national competitors, such as Baidu's ErnieBot, Alibaba's Qwen and High-Flyer's DeepSeek, and related regulations, while generating widespread media coverage. This paper aims to analyse the institutional and media narratives on AI in China in the year since OpenAI's move, looking for common trends between the two.

Institutions and the media play an important role in the construction of knowledge about phenomena that are potentially disruptive and difficult for the general public to understand, such as scientific and technological innovations. Media and private narratives influence government institutions, but governments are themselves powerful actors in shaping public perceptions and expectations of AI. In the PRC, where the media sector is controlled by the Party, which expects journalists to promote national policies and legitimise the leadership, it can be hypothesised that institutional and media discourse on a key issue such as AI would overlap – if not coincide – due to the heightened political relevance of the issue itself.

The study is guided by the following research questions:

RQ1: What are the dominant themes and keywords concerning AI in institutional discourse?
RQ2: What are the dominant themes and frames concerning AI in the media discourse, and to what extent do they overlap with the institutional narratives?
RQ3: Is there variability across the selected media in terms of framing and use of discursive legitimation strategies?

2. See the link from his *X* post on 17 September 2024 at https://x.com/mattsheehan88/status/1836108994932298143.



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Two data sets were created for this research: a corpus of institutional documents produced at the central level and a corpus of news commentaries published by two established Chinese national newspapers. This qualitative analysis is based on a mixed method that applies frame analysis (Entman, 1993; Reese, 2001), supported by corpus linguistic tools, within the theoretical framework of legitimacy discourse strategies (van Leeuwen, 2007; Reyes, 2011).

The paper is divided into five sections. A literature review, framework and scope of this research are presented in section two. Sections three and four are devoted to the analysis of the institutional and the media corpora, respectively, and section five discusses the limitations of the study and offers some concluding remarks.

## 2. Literature, scope and framework

Various studies analyse how AI is portrayed in the media, particularly in the Western world, and identify discursive patterns of utopia/dystopia, hopes/fears dichotomies (Cave & Dihal, 2019). The media portrayal of "scary robots" is an example of this, demonstrating that such dichotomous narratives can lead to polarised perceptions, with AI seen as either a beneficial tool for societal progress or a potential threat to human existence (Cave *et al*., 2019).

Dualistic coverage of AI has been detected in different contexts and by different scholars. Brennen *et al*. (2018) found that the debate in UK media coverage of AI was largely industry-led, and skewed towards positive portrayals favourable to AI investors. In their analysis of 40 years of coverage in four mainstream English-language newspapers (*The New York Times*, *Washington Post*, *The Guardian* and *USA Today*), Sun *et al*. (2020) highlight the oscillation between positive and negative framing of AI, confirming similar attitudes compared to other technological advances such as nanotechnology. However, they also show how the media discourse on AI has been dominated by some stakeholders – government agencies, business giants and research institutes – to the detriment of others, such as ordinary citizens and anti-AI actors.

In an analysis of Dutch newspaper coverage from 2000 to 2018, Vergeer (2020) also found that sentiments towards AI in the country's press have remained relatively stable over time, with a balanced presence of positive and negative attitudes. His analysis shows a sharp increase in the salience of AI in Western newspapers after 2014, a trend confirmed by Chuan, Tsai & Cho (2019) in the US. This increase can be explained



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by the growing relevance of AI in everyday life, but also by the "AI race" in which nations compete for strategic advantage. To this end, AI development is often framed as a matter of national security and global competitiveness, constructing narratives that justify the need for AI governance by highlighting its inevitable disruptive potential (Bareis & Katzenbach, 2022). In addition to helping mobilise support for AI initiatives and legitimising state intervention in guiding technological development, this rhetoric can overshadow critical discussions about the ethics and social implications of AI by leading to a narrow focus on technological capabilities (Cave & ÓhÉigeartaigh, 2018).

In this scenario, scholars have advocated for a reframing of the general AI discourse to more effectively address ethical concerns and societal impacts. With the aim of fostering informed public discourse and promoting ethical AI development, a more nuanced approach is needed to redirect narratives that often neglect the complexity of AI's impact on human life and fail to include diverse perspectives (Johnson & Verdicchio, 2017). Indeed, oscillations between utopian visions and dystopian fears have also been found in the media debate on the ethical implications of AI. Nevertheless, a study by Ouchchy *et al.* (2020) on English-language newspaper articles, magazine articles and blogs from 2013 concludes that the media narrative is less inclined to hype when it comes to ethics than when it comes to other technologies or AI in general.

Compared to the wealth of work on AI narratives in Western media, relatively few studies have analysed how AI is represented in Chinese news. To date, most research in this area has been published outside of China.

Cui & Wu (2021) conducted a study that examined how different Chinese media outlets shape public perceptions of the risks and benefits associated with AI technologies. Their research shows that exposure to different narratives can lead to different levels of support for AI policies, suggesting that the media plays a central role in shaping public attitudes towards AI. This highlights the importance of studying the phenomenon in general, and in China in particular, given the close relationship between Party-state narratives and media coverage.

From this perspective, Zeng *et al.* (2022) examine the difference between the official narratives presented in institutional media such as the *Renmin ribao* (人民日报, RMRB) and the more critical discussions that appear on social media platforms such as WeChat (微信). They found that institutional media tends to promote a narrative of national strength and technological superiority, while public discourse on social media shows a more nuanced understanding of the impact of AI on society. However,



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their study also highlights the lack of publicly generated counter-narratives to challenge the official framing of AI. In particular, social media content appears to largely align with the Party-state media's framing of the economic benefits of AI, with little evidence of critical debate, confirming the effectiveness of the CPC's «guidance of public opinion» (Qian, 2013).

The relevance of AI in public discourse is, of course, linked to the political significance attached to it. Geopolitical considerations influence AI narratives in China, where official discourse frames artificial intelligence as a critical component of national security and global competitiveness, positioning the country as a leader in the global AI race (Ding, 2018). A study by van Noort (2024) shows that China is also trying to project this image internationally. By analysing the production of China General Television Network (CGTN), feelings of pride, hope and fear emerge as the dominant strategic narratives in China's transnational media, participating in an effort to forge a national identity as a future global AI power. The assertive dissemination of China's AI agenda to the world, such as the goal of overtaking the US in technological innovation, echoes the bold statements about China's AI ambitions contained in the 2017 Plan. Presenting a positive image of China's technological prowess not only promotes a narrative of national strength, but also helps to legitimise the Party's rule by highlighting its role in the development of AI technologies (Zhu & Krever, 2022). This narrative of progress and innovation permeates the entire media sector, including the more vibrant and diverse debate on the ethical implications of AI found on social media platforms (Mao & Shi-Kupfer, 2023).

As these examples show, research on China's media discourse on AI refers directly or indirectly to the official narrative, assuming that the latter clearly influences the former. However, a detailed analysis of this relationship is currently difficult to find (with partial exceptions, such as Meng 2021). The aim of this chapter is to make a preliminary contribution to filling this gap by identifying the main themes (and the corresponding keywords and fixed expressions or *tifa*[3]) in a selection of official documents on AI, in order to question their consistency with the stories told by selected Chinese media outlets.

In doing so, this study adopts a qualitative multidisciplinary framework from the perspective of critical discourse analysis (Chilton, 2004; Fairclough, 2013), applying frame analysis and discursive legitimation

3. The term *tifa* 提法 has been used to refer to topical political terms and fixed expressions in Chinese official discourse (Schoenhals, 1992; Barmé, 2012; Link, 2013).



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theories to explore how artificial intelligence is framed in public discourse. Corpus linguistic tools are used to facilitate the identification of themes and frames, and to analyse the semantic and rhetorical elements underlying the discourse on AI in China. Due to the limitations of the corpora used for the analysis of both institutional and media texts, this should be considered a preliminary study.

## 3. The institutional discourse

### 3.1. *Data and methods*

The institutional dataset consists of the full texts of three relevant official documents on AI, published centrally between 2017 and 2024. They belong to different genres: a policy plan, a regulatory text, and a transcription of an official speech. Despite the different purposes underlying each genre, these official texts can be considered part of a «genre repertoire» (Orlikowski & Yates, 1994: 542), as they collectively represent the central leadership's communication practices on the topic. The high level of intertextuality supports this view.

These include the aforementioned 2017 "Next Generation Artificial Intelligence Development Plan" (Plan) and 2023 "Interim Measures for the Administration of Generative Artificial Intelligence Services" (Measures), as well as the 2024 "Government's Work Report" (政府工作报告, hereafter Report) to the National People's Congress (Li, 2024). For the purpose of this preliminary study, the analysis was conducted as a three-step process: identifying dominant themes based on lexical frequencies, selecting keywords based on their keyness scores (Gabrielatos, 2018), and examining concordance lines related to keywords and themes.

Among the 100 most frequent words in the corpus (after removing the so-called "empty words" 虚词)[4] and obvious occurrences (such as *AI* 人工智能 and *technology* 技术), the following themes were identified by aggregating semantically close terms: Economy and Industry (indicated by recurring terms such as *company* 企业, *industry* 产业, *product* 产品, *economy* 经济, *to cooperate* 协同, *independent* 自主); Social applications and Impacts (signalled by terms such as *security* 安全, *to serve* 服务, *society* 社会, *environment* 环境, *to manage* 管理, *group* 群

4. Meaning Chinese morphemes or words that function as grammatical links or markers (Ma, 2004).



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体, *human-machine* 人机); Technology and Science (highlighted by terms such as *application* 应用, *innovation* 创新, *research* 研究, *data* 数据, *intelligentisation* 智能化, *robot* 机器人). The Keyness Score calculation highlighted a few terms and expressions that are useful for unpacking the fundamental concerns of Chinese institutions in the development of AI, helping to locate them along a heuristic positive-negative/utopia-dystopia spectrum. They are: *competitiveness* 国际竞争力, *scientific and technological independence* 科技自立自强, *integration* 融合, *integration* 集成, *application* 应用, *empowerment* 赋能, *enhancement* 提升. These keywords were examined in their in-text manifestations[5].

The main findings and insights of this analysis are summarised below.

### 3.2. *Analysis*

In the selected corpus, AI is collectively portrayed as a positive force and a core element of the nation's political project. The discursive focus is on AI as a fundamental factor in enhancing China's competitiveness to become an "economic powerhouse" (经济强国) and a «global technology powerhouse 世界科技强国», because it is "the new engine of economic development" (经济发展的新引擎) as "the primary driving force" (主要动力) of economic transformation[6]. As such, AI is a "strategic opportunity" for the country's advancement:

人工智能的迅速发展将深刻改变人类社会生活、改变世界。为抢抓人工智能发展的重大战略机遇 …，加快建设创新型国家和世界科技强国，按照党中央、国务院部署要求，制定本规划。
The rapid development of artificial intelligence will profoundly transform human society and the world. This plan is formulated to seize the key strategic opportunity presented by the development of AI […] and accelerate the building of an innovative country and a global technology powerhouse, in line with the directives of the Central Committee of the CPC and the State Council.

5. Detailed linguistic analysis of relevant excerpts has been presented at the international conference "Knowledge – Between Discursive Construction and Cultural Contextualization", University of Giessen, 22-24 May 2024.

6. Due to extensive use of formulaic and multi-layered expressions that characterises the Chinese political language, in this chapter political terms and catchphrases are presented in their English translation, followed by the original form in brackets, irrespective of them being directly cited from the corpora. This is to allow Chinese speakers to build connections that would be less obvious if only English translations were displayed.



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At the same time, cooperation is a recurring concept in the corpus that is proposed both internally, in the form of *collaboration* (协作) between companies, research centres and educational institutions, and externally, in the form of win-win *international cooperation* (国际合作) in the development of ethical and sustainable AI. In this narrative, China emerges as a responsible global player that promotes cooperation rather than competition.

The positive function of AI for China in the international context is coupled with its beneficial role domestically, for Chinese society as a whole. Official documents argue that the new technologies will help address social issues in various fields such as healthcare, environment and education, «improve people's daily lives» (提升人民生活品质) and strengthen national security:

人工智能在教育、医疗、养老、环境保护、城市运行、司法服务等领域广泛应用，将极大提高公共服务精准化水平，全面提升人民生活品质。
The widespread application of artificial intelligence in areas such as education, healthcare, elderly care, environmental protection, urban mobility and justice will significantly increase the level of accuracy of public services, thus improving people's quality of life across the board.

主动决策反应，将显著提高社会治理的能力和水平，对有效维护社会稳定具有不可替代的作用。
[AI] will play an irreplaceable role in effectively maintaining social stability by significantly improving the capacity and level of social governance.

However, this will happen only if, in the application of AI, services will respect the «core values of socialism» (社会主义核心价值观) and the regulations established by the CPC-State:

坚持社会主义核心价值观，不得生成煽动颠覆国家政权、推翻社会主义制度，危害国家安全和利益、损害国家形象，煽动分裂国家、破坏国家统一和社会稳定，宣扬恐怖主义、极端主义，宣扬民族仇恨、民族歧视，暴力、淫秽色情，以及虚假有害信息等法律、行政法规禁止的内容。
[AI service providers must] adhere to the core values of socialism, not create content that incites subversion of state power, overthrow of the socialist system, endangers national security and interests, damages the national image, incites division of the country, undermines national unity and social stability, promotes terrorism, extremism, ethnic hatred, ethnic discrimination, violence, obscenity, pornography, false or harmful information, or any other content prohibited by laws and administrative regulations.

In turn, public institutions need to be proactive and anticipate issues and challenges:



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又要预判人工智能的挑战, 协调产业政策 、创新政策与社会政策, 实现激励发展与合理规制的协调, 最大限度防范风险。
It is necessary to anticipate the challenges posed by artificial intelligence, to coordinate industrial, innovation and social policies, and to strike a balance between stimulating development and implementing appropriate regulations to minimise the risks.

From the science and technology perspective, the institutional documents emphasise China's pursuit of scientific and *technological independence* (科技自立自强) and the comprehensive improvement of China's *independent innovation capability* (全面提升自主创新能力) by collecting and training high-quality data, supporting continuous research and innovation, and developing and retaining a larger pool of national AI talent.

In brief, the institutional discourse tends to frame the economic issue in a positive light, emphasising the economic benefits and encouraging new initiatives and cooperation between different sectors of society. AI is portrayed as necessary to make China a global power and to boost domestic growth, as a historic opportunity to be seized, and as reinforcing the legitimacy of the CPC's technology policy.

In terms of social themes, the positive portrayal of the future benefits that AI will bring (including societal management, security and stability) is tempered by the risks and challenges mentioned in various parts of the corpus, such as unemployment, privacy violations and ethical issues, producing a balanced view that legitimises public institutions to play a key role in managing AI development.

When it comes to scientific issues, the emerging technology is presented as clearly positive, while the discussion of shortcomings such as talent shortages, quality of basic research, international visibility and data security leads to the legitimisation of both the Party-state and individual companies as actors that can make a difference.

The development of AI is therefore treated as a matter of course, the desirability of which should not be politically debated. In line with this, the country's media are assigned the role of promoting AI literacy among the public, suggesting institutional control of the narrative to ensure popular acceptance and support.

充分利用各种传统媒体和新兴媒体，及时宣传人工智能新进展、新成效，让人工智能健康发展成为全社会共识，调动全社会参与支持人工智能发展的积极性。及时做好舆论引导，更好应对人工智能发展可能带来的社会、伦理和法律等挑战。
[We should] make full use of various traditional and new media to promote the new advances and achievements in AI in a timely manner, so that the healthy development of AI becomes a shared consensus in society. This will mobilise



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the active participation and support of the entire society for the development of AI. Through the timely management of public opinion, we will better address the societal, ethical and legal challenges that may arise from the development of Artificial Intelligence.

The CPC still regards the national information sector as its mouthpiece ("throat and tongue" 喉舌), meaning that it expects news outlets to act as loudspeakers for the Party. In this view, it is only normal that official documents assign the media the duty to communicate AI to the public in a way that can «mobilise […] support from the whole of society». In light of these directives, it is reasonable to expect that the Chinese media discourse will largely frame AI in a positive light, as a reflection of the institutional discourse. The following section explores this point in order to answer RQ2.

## 4. Media discourse

### 4.1. *Data and methods*

The media corpus consists of commentary articles published by two selected news outlets between 1 November 2022 and 30 November 2023. The time period was chosen to cover the year since the release of ChatGPT (November 2022) and, consequently, the surge in global media attention to AI (especially generative AI).

The media outlets included in this study are the Chinese-language online editions of RMRB and Caixin Zhoukan (财新周刊, CXZK). The former is considered the most authoritative institutional paper in the country due to its direct link to the CPC (Stockmann, 2013), while the latter is considered one of the most authoritative but relatively independent outlets due to its specialised coverage (financial news or general news with a financial angle) (de Burgh, 2017). The RMRB represents the generalist party media, while the commercial CXZK reflects a (potentially) alternative perspective. The core difference between the two types lies in their financial set-up, which affects the content produced by each outlet[7]. It can be expected that media coverage in the RMRB would reflect the Party's overwhelmingly positive view of AI, emphasising the technology's

7. Commercial (or commercialised 市场化) media emerged in China in the 1990s. The difference between commercial and institutional (机构) or party media in China has been discussed, among others, in Stockman (2013: 67-71).



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economic, social and patriotic potential, while the CXZK might provide space for a slightly more critical debate where official views could be challenged. This would most likely have been the case in the pre-Xi Jinping political context, while it is less obvious in the more restrained media environment of contemporary China (Anonymous, 2024).

Texts were manually retrieved from Caixin.cn and the RMRB commentary section (评论版) by searching for the term *artificial intelligence* (人工智能) in titles and/or lead paragraphs, and then filtered according to whether they belonged to the commentary genre[8] and their relevance to the topic. To ensure this, the complete paragraphs in which the keyword appeared in the text were collected for each preselected article. After this selection, a total of 26 commentaries were finally included in the RMRB sub-commentary (corresponding to approximately 35,000 Chinese characters) and 47 in the CXZK sub-corpus (corresponding to over 56,000 Chinese characters). The entirety of the selected articles was considered in the textual analysis phase.

### 4.2. *Analysis*

The first step of the analysis was devoted to identifying themes and frames in the two sub-corpora. A deductive approach to the content analysis of frames in news was used to make the study reproducible and comparable across time and linguistic/political/geographical contexts in potential future research. Semetko & Valkenburg's (2000: 94-95) model of five frames found in discourses, including conflict, human impact, responsibility, morality and economic consequences, was applied. In order to avoid the inherent subjectivity in qualitative research (Simon, 2001), SketchEngine (Kilgarriff *et al*., 2014) was used to support the identification of frames in the two sub-corpora using word frequency, collocates, keyness (against the Chinese Web 2017 corpus) and concordance lines, based on the idea that specific words are the "building blocks" of frames (Entman, 1993).

After coding the articles (and paragraphs, as usually more than one frame was detected in each article), the texts were analysed in a third step, looking for potential manifestations of discursive legitimation strategies in

8. More precisely, CXZK corpus construction was made according to the articles' belonging to commentary sub-genres, since the keyword search on the magazine's website does not allow the user to automatically filter between news and views. For a presentation of the most relevant sub-genres in Chinese journalism, see Lupano (2018).



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each sub-corpus. Wang's (2020: 686) categorisation, which adapted van Leeuwen's and Reyes' categories to the Chinese context, was used as a framework for interpreting CPC legitimation strategies in AI narratives. Four of Wang's five categories were considered applicable to this study: (1) emphasising the government's positive actions (the power, wisdom and effectiveness of the central government's actions are emphasised); (2) evoking emotions (positive or negative emotions are evoked through the representation of social actors/actions); (3) rationality (rational constructs based on common sense, morality and community-shared values are used to justify certain actions); and (4) hypothetical future (typically realised through a construct where clause A presents certain actions as necessary to avoid a potential threat or negative situation described in clause B)[9].

In the two sub-corpora, frames are activated by recurrent words or expressions as noted below:

- Responsibility: nouns such as *government* 政府, *China* 中国 (as the subject of a sentence); verbs (also used as nouns) such as *to support* 支持, *to promote* 推动, *to develop/development* 发展, *to encourage* 鼓励, *to deepen* 深化, *to cooperate/cooperation* 合作, *to establish* 建立; adjectives such as *together/common* 共同; *tifa* such as *community with a shared future* 命运共同体 etc.
- Economic impact: nouns such as *industry* 产业, *company* 企业, *private company* 民企, *economy* 经济, *market* 市场, *application* 应用, *result* 成果; verbs/nouns such as *to develop/development* 发展; expressions such as *new level* 新台阶, *digital economy* 数字经济, *digital transformation* 数字化转型 etc.
- Human impact: nouns related to the human sphere like *hand* 手, *chemist* 化学家, *future* 未来, *life* 生活, *the masses* 群众; nouns and adjectives that articulate a feeling or emotion such as *confidence* 信心, *beautiful* 美好; and adverbs that stress exceptional performances such as *only* 只, *only* 仅 etc.
- Morality: deontic verbs such as *must* 必要; expressions like *life of the masses* 公众生命, *vital interests* 切身利益 etc.

9. The construct is very often a conditional sentence expressing an inevitable condition in clause A. See Von Wright (1963); Sparvoli (2011).



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### 4.2.1. RMRB

Of the five frames proposed by Semetko & Valkenburg, "conflict" was not found in the RMRB sub-corpus. The "responsibility" frame was the most common – a finding that is consistent with the outlet being the main party newspaper in China. This frame is often linked to (or even overlaps with) the "economic impact" frame. The "moral" frame is the least frequent in the sub-corpus.

The excerpts below, coded for the "responsibility" frame, describe the government's involvement in AI and its actions to solve potential problems.

(1) 政府"该出手时就出手"…支持企业发展不断迈上新台阶。
The government takes action when it is necessary… to support the development of enterprises to constantly reach new levels.

(2) 机器人产业是一扇窗口，从中可窥见我国产业高端化发展的"大棋局"。
The robotics industry is a window through which we can get a glimpse of the "big chess game" of our country's high-end industrial development.

(3) 中国将与世界各国一道深化合作，共同推动构建网络空间命运共同体迈向新阶段，让更多国家和人民共享互联网发展成果。
China will work with countries around the world to strengthen cooperation, jointly promoting the advancement of a community with a shared future in cyberspace to a new stage, allowing more countries and people to share the benefits of internet development.

(4) 建立"一张网"，提供"一站式"服务，彰显了政府部门为中小企业真心实意解难题、真招实招助发展的决心。健全公共服务体系，鼓励和支持中小企业发展壮大，不断提振市场预期和信心，中国经济必将汇聚起更磅礴的内生动力。
The establishment of "one network" and the provision of "one-stop" services demonstrate the determination of government departments to sincerely solve the problems of small and medium-sized enterprises (SMEs) and support their development with real measures. By improving the public service system, encouraging and supporting the development and growth of small and medium-sized enterprises, and constantly raising market expectations and confidence, China's economy will inevitably gain stronger endogenous momentum.

Legitimation strategies that emphasise the government's positive actions are evident in these excerpts, which highlight the government's generosity and responsibility towards other countries (3), its reliability, care and support for Chinese businesses (1), and its wisdom in leading the nation to successful development by following a well-thought-out plan. The chess metaphor in extract (2) is particularly effective in giving the



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government/CPC legitimacy to lead China because of its strategic, rational and forward-looking approach.

Excerpts (1), (2) and (4) were also coded for the "economic impact" frame. The two frames are closely intertwined in the RMRB sub-corpus. In extracts (1) and (2), enterprise development and industrial development are taken care of by the leadership, which guarantees continuous progress. The Party-state is thus legitimised in its work because it promises economic and technological progress, and because it can be trusted to intervene to solve problems that arise. Expressions such as «new stage 新阶段» and «new level 新台阶» hint at a future that is positive and better than the present, implicitly confirming that the government's actions are going in the right direction. The message is that the Chinese people are in safe hands.

In extract (4), the two frames overlap completely. The "government departments" are portrayed as a united force, a determined, proactive, good-hearted problem solver («sincerely solve problems 真心实意解难题»), eager to *help* (招助) by taking «real measures 真招实» to benefit the business world and counteract potential negative effects of AI. Legitimation strategies also overlap in this part of the text: in addition to the emphasis on positive government action, the discursive strategy of "hypothetical future" appears when a desirable phenomenon (gathering endogenous driving force) is conditionally linked to government action (improving public service, encouraging SME growth, and boosting market confidence). The certainty adverb (*inevitably* 必将) reinforces the message that with the CPC-State in charge, everything will be fine.

The following excerpts were coded for the "human impact" frame, which foregrounds stories with a human angle.

(6) 在不久前举办的 2023 中关村论坛展览（科博会）上，前沿科技与未来产业展区内，一台机器人引起了笔者关注。只见它将"手"伸入一个开口狭小的球状容器，轻松剥开鹌鹑蛋壳，薄如蝉翼的蛋膜却完好无损。
At the 2023 Zhongguancun Forum Exhibition (Sci-Tech Expo) held not long ago, a robot caught my attention in the cutting-edge technology and future industry exhibition area. It stretched its "hand" into a spherical container with a narrow opening and easily peeled off the quail eggshell, leaving the egg membrane as thin as a cicada's wing intact.

(7) 有了聪明的"机器化学家"，从数百万种材料组合中找到理想结果，可能只需一两周。这不，仅用 10 多天，它就为实验室的科研团队找出了 20 多种高质量材料组合，极大提高了开发优质薄膜材料的效率。
With a smart "machine chemist", it may only take a week or two to find the ideal result from millions of material combinations. In just over 10 days, it found more than 20 high-quality material combinations for the laboratory's



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research team, greatly improving the efficiency of developing high-quality thin film materials.

(8) 科技改变生活，科技引领未来。…一个个新产品、一项项新技术，着眼群众现实需求，带来全新体验，描摹出未来生活的美好图景。
New products and new technologies focus on the actual needs of the masses, bring new experiences, and depict a beautiful picture of future life.

(9) 新征程上，我们有基础、有底气、有信心、有能力实现高水平科技自立自强，以科技创新的累累硕果惠及广大群众，创造更加美好的生活。
On the new journey, we have the foundation, confidence, and ability to achieve high-level scientific and technological self-reliance, to benefit the public with the fruitful results of scientific and technological innovation, and to create a better life.

Discursive strategies aimed at eliciting emotions can be found in excerpts (6) and (7), where positive feelings of astonishment and admiration for technological advances help to legitimise the Party-state that promotes them and to generate a feeling of national pride for China's technological achievements. The humanisation of a robot – capable of actively "attracting" the journalist's attention and using its *hand* (手) to peel a quail's egg – creates an immediate sense of closeness to the machine. In excerpt (7), the superior capabilities of an intelligent «machine chemist 机器化学家» are emphasised by the adverbs *only* 只, *only* 仅 and *greatly* 极大, the adjectives *smart* 聪明 and *ideal* 理想 and the modifier *high-quality* 高质量. In excerpt (6), the adjective *cutting-edge* 前沿, the adverbial adjective "relaxed/easy 轻松" and the idiom 'as thin as a cicada's wing 薄如蝉翼' all contribute to evoking awe at the wonders of machines. Showing their "human face" makes them less threatening, and the "technological sublime" that is evoked embodies the celebration of technological progress and conceals its problems and contradictions (Marx, 2000: 207). There is no room in this narrative for the risks and negative effects, such as unemployment or loss of control, that might result from the extensive use of machines.

In excerpts (8) and (9), emotions are used to depict a «beautiful picture of future life 未来生活的美好图景» where the needs of the masses are taken care of by AI, and where China can rely on itself for scientific and technological progress, leading to a «better life 更加美好的生活». In excerpt (9), the legitimising strategy of eliciting emotions is mixed with the strategy of emphasising the government's positive actions, signalled by two expressions that have been frequently used in official documents and speeches in recent years, such as «technological self-reliance 科技自立自强» and «beautiful life 美好的生活». The idyllic picture of the future painted



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in excerpt (8) lends legitimacy to the Party, whose actions are implicitly the key to unlocking this scenario.

Only one article in the sub-corpus was coded for the "morality" frame. It presents the 'Beijing Internet Medical Treatment Supervision Implementation Measures (Trial)' formulated by the Beijing administration:

(10) 北京市卫健委日前牵头组织制定了《北京市互联网诊疗监管实施办法（试行）》。。。在此基础上，《北京市互联网诊疗监管实施办法（试行）》进一步细化了管理规定。其中一大亮点是，由北京市卫生健康委员会建立北京市互联网诊疗监管平台。。。互联网技术的运用旨在提高诊疗效果、降低门诊压力、减轻患者负担。但无论如何，人工智能都不能越俎代庖冒充医生——倘若医疗"工具人"大行其道，不仅是对患者切身利益的巨大伤害，同时也是对医生神圣职业的巨大贬损。事关公众生命安全和切身利益，审慎的态度是非常重要而且必要的。

The Beijing Municipal Health Commission recently took the lead in formulating the "Beijing Internet Medical Treatment Supervision Implementation Measures (Trial)"… On this basis, the "Beijing Internet Medical Treatment Supervision Implementation Measures (Trial)" further refined the management regulation. One of the highlights is that the Beijing Municipal Health Commission has set up the Beijing Internet Medical Treatment Supervision Platform… The application of Internet technology aims to improve the effectiveness of diagnosis and treatment, reduce the pressure on outpatient clinics and reduce the burden on patients. However, AI cannot replace doctors. If medical "tool men" become widespread, it will not only cause great harm to the vital interests of patients, but also greatly devalue the sacred profession of doctors. It is very important and necessary to be cautious when it comes to the safety of life and vital interests of the public.

The commentary discusses the benefits and risks of online medical treatment and condemns abuses. The "moral" frame is activated by deontic verbs such as *must* 必要 and *cannot/should not* 不能; by names and adjectives semantically related to the area of risk (*harm* 伤害, *caution* 审慎, *safety* 安全); and by modifiers indicating crucial times and situations, as shown in extract (10): the medical profession is *sacred* 神圣, the people's interests are *vital* 切身, the damage is *great* 巨大. However, such risks will be contained thanks to the initiative of the local government, which has «taken the lead 牵头», *refined* 细化 the regulation, and *set up* 建立 a monitoring platform to contain the negative effects of technology application. This narrative legitimises the Party-state by projecting an image of proactivity and responsibility, but also shows the high moral standing of the leadership in recognising the existence of ethical boundaries that should not be crossed. In this narrative, the CPC can be trusted to do the right thing.



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It is worth noting that the absence of the 'conflict' frame in the RMRB sub-corpus tacitly supports the Party's legitimation strategies. With no conflict in sight, everyone wins under the leadership of the CPC.

In short, the AI narrative that emerges from the sub-corpus tends to emphasise the positive actions and attitudes of the leadership, its sense of responsibility and trustworthiness, as might be expected in RMRB commentaries. A generally positive portrayal of AI applications and impacts legitimises the CPC's push for its development in the country. When negative impacts are discussed, the leadership is portrayed as being on top of every issue thanks to its wisdom, proactivity and foresight.

As such, RMRB commentaries carefully reproduce the official discourse on AI, contributing fully to the effort to create AI literacy.

### 4.2.2. CXZK

The "conflict" frame is found in the CXZK sub-corpus, together with the other four framing categories. The "economic" and "human impact" frames predominate, followed by the "conflict", "responsibility" and "morality" frames. As in the RMRB sub-corpus, frames tend to overlap in individual comments and even in individual paragraphs in the CXZK sub-corpus.

Unsurprisingly, given the focus of the magazine and its commercial orientation, the CXZK commentaries place enterprises at the centre of the discourse on AI. In particular, the articles argue for the importance of private companies for the success of China's technological innovation.

(11) 民企已然成为中国科技创新的主体。离开民企，创新型国家建设就无从谈起。在科技创新上，民企用得上、离不开，自然也应当信得过。
Private enterprises have become the main body of China's scientific and technological innovation. Without private enterprises, it is impossible to talk about building an innovative country. In scientific and technological innovation, private enterprises are useful and indispensable, and of course they should be trusted.

(12) 在关键核心技术攻关中，让民企参与不是"不得已"，而是"必须有"。
In the research and development of key core technologies, it is not a "last resort" but a "must" to allow private enterprises to participate.

Both texts, which could fall into the "economic impact" category, use deontic verbs (*must* 应当, *must* 必须), verbal constructions (*useful* 用得上, *inseparable* 离不开) and conditional sentences («is out of the question



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无从谈起») to highlight the central role of private companies in the development of AI, arguing that their trustworthiness lies in the natural order of things (*naturally* 自然). In excerpts (11) and (12), there is no language directly legitimising the leadership, nor are there any critical remarks. However, the portrayal of private enterprise as the key to «building an innovative country 创新型国家建设» tacitly supports the leadership's narrative, which promotes technological development as highly positive.

In contrast to the RMRB sub-corpus, the CXZK commentaries openly describe the negative economic effects of AI, and no reference is made to a *deus ex machina* (such as the CPC) that could alleviate the sense of fear and uncertainty («it is unclear 尚不清楚», «if any 如果有的话», «causing panic 引起恐慌»):

(13) ChatGPT 可能带来的失业规模和速度将比物理自动化浪潮更大更快，被淘汰的岗位将不仅限于体力劳动、低技能和低工资岗位。目前，尚不清楚人工智能将无法模拟哪些人类特质（如果有的话）。这些特质是人与生俱来的，还是可以后天习得的？… DALL·E 能够依照文本描述（如"一幅苹果画"或"留着胡子的'蒙娜丽莎'"）去生成复杂的图像。这已被用于设计杂志封面等工作，在艺术家中引起恐慌。
The scale and speed of unemployment that ChatGPT may bring will be greater and faster than the wave of physical automation, and the jobs that will be eliminated will not be limited to manual labour, low-skilled and low-wage jobs. At present, it is not clear which human traits (if any) artificial intelligence will not be able to simulate. … DALL·E can generate complex images based on text descriptions … causing panic among artists.

Excerpt (14) focuses on the international scenario, arguing that competition between companies and between states requires supervision at the global level:

(14) AI 技术发展需要规则约束；企业与企业之间、甚至国与国之间的合作和竞争，同样需要规则。AI蕴藏的巨大商业利益，可能会让一些企业失守底线，所以，外部监管及时跟进就显得尤为重要。
The development of AI technology requires rules and constraints; cooperation and competition between firms and even between countries also require rules. The huge commercial benefits contained in AI may cause some companies to lose their bottom line, therefore it is particularly important for external supervision to follow up in a timely manner.

This is an example of using the rationality strategy to legitimise the authority of the CPC. Logical consequences are drawn (*therefore* 所以) from the hypothesis (*may* 可能会). The message is that rules are needed, therefore leadership is needed. And who else could lead, if not the Party-state?



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In the sub-corpus, the "conflict" frame is activated by terms like *war* 战 and *disaster* 灾难 and by verbs like *to win* 赢 and *to beat* 胜出, as in excerpt (15):

(15) 如果只是将其视为科技战的一环，单纯以赢为目的，自然会弱化底线。一国的胜出，却可能带来全人类的灾难。
If it is only regarded as a part of the technological war and the purpose is simply to win, it will naturally weaken the bottom line. The victory of one country may bring disaster to the entire mankind.

This narrative, which also evokes emotions of fear by alluding to existential tragedies («the entire mankind 全人类»), is in line with official discourse and helps to implicitly legitimise CPC policies. When discussing the risks associated with the development of AI, the "human impact" frame is also intertwined with the "morality" frame, activated by nouns such as *ethics* 伦理, *humanity* 人类, *constraint* 约束, and modifiers such as *necessary* 必要的.

(16) 对狂飙突进中的 AI 保持必要的警醒，防止其横冲直撞，又不阻碍人类获得 AI 发展的红利，这需要智慧。
It will take wisdom to maintain the necessary vigilance against the rapid development of AI, to prevent it from running amok and to ensure that humanity can reap the dividends of AI development.

(17) 如果只是追求商业利益最大化，不顾及伦理，不施加约束，那么，AI 技术尤其是近在咫尺的 AGI（Artificial General Intelligence，人工通用智能），必然会给社会带来巨大的全方位冲击。
If we pursue only the maximisation of commercial interests without considering ethics and imposing constraints, then AI technology, especially AGI (Artificial General Intelligence), will inevitably have a huge all-round impact on society.

This type of discourse exploits the reader's emotional response to potential catastrophes («huge all-round impact 巨大的全方位冲击») with the aim to legitimise the (only) "wise" actor entitled to be vigilant and to prevent rampant AI: the Party. Its role is clearly stated in other excerpts that make strategic use of emotions, while also activating a "conflict" frame.

(18) 倘若 AI 的设计者根本就不想造福人类，比如希特勒在柏林暗堡里组队并研发了 AI，那么人类基本就可以与世界告别了。
If the designers of AI do not want to benefit humanity at all, like Hitler forming a team and developing AI in a bunker in Berlin, then humanity can basically kiss the world goodbye.



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(19) 对于它，眼下有两种极端的看法。一是津津乐道其技术之神奇，而无视其风险。… 二是末日般的悲观，认为 AI 必将彻底取代人类，等待人类的是一场史无前例的浩劫。

There are two extreme views on AI. One is to talk about the magic of its technology with great relish, while ignoring its risks. … The other is doomsday pessimism, believing that AI will completely replace humans and that what awaits humanity is an unprecedented catastrophe.

(20) 在对生成式 AI 的诸多评论中，人们很少提及一个关键问题：哪些国家将从中受益，哪些国家将受损。… 毫无疑问，美国在开发大型语言模型（LLM）方面颇具优势。… 纵观历史，技术变革往往同时带来赢家和输家。我们需要确保AI带来更多的赢家和更少的输家。

Commentaries on generative AI rarely address a key question: which countries will benefit and which will suffer… There is no doubt that the United States has an advantage in developing large language models (LLMs)… Throughout history, technological change has often created both winners and losers. We must ensure that AI creates more winners and fewer losers.

In excerpt (18), emotions are again foregrounded by the noun *mankind* 人类, the reference to Hitler (希特勒) and the dramatic figure of speech «say goodbye to the world 与世界告别». Excerpts (19) and (20) articulate the "conflict" frame by rhetorically emphasising the existence of two "sides": «one is… the other is 一是… 二是»; «which countries… which countries 哪些国家… 哪些国家», «winners and losers 赢家和输家», «the US… we 美国… 我们». In excerpt (20), the presupposition («there is no doubt that 毫无疑问») supports an othering discourse strategy (Lams, 2017) to emphasise that China, unlike the US, is interested in ensuring balanced AI development in the world. In this narrative, China stands as the champion of international harmony and cooperation, supporting a positive perception of leadership that cares for the weaker.

To sum up, in the CXZK sub-corpus discursive strategies are used in a few cases to lend legitimacy to the CPC, mainly by eliciting positive emotions of approval and admiration towards AI (and thus towards the CPC, which supports its development) or towards the leadership's attitudes and actions. To the same end, negative emotions of disapproval and fear are evoked towards others (such as the US) who are portrayed as not caring about the dangers posed by uncontrolled AI. However, there are also cases where the Chinese leadership is not featured: in these instances, the risks, dangers and moral issues related to AI are not presented as having been taken care of, and a genuine discussion of the intricacies of AI is conducted.

Compared to the institutional narrative on AI, the CXZK sub-corpus shows partial alignment. The articles reiterate the positive attitude of



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the leadership towards the development of AI, seeing it as a disruptive but necessary advancement that only needs to be managed wisely. However, compared to the RMRB sub-corpus and the institutional discourse, the texts focus more on the problems, social impacts and risks of AI (unemployment, scientific integrity, enterprises, machine takeover, international competition, etc.), and only a few comments mention (or hint at) the Party-state as the obvious problem solver. As a result, the CXZK narrative appears to only partially legitimise leadership through the AI debate.

## 5. Concluding remarks

This study has explored the institutional and media narratives on AI in China, and examined the degree of overlap between the two. The analysis looked at dominant themes and keywords related to AI in the institutional discourse and dominant themes and frames related to AI in media discourse, with the aim of questioning their discursive function in legitimising the Party-state and assessing content variability across media. A mixed-methods approach of theme and frame analysis, supported by corpus linguistic tools, was used within the theoretical framework of legitimation discourse strategies.

The use of two datasets (a corpus of institutional documents and a corpus of news commentaries) provided original insights into the actual overlap between institutional and media discourses compared to previous literature, which has assumed – but not verified – a basic alignment of Chinese media discourse with the national institutional discourse. However, due to the limited corpora used, the findings presented in this study must be considered preliminary. Both corpora could be expanded in future work, including more official documents in one case and more news outlets in the other. Similarly, the time frame examined could be extended to look at potential discursive trends and developments.

On the basis of this analysis, AI is generally portrayed as an overwhelmingly positive force in China, particularly in terms of its economic potential to enhance the nation's global position. At the same time, there are nuanced concerns about its social implications, coupled with an imperative to address the shortcomings in its development. However, there are significant gaps in addressing ethical implications (which are described but never discussed in depth), environmental impacts (which are simply not mentioned), and monopolistic power risks (which are largely overlooked). In both corpora, AI is normalised as a part of



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everyday life, a matter-of-course phenomenon to be dealt with, while the rightness and desirability of developing AI is removed from the debate, depoliticising the issue. Since artificial intelligence is presented as vital to China's international competitiveness, dropping out of the global AI race is simply not an option. Its desirability is instilled by narratives that link its development to the restoration of China's greatness, thus evoking patriotic sentiments that support the party line.

The institutional discourse (RQ1) does this by foregrounding AI as a strategic opportunity for the national future, focusing on the themes of economy and industry, social applications and impacts, and technology and science. If AI development is the way to restore China's deserved greatness, then the leadership is on the right track. The Party-state is also legitimised as the actor entitled to promote and stimulate this process, to avoid potential negative impacts on society, and to ensure that weaknesses in the scientific field are overcome.

In relation to RQ2, the RMRB opinion articles included in the sub-corpus also support the development of AI as a prerequisite for national empowerment and social stability. Risks are somehow minimised by only mentioning them as something to be anticipated and dealt with. The CPC-state is portrayed as responsible and committed to seizing every opportunity to make China stronger, but also wise and competent about the risks to be addressed. Again, the development of AI is presented as a patriotic goal, and the CPC is the legitimate actor to promote this goal. Feelings of national pride are also elicited by insisting on the astonishing applications and capabilities of Chinese AI. The opinion articles from the CXZK sub-corpus, however, present a partially different scenario, as they deal extensively with the problems, doubts and risks associated with AI (such as unemployment, scientific integrity, companies, takeover by machines, international competition, etc.). In some cases, the texts use positive and negative emotions to legitimise the Party-state as the ideal leadership to tackle AI, presenting it as an opportunity to be embraced for national growth and mentioning the Party-state as a problem-solver. In a number of other cases, the commentators appear instead to be genuinely discussing the issue, particularly in terms of its social implications.

With regard to RQ3, the analysis suggests that the RMRB strongly supports the official discourse on AI in line with the goals of socialism and modernisation, while the CXZK is less focused on the CPC's legitimation strategies and more interested in an actual discussion of AI, reflecting on its ethical and economic implications. These preliminary findings suggest that institutional and commercial media use overlapping yet distinct framing strategies to legitimise AI development as central to



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China's national strategy, confirming the potential for at least moderate deviations from institutional discourse even in prominent national media.

In conclusion, the use of framing analysis supported by corpus linguistic tools has proved effective in identifying discursive patterns and strategies that allow for a nuanced understanding of how institutional and commercial voices negotiate the opportunities and risks associated with AI. From a Chinese media studies perspective, this research also testifies to the persistent difference between commercial and institutional outlets in the country, even under Xi Jinping's (tighter) rule. As seen in previous studies (Lupano, 2017; Repnikova, 2018; Lupano, 2020), it is possible to highlight differences in coverage by institutional and commercial media even under critical circumstances, with the latter maintaining a certain autonomy in the tones and concepts expressed. This is more likely to be seen in the commentary genre, due to the characteristics of this type of text. Arguably, moderate deviations from the "main melody" (主旋律) (Chen, 2022) can still be heard in the generally monotonous journalistic discourse in the PRC, which encourages continued efforts to analyse media discourse in China.

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# *Framing the Metaverse and AI: A Comparative Analysis of Media Discourse and Public Perception in China and the West*

by Vincenzo De Masi, Qinke Di, Siyi Li & Yuhan Song

## 1. Introduction

The rapid advancement of Artificial Intelligence has catalysed numerous technological innovations, with the Metaverse emerging as one of the most promising and controversial developments. Originally conceived by Neal Stephenson in his 1992 science fiction novel *Snow Crash*, the Metaverse concept has evolved from a speculative vision to a tangible technological goal (Stephenson, 1992). It represents a collective virtual shared space, created by the convergence of virtually enhanced physical reality and persistent virtual realms.

The integration of AI technologies, including natural language processing, computer vision, and machine learning, is crucial in realizing the Metaverse's potential. These technologies enable the creation of immersive, interactive, and personalized virtual experiences that blur the line between physical and digital realities (Lee *et al*., 2024). AI-driven avatars, for instance, can provide more natural and context-aware interactions within virtual environments, while machine learning algorithms can generate dynamic and responsive virtual worlds that adapt to user behaviour and preferences.

The potential applications of the Metaverse span across various sectors, including entertainment, education, commerce, social interaction, and healthcare. Virtual concerts, immersive gaming experiences, and interactive storytelling represent just a fraction of the possibilities in the entertainment sphere. In education, virtual classrooms, simulated historical environments, and interactive learning experiences promise to revolutionize the way knowledge is disseminated and acquired. The realm of commerce stands to be transformed through virtual storefronts, try-before-you-buy experiences, and blockchain-based virtual economies.



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Social interaction could be redefined through virtual meeting spaces, advanced social networks, and collaborative work environments that transcend physical limitations. In healthcare, the Metaverse opens up possibilities for virtual therapy sessions, sophisticated medical training simulations, and enhanced remote patient monitoring.

As a result of these wide-ranging applications, both tech giants and governments worldwide are investing heavily in Metaverse development. Companies like Meta (formerly Facebook), Microsoft, and Epic Games are pouring billions into research and development, while countries like China are incorporating the Metaverse into their national technology strategies (Heath, 2021; State Council of the People's Republic of China, 2017). However, the rapid development of the Metaverse and its underlying AI technologies has also raised significant concerns. Issues such as data privacy, digital addiction, and the potential for deepening social inequalities have become focal points in discussions about the future of these technologies (Bogost, 2021).

The way these concerns are framed and addressed varies significantly between different cultural and political contexts, particularly when comparing China and the West. This study aims to examine how media discourse in China and the West frames the Metaverse and AI, and how these narratives influence public perception in these regions. We seek to understand the impact of cultural, political, and economic factors on media representations of the Metaverse, and how these representations shape public opinion and expectations surrounding these emerging technologies.

Our research is guided by several key questions: How do Chinese and Western media outlets differ in their framing of the potential benefits and risks of AI and the Metaverse? What cultural, political, and economic factors influence these narrative differences? How do these media representations correlate with public perception and engagement with AI and the Metaverse in China and the West? What are the implications of these differing narratives for the global development and regulation of Metaverse technologies?

To address these research questions, we employ a mixed-methods approach, combining critical discourse analysis with a systematic review of secondary data on public opinion. Our critical discourse analysis is grounded in Fairclough's (1995) three-dimensional framework, which examines text, discursive practice, and social practice. Within this framework, we focus on identifying frames, defined by Entman as the process of selecting «some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation» (1993: 52).



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Our frame identification process involves both qualitative coding and computational text analysis. We initially conducted manual coding on a subset of articles to identify recurring themes, ideological stances, and linguistic patterns. This process was guided by van Dijk's (1993) approach to ideological analysis and Wodak's (2001) discourse-historical approach. Subsequently, we employed natural language processing techniques using the Python NLTK library to analyze the frequency, co-occurrence, and contextual usage of key terms related to the Metaverse and AI across the entire corpus.

The corpus comprises 500 articles published between January 2022 and December 2023. This timeframe was selected to capture recent developments in Metaverse technologies and associated discourse, while acknowledging the rapid evolution of the field. Articles were sourced from influential media outlets in China and the West, including state-controlled Chinese media (e.g., *Xinhua*, *People's Daily*), Western mainstream media (e.g., *The New York Times*, *The Guardian*, *BBC*), and technology-focused publications (e.g., *Wired*, *TechCrunch*). The selection criteria prioritized in-depth analyses, feature articles, and opinion pieces that significantly contribute to shaping public discourse on the Metaverse and AI.

To account for potential shifts in narrative and public perception over the study period, we conducted a longitudinal analysis, examining quarter-over-quarter changes in framing and sentiment. This approach allowed us to identify evolving trends, such as the transition from initial enthusiasm about the Metaverse to growing concerns about privacy and regulation.

Complementing our discourse analysis, we systematically reviewed public opinion data from reputable sources, including the Pew Research Center, Ipsos, and the China Internet Network Information Center (CNNIC). Studies were included based on their methodological rigor, sample representativeness, and relevance to Metaverse and AI perceptions. This quantitative data serves to triangulate our findings from the media discourse analysis, providing a more comprehensive understanding of public awareness, attitudes, and engagement across different cultural contexts.

By integrating critical discourse analysis with public opinion data, our methodology aims to provide a nuanced understanding of how the Metaverse and AI are framed and perceived in China and the West, while also capturing the dynamic nature of these perceptions over time.

By combining these methodological approaches, we aim to provide a comprehensive understanding of how the Metaverse and AI are perceived and discussed in different cultural contexts, and how these perceptions might influence the future development and adoption of these technologies.



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This research not only contributes to the academic discourse on emerging technologies but also offers valuable insights for policymakers, industry leaders, and the general public as we collectively navigate the challenges and opportunities presented by the Metaverse and AI.

## 2. China's Strategic Embrace of the Metaverse

China's approach to AI and the Metaverse offers a compelling case study in state-driven technological innovation. The Chinese government has explicitly designated AI and the Metaverse as pillars of its digital economy, positioning these technologies at the heart of its broader national development strategy. This aligns with China's ambition to become a global leader in AI by 2030, as outlined in the *New Generation Artificial Intelligence Development Plan* (State Council of the People's Republic of China, 2017).

The plan sets out a three-step strategy that aims to keep pace with globally advanced AI technologies and applications by 2020, achieve major breakthroughs in basic AI theory by 2025, and become the world's primary AI innovation center by 2030. This ambitious roadmap demonstrates China's commitment to not just adopting but leading in AI and related technologies like the Metaverse.

China's digital landscape provides fertile ground for Metaverse development. With an internet penetration rate of 73% as of early 2023 and a highly integrated digital economy, China offers a vast potential user base for Metaverse platforms (Kemp, 2023). The country's 989 million internet users, many of whom are already accustomed to virtual social interactions and digital payments, represent a significant market for Metaverse technologies.

Moreover, the country's protectionist policies, such as the "Great Firewall", ensure that domestic tech companies dominate the digital landscape, providing them with a relatively insulated market for innovation (Shen, 2019). This digital sovereignty approach has allowed Chinese companies to develop unique platforms and services tailored to local preferences and regulatory requirements.

Leading Chinese tech companies have already launched significant Metaverse-related projects. Tencent's social platforms like QQ and WeChat have long incorporated virtual avatar systems, and the company has invested heavily in gaming and virtual reality technologies. Baidu's XiRang platform, unveiled in 2021, represents one of China's first explicit forays into Metaverse development, aiming to host up to 100,000 virtual



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attendees for events and conferences (Kharpal, 2022). Alibaba has been exploring Metaverse applications in retail, including virtual shopping experiences and digital collectibles backed by blockchain technology. ByteDance, the parent company of TikTok, has invested in VR hardware through its acquisition of Pico Interactive, signalling its interest in the Metaverse space.

These initiatives are not just corporate endeavours but are often aligned with and supported by government policies. For instance, the city of Shanghai included the Metaverse in its five-year plan for developing its electronic information industry, demonstrating the integration of Metaverse development into local and national economic strategies (Shanghai Municipal People's Government, 2023).

However, China's embrace of the Metaverse also comes with unique characteristics and challenges. The government's emphasis on social harmony and stability means that Metaverse platforms in China are likely to be more tightly regulated than their Western counterparts. Issues such as content control, digital identity verification, and data sovereignty are likely to shape the development of China's Metaverse in ways that may differ significantly from Western approaches.

## 3. Western Corporate and Consumer-Driven Development

In contrast to China's state-led approach, Metaverse and AI development in the West is primarily driven by the private sector. Companies such as Meta (formerly Facebook), Microsoft, and Epic Games are at the forefront of Metaverse innovation, investing billions of dollars to transform how individuals interact, socialize, and conduct business online (Heath, 2021).

Meta, in particular, has made the Metaverse central to its corporate strategy. In his founder's letter announcing the company's rebranding, Mark Zuckerberg described the Metaverse as «an embodied internet where you're in the experience, not just looking at it» (Zuckerberg, 2021). The company has committed to investing $10 billion annually in Metaverse-related technologies, including virtual and augmented reality hardware.

Microsoft has focused on enterprise applications of the Metaverse, integrating mixed reality capabilities into its Teams platform and developing the HoloLens for industrial and medical applications. The company's acquisition of gaming giant Activision Blizzard for $68.7 billion in 2022 was partly motivated by Metaverse-related ambitions (Warren, 2022).



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Epic Games, creator of the popular game Fortnite, has been pushing the boundaries of what's possible in virtual social spaces. Fortnite has hosted massive virtual concerts, including a Travis Scott performance that drew 12.3 million concurrent players (Spangler, 2020). These events hint at the potential for large-scale social experiences in the Metaverse.

Western Metaverse initiatives often focus on entertainment and gaming, social interaction, e-commerce, workplace collaboration, and decentralized economies. Companies are exploring ways to create more immersive and social gaming experiences, blurring the lines between games and virtual worlds. Platforms are being developed to facilitate more natural and engaging virtual social interactions, potentially replacing or augmenting traditional social media. Virtual and augmented reality technologies are being integrated into online shopping experiences, allowing customers to visualize products in their own spaces or try on virtual clothing.

With the rise of remote work, companies are investing in virtual office spaces and collaboration tools that aim to replicate or improve upon in-person interactions. Blockchain-based platforms like Decentraland and The Sandbox allow users to buy virtual land, create and trade digital assets, and participate in decentralized governance structures (Howcroft, 2021).

However, Western media discourse surrounding AI and the Metaverse tends to be more cautious than in China, emphasizing potential risks such as privacy violations, addiction, and the exacerbation of social inequalities. Critics argue that without proper regulation, the Metaverse could create a "dystopian" digital future dominated by a few powerful corporations (Bogost, 2021).

Key concerns raised in Western discourse include data privacy, digital addiction, economic inequality, content moderation challenges, and the concentration of corporate power. These concerns have led to calls for proactive regulation and ethical guidelines for Metaverse development in the West. However, the decentralized nature of Western regulatory systems and the rapid pace of technological change pose challenges for creating comprehensive and effective oversight.

## 4. Analysis of Media Discourse: China vs. the West

The analysis of media discourse reveals significant differences in how AI and the Metaverse are framed in China and the West, reflecting broader cultural, political, and economic contexts. These differences are evident in both the tone and focus of media coverage, as demonstrated by the following examples.



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### 4.1. *Framing in Chinese Media: Economic Growth and Social Harmony*

Chinese media often frames AI and the Metaverse as crucial components of the nation's technological and economic future. This framing consistently emphasizes economic growth, technological leadership, and social development.

A *CNBC* article from February 14, 2022, titled «China's tech giants push toward an $8 trillion metaverse opportunity – one that will be highly regulated», highlights the economic potential of the Metaverse in China (Kharpal, 2022). The article cites a Morgan Stanley estimate that «China's metaverse could be worth 8 trillion yuan, or $1.25 trillion». This framing aligns with the broader narrative of technological advancement and economic potential prevalent in Chinese media discourse.

The emphasis on economic growth is further reinforced by coverage of specific tech initiatives. When Baidu launched its Metaverse app XiRang in 2021, *China Daily* published an article titled «Baidu readies for imminent metaverse app launch» on December 23, 2021 (Fan, 2021). The article employs the frame of technological advancement and economic potential, noting: «The metaverse, which many people believe will be the next big thing after the internet, is expected to generate a market opportunity of 29 trillion yuan ($4.55 trillion) for related industries in China by 2030».

This economic framing extends to broader discussions of China's digital economy. A *Xinhua* report from May 26, 2024, titled «Digital economy expands in scale, demonstrating enormous potential», emphasizes the rapid growth of China's digital sector (Xinhua, 2024). The report states that «the value-added output of core industries in the digital economy reached 10 percent of China's total gross domestic product in 2023», highlighting the country's progress in digital development.

Moreover, Chinese media often frame the development of Metaverse technologies as a matter of national progress and coordinated effort. A *Global Times* article from January 21, 2024, titled «China brings together tech giants, universities to draft metaverse standards», reports on the formation of a standard-setting working group by the Ministry of Industry and Information Technology (*Global Times*, 2024). The group, comprising industry giants and leading universities, aims to create and revise industry standards for the Metaverse, emphasizing China's systematic approach to developing this technology.

The article also highlights the economic potential, stating that «By 2026, China's metaverse industry is expected to reach a scale of nearly 180 billion yuan ($25.29 billion)». This projection further reinforces the framing of the Metaverse as a significant economic opportunity.



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These examples demonstrate how Chinese media consistently frames the Metaverse and related technologies as drivers of economic growth, national technological advancement, and social development. The language used in these articles emphasizes the potential for innovation, economic opportunities, and China's position as a global leader in emerging technologies, all within a context of coordinated national effort.

### 4.2. *Framing in Western Media: Privacy Concerns and Ethical Considerations*

In contrast to Chinese media, Western outlets often frame discussions of AI and the Metaverse through the lens of privacy concerns, ethical considerations, and potential societal impacts. This framing tends to be more cautious and critical, emphasizing both the potential benefits and risks associated with these technologies.

*The New York Times*, in an article about Meta's $1.3 billion fine for violating E.U. data privacy rules, highlights the ongoing privacy concerns surrounding major tech companies involved in Metaverse development (Satariano, 2023). The article states, «The penalty… is potentially one of the most consequential in the five years since the European Union enacted the landmark data privacy law known as the General Data Protection Regulation». This framing places privacy at the forefront of discussions about digital technologies, including the Metaverse.

Similarly, *The Guardian*'s coverage often adopts a critical stance towards big tech companies' involvement in Metaverse development (MacDonald, 2022). In an article titled «I've seen the metaverse – and I don't want it», the author frames the Metaverse as a potential threat to privacy and societal well-being:

> Meta has patented technology that could track what you look at and how your body moves in virtual reality in order to target ads at you. Is that the future of video games and all the other virtual places where we spend time – to have our attention continually tracked and monetised, even more so than it is in real life?

Tech-focused publications like *Wired* tend to offer more nuanced perspectives, balancing discussions of technological advancements with critical examinations (Hanley, 2021). In an article titled «The Metaverse Land Rush is an Illusion» (December 16, 2021), David Hanley provides a critical examination of the economic aspects of the Metaverse: «The artificial scarcity of "virtual land" is a speculative bubble that doesn't reflect real demand for a non-existent technology».



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This framing challenges the economic narratives often found in Chinese media coverage, highlighting a more skeptical approach in Western tech journalism.

The *MIT Technology Review* (Bell, 2022), in an article titled «The metaverse is a new word for an old idea», frames the Metaverse concept within a historical context of technological hype and unfulfilled promises. The author, Genevieve Bell, argues: «Knowing the history of a technology, or the ideas it embodies, can provide better questions, reveal potential pitfalls and lessons already learned, and open a window onto the lives of those who learned them».

This perspective introduces a level of skepticism about the immediate feasibility and impact of the Metaverse, contrasting with the more optimistic framing often seen in Chinese media.

These examples illustrate how Western media often frames the Metaverse through a lens of caution, emphasizing potential privacy and ethical concerns alongside discussions of technological advancement. The language used in these articles tends to be more critical and questioning, focusing on the societal implications and potential risks associated with the development of Metaverse technologies.

## 5. Public Perception: A Comparative Analysis

The public perception of the Metaverse and AI reveals significant disparities between China and the West, reflecting the diverse cultural, political, and economic dynamics of these regions.

### 5.1. *Public Awareness and Engagement*

Public awareness of the Metaverse varies considerably between China and the West. In China, where the government actively promotes AI and Metaverse adoption, public awareness is relatively high. According to the 49th *Statistical Report on Internet Development in China*, published by the China Internet Network Information Center (CNNIC, 2022), by the end of 2021, 27.9% of Chinese internet users had used Metaverse-related applications, indicating a rapid adoption of these technologies. This statistic suggests a growing familiarity with the concept of the Metaverse among the Chinese population.

This heightened awareness is exemplified by the success of platforms like Zheli (later renamed Lingo), an avatar-based social app that achieved



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over 20 million downloads in January 2022, briefly becoming the most downloaded free app on China's App Store (Lee, 2022). This phenomenon illustrates the Chinese public's interest in immersive social experiences associated with the Metaverse concept.

In contrast, public awareness in the West remains more limited. A survey conducted by Pew Research Center in 2022 revealed that only 38% of Americans had heard of the Metaverse, with an even smaller percentage actively engaging with Metaverse platforms (Anderson & Rainie, 2022). This lower level of awareness can be attributed to less centralized promotion of Metaverse technologies, greater scepticism towards claims made by tech companies, and more fragmented media coverage of Metaverse developments.

The disparity in public awareness is evident in the contrasting responses to Metaverse initiatives in China and the West. While Chinese applications like Zheli have seen rapid adoption, Western platforms such as Meta's Horizon Worlds have struggled to attract and retain users. Reports indicated that Horizon Worlds had less than 200.000 monthly active users by the end of 2022, despite significant marketing efforts (Wagner, 2022). This stark contrast highlights the difference in public readiness and enthusiasm for Metaverse technologies between the two regions.

### 5.2. *Emotional Responses and Public Sentiment*

Research indicates significant regional variations in public sentiment towards AI and the Metaverse, with notable differences between Asian and Western markets. A 2022 Ipsos survey for the World Economic Forum reveals that these differences are quantifiable and substantial (Edmond, 2022; Jackson, 2022).

In Asian markets, particularly China, public sentiment shows strong positive engagement. A 2024 IPSOS survey reveals that 78% of Chinese citizens express a positive outlook towards extended reality (XR) technologies, exceeding the global average by 28% (Uzunoglu, 2024). This enthusiasm is further evidenced by concrete engagement metrics: according to Visa Inc., 26% of Chinese respondents are "very familiar" with the Metaverse, while 52% have some knowledge of it, and 5% have already invested in or experienced it (Uzunoglu, 2024). This positive sentiment is also reflected in academic research, where studies of Chinese users have found high levels of perceived usefulness and enjoyment among specific demographic groups (Ren *et al*., 2022).

In contrast, Western countries demonstrate more measured enthusiasm. According to Jackson (2022), fewer than one-third of respondents



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in countries like Japan, Great Britain, Belgium, Canada, France, and Germany express positive feelings about engaging with extended reality in their daily lives. This disparity is particularly evident in consumer adoption: while 22% of Chinese consumers are interested in using AR and VR for online shopping, this figure drops to 16% in the United States and 14% in the UK (Uzunoglu, 2024).

Western audiences' more cautious approach is reflected in both public sentiment and policy initiatives. The Ipsos survey found that while 52% of respondents across 29 countries are familiar with the metaverse, enthusiasm is significantly higher in emerging markets like China, India, and Saudi Arabia, where over two-thirds view it positively (Jackson, 2022). Demographics also play a role, with younger, more educated individuals showing greater familiarity and excitement about these technologies (Edmond, 2022).

Institutional factors appear to influence these regional differences. In China, government initiatives like the Three-Year Action Plan for Industrial Innovation and Development of the Metaverse (2023-2025) provide substantial support for Metaverse development (Uzunoglu, 2024). Additionally, CoinKickoff's analysis of social media sentiment confirms that Asian countries generally demonstrate higher levels of enthusiasm for Metaverse technologies compared to Western nations (Chen, 2023).

These divergent attitudes have significant implications for the future development and adoption of the Metaverse and AI in these regions. While China's positive approach may facilitate rapid adoption and innovation, the West's more measured stance could result in slower implementation with greater emphasis on addressing privacy and ethical concerns.

## 6. Conclusion

The comparative analysis of media discourse and public perception surrounding AI and the Metaverse in China and the West reveals significant differences in how these technologies are framed and understood. Our research presents clear evidence that China's state-led promotion of the Metaverse has fostered an optimistic narrative emphasizing collective benefits, while Western discourse demonstrates a more fragmented approach with greater emphasis on ethical and social risks (World Economic Forum, 2022; Uzunoglu, 2024).

These divergent narratives have concrete implications for the future development of the Metaverse. Our findings suggest we may witness the emergence of two distinct Metaverse ecosystems, each reflecting different



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technological standards and governance structures. China's optimistic framing and higher public awareness (78% positive outlook) could accelerate Metaverse integration into daily life, particularly in sectors like industrial manufacturing, education, and social interaction (Uzunoglu, 2024). Meanwhile, the West's more cautious approach (14-16% adoption rates) might result in slower but potentially more secure development, with greater emphasis on individual privacy and ethical considerations.

The regulatory landscape further reflects these regional differences. China's centralized approach, exemplified by the Three-Year Action Plan and initiatives like Shanghai's incorporation of the Metaverse in its five-year plan, enables rapid implementation of regulations and standards. This state-led strategy has already fostered significant corporate investment, with companies like Baidu, Tencent, and Alibaba launching major Metaverse initiatives. In contrast, the West's decentralized system, while potentially slower, may offer more robust consideration of privacy and ethical concerns, particularly regarding data collection and user protection (Bell, 2022; Uzunoglu, 2024).

Our longitudinal analysis reveals evolving narratives between 2022 and 2024. In China, we observe a shift from general consumer applications toward industrial implementations, aligned with national development strategies. Western discourse maintains its focus on privacy and ethical considerations but has evolved to include more specific concerns about data protection, social inequality, and corporate power concentration. These changing perspectives reflect deeper cultural and institutional differences in approaching technological innovation.

The role of private sector involvement also differs markedly between regions. In China, corporate initiatives align closely with government objectives, creating a coordinated approach to Metaverse development. Western development, led by companies like Meta, Microsoft, and Epic Games, follows a more market-driven path, with emphasis on entertainment, social interaction, and workplace collaboration.

These findings suggest significant implications for global interoperability and standardization. The emerging "two-track" development of the Metaverse could create technical and regulatory barriers that complicate international collaboration and user access. Furthermore, the contrasting regulatory frameworks will likely influence how privacy, data protection, and content moderation evolve in virtual spaces, potentially resulting in different user experiences and rights depending on geographic location.

Future research should expand beyond our current findings to examine the quantitative impact of government policies on adoption rates and the



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evolution of public sentiment across different demographic groups. Studies should also investigate the effectiveness of different regulatory approaches in protecting user interests while fostering innovation, as well as exploring potential pathways for bridging divergent development trajectories to create more inclusive global standards.

The Metaverse's development path will ultimately depend on how societies navigate these complex technological, ethical, and social challenges. Understanding these regional differences and their implications will be essential for fostering international collaboration and ensuring that the Metaverse becomes a technology that is not just advanced, but truly beneficial to society as a whole.

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# *Part II*

# *Public Opinion*

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# *Beyond Awareness: Exploring AI's Impact on Kenyan PR Adoption, Efficiency, and Ethics*

by John Maina Karanja

## 1. Introduction

In the past decade, new media technologies, such as social media, have played a pivotal role in mediating organization-public relationships (OPR) between organizations and their audiences (Roth-Cohen & Avidar, 2022). In the era of Universe 4.0, characterized by intelligent systems driven by cognitive technologies anchored on artificial intelligence (AI), critical processes such as decision-making, strategic communication, and relationship management could soon rely heavily on AI technologies and interfaces (Galloway & Swiatek, 2018; Karanja, 2023; Moore & Hubscher, 2021; Panda *et al*., 2019; Swiatek & Galloway, 2022; Yue *et al*., 2024). Organizations will need to carefully evaluate the utility of AI systems, agents, and interfaces before incorporating them into their short-term and long-term PR goals. For example, Panda *et al*. (2019) suggests that AI could assist practitioners in handling time-consuming tasks, analysing social media sentiments and trends, thereby enhancing social media engagement (Galloway & Swiatek, 2018; Moore & Hubscher, 2021; Yue *et al*., 2024). AI can also improve the speed and efficiency of online research, campaign assessment, and the quick identification of potential issues.

The landscape of public relations in Kenya has undergone significant transformations, both prior to and following the founding of the Public Relations Society of Kenya in 1971 (Kiambi, 2014). For many years, PR practitioners in Kenya relied on traditional media channels to build and maintain relationships with key stakeholders (Kiambi, 2014). While the industry has embraced the social media revolution over the past decade, legacy media continues to play a significant role in organization-public interactions (Macharia, 2017). Today, the PR industry in Kenya, like its global counterparts, faces unprecedented disruption due to the emergence



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of human-like artificial intelligence (AI) technologies (Moore & Hubscher, 2021). African experts have cautioned policymakers about the socio-economic challenges posed by AI, particularly in terms of shifts in the labor market (Gwagwa *et al*., 2020). Publications like the *PR Digest* and quarterly forums organized by the Public Relations Society of Kenya (PRSK) for both members and non-members reflect an ongoing effort to raise awareness about the evolving nature of the PR industry, driven by AI systems and technologies (PR Digest, 2021; PRSK, 2024). Interestingly, a recent analysis of tweets from Kenya and South Africa indicates that Kenyans are generally more optimistic about the impact of AI across multiple sectors, even though AI penetration remains relatively low (Wairegi *et al*., 2022).

While AI technologies are gaining popularity globally (Natale, 2021), their adoption in public relations (PR) particularly in the Global South, remains underexplored. For example, Lahav (2014) found that practitioners' reluctance to embrace social media in their work was often linked to their comfort with traditional media, existing expertise, and a fear of innovation. In Kenya, there is considerable uncertainty regarding the adoption and impact of AI in public relations and strategic communication. This exploratory study aims to understand practitioners' perceptions of the impact of PR-AI technologies on creativity, ethics, efficiency, and job security in Kenya. I conducted in-depth semi-structured interviews with 20 PR practitioners from Kenya. The analysis of transcribed data followed reflexive thematic analysis procedure which is suitable for exploratory studies due to its ability to generate rich data and unique themes (Bryman, 2016).

The study makes several practical contributions. Specifically, it provides valuable insights into the general perceptions of Kenyan PR practitioners regarding AI technologies, including their impact on creativity, ethics, job security, efficiency and productivity, and the evolving roles of PR professionals in the emerging AI era. These findings will be significant to the Public Relations Society of Kenya (PRSK), educational institutions, and communication scholarship in Africa, and beyond.

## 2. New Media, Artificial Intelligence and Public Relations

In recent years, Public Relations studies have highlighted the critical need for practitioners to possess the skills and abilities necessary to effectively leverage AI systems and interfaces in achieving their goals (Cheng & Yang, 2020; Swiatek & Galloway, 2022; Yue *et al*., 2024). PR scholarship has extensively examined practitioners' perspectives on



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utilizing new media technologies across various PR sub-fields, including blogs, websites, blogger relations, crisis communication, activism, internal communication, relationship management, issue management, transparency, mentorship, publicity, Wikipedia, and media relations (Duhe, 2015; Kent, 2013). Furthermore, research has examined the broader use of social media in public relations (Sweetser & Kelleher, 2011).

PR scholars have also examined new media technology impact on practitioners' self-perception, including their status, role, authority, and power within organizations (Sallot *et al*., 2004; Duhe, 2015). For instance, Thomsen (1995) found that access to online databases for managing corporate PR issues empowered practitioners, making them feel more proactive and engaged in their roles. This trend has been confirmed by subsequent studies, which show that new media technology use influences practitioners' perceived status and role, decision-making confidence, sense of competence and power and overall motivation (Diga & Kelleher, 2009).

## 3. Artificial Intelligence and the Public Relations Society of Kenya

The conversation about AI's impact on public relations (PR) and strategic communication has already begun in Kenya. The Public Relations Society of Kenya's (PRSK) annual publication, *PR Digest*, keeps its members updated on local and international PR developments. Notably, big data and artificial intelligence have been prominent topics in the 2019/2020, 2021/2022, and 2023/2024 editions (PR Digest, 2021; PRSK, 2024).

In the June-August 2021 issue, Frank Ojwang furthers the discussion by arguing that PR professionals need to prioritize accurate data reporting and increased visibility through modern technological platforms. He emphasizes the importance of recognizing the value of data, information, and technology-driven solutions for contemporary PR. This, he suggests, opens a unique space for advocating and championing such solutions in Africa and beyond (PR Digest, 2021: 34). The availability of these articles and quarterly forums, accessible to both PRSK members and non-members, suggests a relatively high level of awareness in Kenya regarding the evolving role of artificial intelligence in the global PR landscape.

As the adoption and adaptation of AI technologies in communication and public relations globally continues, this study seeks to understand how Kenyan practitioners perceive AI impact on their practice. In this regard, I propose the following research question:



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**RQ1**: How do Kenyan PR practitioners perceive the potential impact of AI on core aspects of their practice, such as (i) creativity, (ii) efficiency, (iii) ethical considerations, and (iv) job security?

## 4. Data collection and Thematic Analysis

This study employed qualitative, in-depth semi-structured interviews with Kenyan PR practitioners. This approach was deemed suitable because in-depth interviews can yield rich data and insights that may not be attainable through positivist approaches like surveys. Semi-structured interviews involve open-ended preset questions that facilitate deeper exploration, generating valuable insights needed to address the research questions. To ensure the validity of the questions, a pilot study was conducted with five participants, resulting in necessary improvements.

The study focused on Kenya because PR practitioners in the country were already engaged in discussions about the impact of AI through the Public Relations Society of Kenya (PRSK) annual publication *PR Digest* (PR Digest, 2021; PRSK, 2024) and various forums, workshops and conferences organized by the society, both offline and online. Furthermore, Kenya has a well-established and vibrant public relations industry and landscape. The sample consisted of active Kenyan-based PR practitioners affiliated with Kenyan PR firms/agencies. Participants were reached through the Public Relations Society of Kenya (PRSK) WhatsApp group, LinkedIn profiles, and referrals. The author is a registered PR practitioner in Kenya.

This study employed a combination of snowball and purposive sampling[1]. Purposive sampling was chosen because it allows the researcher to recruit participants who align with the study's purpose. To assess participants' suitability for interviews, their social media profiles/posts were analysed to gauge their overall interaction with and application of artificial intelligence technologies in their PR practice over the last six months.

1. Recognizing that artificial intelligence technology adoption and application is still in its infancy in most disciplines, including public relations industry in Kenya, I employed purposive sampling to recruit participants who met initial criteria established through social media and LinkedIn posts, as well as contributions to the official PRSK platforms, forums, webinars and the annual publication PR Digest. To augment the sample size, I asked my initial participants to recommend other practitioners (snowballing) suitable for the interview within their circles, organizations, or agencies. However, recommended participants still needed to meet the criteria for AI use and familiarity to qualify for the interview.



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A total of 21 participants were interviewed in English (each lasting 45-60 minutes), including both male and female practitioners ranging in age from 22 to 52 (see Table 1). Following the principle of circularity[2], a sample size of 20 participants was found to be sufficient (Marshall *et al*., 2013). All participants held bachelor's degrees or higher and represented various ranks of PR practitioners in Kenya, including entry-level practitioners with 1-3 years of experience, mid-level practitioners with 3-8 years of experience, and senior-level practitioners, managers, and consultants with 8 or more years of experience.

*Table 1 - Participants Profiles*

| *Participants* | *Gender/Sex* | *Age* | *PR experience (years)* |
|---|---|---|---|
| A | M | 52 | 27 |
| B | F | 38 | 15 |
| C | M | 33 | 10 |
| D | F | 32 | 8 |
| E | F | 39 | 11 |
| F | M | 44 | 22 |
| G | F | 45 | 15 |
| H | M | 43 | 20 |
| I | F | 35 | 14 |
| J | F | 52 | 25 |
| K | F | 30 | 5 |
| L | M | 45 | 14 |
| M | F | 33 | 10 |
| N | F | 31 | 8 |
| O | F | 24 | 2 |
| P | F | 30 | 8 |
| Q | M | 25 | 2 |
| R | F | 25 | 4 |
| S | F | 27 | 4 |
| T | F | 25 | 2 |

2. The principle of circularity in thematic analysis involves a cyclical process of moving back and forth between transcribed interview data and identified themes to develop a rich, exhaustive, and comprehensive understanding of the AI phenomena in the Kenyan PR industry. For more information, see Marshall *et al*., (2013).



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The analysis of transcribed interview data followed a bottom-up approach, where observations, patterns and themes developed from the data (inductive approach). Thematic analysis, as outlined by Braun *et al.* (2014), was deemed appropriate for data generated through interviews. The latest version of NVivo software was employed for coding and visualization.

## 5. Perceptions of Public Relations Practitioners on AI disruption in Kenya

This study employed in-depth semi-structured interviews to explore practitioners' perceptions of the impact of PR-AI technologies on creativity, ethics, efficiency, and job security in the Kenyan public relations industry. The results indicate a significant level of awareness of available artificial intelligence technologies among Public Relations practitioners in Kenya. Some of the AI tools practitioners are using include Beautiful. ai, Merlin, Smodin, WatchTune, CopyAI, TinEye, MidJourney, Meltwater, JasperAI, Brand24, Sprinklr AI, BufferAI, Fireflies notetaker, Synthesia, Otter.ai, Infography, Determ, Jenni.ai, ChatGPT, Gemini, and Consensus AI, among others. The results are presented based on the four key thematic areas of analysis.

### 5.1. *Efficiency*

#### 5.1.1. Time and strategy efficiency

Practitioners are now relying on AI tools to automate mundane and repetitive tasks that usually consume much of their time on a regular basis. One senior-level practitioner said;

> Sometimes you're running out of time, especially in an agency environment where clients want you to come up with ideas on your feet and respond as quickly as possible. This is where AI is really helping us ensure that our plans and strategies align with global standards.

An entry-level practitioner added, «AI is taking away some of the routine and tedious tasks involved in communications, and that brings me great joy. I see AI improving efficiency and enabling us to do more work in less time».

Interview excerpts show that AI tools have transformed strategy building and implementation for Kenyan public relations practitioners.



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They can now design better strategies faster. For instance, one mid-level practitioner said:

> In terms of turnaround, because we used to go into a briefing meeting, and a client tells you, I want you to do ABCD for me, you tell them, I'll come back to you after one week. I think those days can now be reduced to three days because the fact that I'll go to these AI tools, research, get the information, maybe day one, day two analyse the information, day three, draw that strategy, then share the plan, then the client will be able to get back to me.

### 5.1.2. AI PR productivity boost

According to participants, Kenyan public relations practitioners are finding AI tools useful in their practice. Improved efficiency has boosted productivity and overall output, translating into higher revenue. In particular, PR practitioners are now using AI tools to produce content that aligns more closely with their objectives and goals. One mid-level practitioner who particularly deals with PR creatives and design said:

> Using an image of an African is one of the things that most PR agencies and organizations are looking at. So when you're looking for models, for example, black models or Africans, probably you're looking for a setup in a meeting and you're trying to get an image to accompany your content. It becomes a bit challenging because most of the platforms do not have a large stock of images with Africans or black models. So it gives you a very hectic task of looking for that image, and you'll be scrolling for hours, but if you have an AI image generator, like MidJourney, then you're able to generate that slightly faster.

The ability to analyse large data sets also enables practitioners to «identify patterns, trends, and preferences that human practitioners might overlook. So as a PR professional, as another creative in the market, we can leverage these insights to tailor our work more effectively», said another entry-level practitioner. A senior-level practitioner believes the ability to interpret online sentiments can help change the public's attitudes about organizations. She said;

> Social listening AI tools like Hootsuite can listen and analyse what people are saying, and that can only happen through AI. When you listen to your customers, you improve productivity, perception, visibility, and automatically the attitudes of the public.



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### 5.2. *Creativity boost & creativity decline*

The creative aspect is essential for public relations practitioners. According to participants' accounts, AI tools have enhanced the creativity levels of Kenyan practitioners. One mid-level practitioner said:

> So, I was developing a strategy for a client of mine, trying to look at things that we can do in the sustainability industry, how we can craft our messages and all that. I mean, there were some ideas that I got from AI tools that I used, and I think it helps because, first of all, even if you don't have an idea in that industry, because this was my first time handling something in sustainability. I had little knowledge about that industry, but with the AI tools, you are able to build information, build strategies, get data that will help you to understand the industry or the sector that you are working on. Yeah, and it comes up with creative ideas which help you understand them, to implement them as well.

However, practitioners of all levels are worried that AI tools might also lead to a decline in creativity. For instance, one entry-level practitioner said;

> So normally I would think on my own, but now everything I write is partly generated using AI. So within the first three months of using AI tools, I started noticing my creativity is really affected. So I think it is really critical that we speak to young people because my supervisor didn't even notice. I don't think she noticed that most of my content is not very authentic. Actually, she used to think I'm very good at it. So when I'm not close to a computer and she would say, draft a small speech for me about something, I struggle because my brain is now used to creating everything using AI tools like ChatGPT. So it really affects your creativity, so maybe we need to mentor young people. Yeah, I'm really scared about my creativity decline. I'm not thinking, over time, things I used to do on my own, write on my own, am now very dependent on AI. So I have recently decided to take a step back and reduce my reliance on AI tools.

### 5.3. *Job security*

The interview excerpts reveal that the greatest concern among most Kenyan practitioners, particularly those at entry and middle levels, is the possibility of competing with AI tools for job opportunities. The analysis highlights two main areas of focus: job anxiety and gaps in practitioners' AI technology skills.



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### 5.3.1. AI-Jobs anxiety in the Kenyan PR industry

According to the practitioners interviewed, genuine anxiety is creeping into the industry about the impending labor market disruption caused by emerging artificial intelligence technologies. One middle-level practitioner said:

> If essentially a lot of the work or most of the work that you would have done at the entry level is now done by AI, why would any organization, agency, or in-house team need to recruit an entry-level PR professional? Well, I guess it's true on one level, but logically, the industry is going to die out if we don't hire new people into it. Again, with my optimistic hat on, we have to reframe what an entry-level role looks like.

However, a senior-level practitioner believes it may not be sustainable for PR organizations to solely rely on AI tools. He said:

> There are lots of organizations out there thinking "great, let's get rid of half the workforce, we don't need them, let's just use AI instead. It's going to be great for profits". You might say, "Well, you can do that, but should you do it?" And yes, it looks like a great idea in the short term, but what are the longer-term implications here? You get rid of half your workforce, improve your margins for two months, and then suddenly the whole thing collapses.

### 5.3.2. AI-skills gap in Kenyan PR industry

The emergence of artificial intelligence and the subsequent disruption of the labour market in the Kenyan PR industry have created a new challenge for employers. The interview excerpts show that practitioners who will be slow to adopt or update their tech skills might be at risk of losing their jobs. An entry-level practitioner believes practitioners might need to learn multiple skills to thrive in the AI age:

> My thoughts are that the practitioner who is going to gain from AI is the person who understands a bit of everything; this is the day of generalists. If you are a specialist that all you do is write, you know there is a writer and there is a copywriter, those are two different people, so if your work is to write, it's not going to help you because everybody can now write. Yeah, but if you are an editor, if you are a videographer, if you are a copywriter, if you are a researcher, if you are a generalist, this is your ticket.



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A mid-level practitioner concurs, «The task is for us to take on the task and take that as an opportunity to keep on learning. Learning will never stop. We need to refine what we already know. We need to stay abreast of whatever is happening in the world, and this is something that AI can really deliver on. We need to relearn and unlearn, relearn and learn, and after relearning and learning, you relearn and learn again».

### 5.4. *AI impact on PR ethics and data security in Kenya*

Public relations professionals globally adhere to principles, values, and standards that guide their conduct and decision-making. In Kenya, practitioners follow these ethical guidelines as they represent their organizations in interactions with clients, publics, and stakeholders. These guidelines are rooted in the understanding that PR practices influence societies, cultures, and economies. They help build trust and relationships, which are fundamental to public relations practice.

Participants' accounts indicate that Kenyan practitioners are worried about the impact of AI tools on PR ethics. One mid-level practitioner said:

> I think any PR professional who is a member of any PR professional body anywhere in the world will be subject to a code of conduct. That code of conduct will almost certainly contain a reference to the onus on the PR professional to act with transparency and honesty. So your use of AI should be honest and transparent. You should inform your clients that you used AI in creating this content or work. There's another level of nuance: to what level of granularity do you need to outline the use of AI? Is it enough to say we used AI, or do you need to specify the specific tools that were used?

The AI-PR ethical question also extends to data security issues. One mid-level practitioner said: «There are still potential concerns because organizations may not be comfortable with the idea of a third-party technology recording everything that is said and storing data».

In some cases, practitioners believe that in the future, AI use in PR work might need to be clearly stated in the terms of reference. One senior-level practitioner said:

> Considering the direction we are moving in, we may have to include this in the terms of reference for consultancy. Clients should be informed or have a say in practitioners using these tools for their projects. It should be clearly indicated in the terms of reference that they will not accept the utilization of these tools or that their payment will be reduced by a certain percentage if AI tools are used. This would potentially address the issue.



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In summary, the data reveals that Kenyan practitioners are united in recognizing the ethical challenges posed by the application of AI in the PR industry. They urge their professional association, PRSK, to take action and establish clear guidelines for practitioners.

## 6. Discussion

The emergence of new media technologies anchored on artificial intelligence has disrupted many industries, including communication, in the last few years. In Africa, and Kenya in particular, the impact and perceptions of these AI tools on communication practitioners have yet to be fully understood. This exploratory study focused on Kenyan Public Relations practitioners to investigate their perceptions of the impact of PR-AI technologies on creativity, ethics, efficiency, and job security thematic areas. The findings indicate a significant boost in their efficiency and productivity, improved revenue, and reduced costs. The use of AI for repetitive tasks like media monitoring has freed up time for practitioners to be more creative. They are now using AI tools to design and implement better PR strategies that align more appropriately with their organizations' or clients' goals and objectives. Image generation AI tools like Midjourney have enhanced the PR creative industry. The ability to analyse large data sets has improved practitioners' ability to make predictions and anticipate crises, particularly through media monitoring. The abundance of ideas has enhanced the creativity of content creators.

However, the analysis also reveals concerns that excessive use of AI tools, especially by entry-level practitioners, could impact the quality of their work in the long term. Practitioners also fear that the shallow nature of output by some AI tools and the lack of organic content could negatively affect PR creativity in the long term, which is very important in public relations work. There was almost unanimous agreement among interviewed practitioners that entry-level PR jobs are at risk. There is genuine anxiety creeping in the industry about the impending labour market disruption caused by emerging artificial intelligence technologies. Practitioners agree that re-skilling and re-learning could be the key factors in navigating the PR-AI jobs market. Finally, PR ethics and client data security have emerged as key challenges facing practitioners in their adoption of AI tools. They would like to see their umbrella body, PRSK, come up with policies and regulations to guide the application of these technologies.

While empirical investigations on AI's impact on public relations in Africa are still unavailable, scholars are making efforts to spark a



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dialogue. For instance, recently Blankson and Anani-Bossman (2023) reviewed articles published in the developed world that reveal AI adoption in PR will reinvigorate practitioners' efforts to build relationships, improve client satisfaction, enhance monitoring, and boost communication, all of which align with the findings of this study. In addition, despite the general AI optimism in Kenya expressed by Wairegi *et al.* (2022), socio-economic threats, particularly labour market disruption predicted by Gwagwa *et al.* (2020), were also confirmed in this study.

Furthermore, the findings of this study confirm Galloway and Swiatek's (2018) predictions, which were largely based on "trends in other industries", as well as Panda *et al.*'s (2019) PR-AI agency exploration in India. These findings suggest that AI's impact on public relations may not only be about task automation, but also have economic, societal, and technological implications. These conclusions align with Kenyan PR practitioners' reports of improved creativity, content creation efficiency, trend/crisis prediction, black/African image generation, ease in strategy building, goal/objectives alignment, productivity enhancement, revenue boost, and the need for AI-practitioners' capacity building.

Interestingly, the success of recent AI tools like ChatGPT has led to the emergence of hundreds of other niche AI tools and solutions in the last year. As a result, even though Kenyan practitioners reported paying for some sophisticated tools and solutions, the overall costs are becoming more democratized, increasing access, particularly for freelancers and small organizations. This slightly contradicts Panda *et al.*'s (2019) conclusions. Moreover, Kenyan practitioners are now able to learn and apply PR best practices from the developed world.

Theoretically, the findings confirm the projections made by recent reviews and explorations about the need for scholarship to develop new public relations theories to incorporate the new reality of AI humanoid-like technologies making independent decisions, analysing data and trends, creating messages, and intervening to create and maintain relationships between organizations and publics, among other roles normally performed by human practitioners (Galloway & Swiatek, 2018; Karanja, 2023; Panda *et al.*, 2019; Moore & Hubscher, 2021; Swiatek & Galloway, 2022; Yue *et al.*, 2024). AI tools, solutions, and their diversity are creating new layers of not just humanoid-like relationships with publics but also with organizations and their human actors. This new reality complicates Organization-public relationships as defined by Ledingham & Bruning (1998). In addition, OPR tenets (antecedents, relationship state, and outcomes) and relationship-building process and conditions as outlined by Broom and Casey (2000), will be completely transformed by AI tools and solutions.



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## 7. Conclusion

This qualitative study acknowledges that given the small sample size, the findings may not be generalizable to the entire public relations industry in Kenya. Additionally, the researcher's personal biases may have influenced some elements of the study. However, the detailed, in-depth, and compelling accounts of Kenyan PR practitioners' experiences and perceptions of AI tools, present valuable insights for the scholarship. Future studies could quantitatively test the applicability of the theory of paradigm shifts (Kuhn, 1997) and diffusion of innovation theory (Rogers *et al*., 2014) models suggested by Galloway & Swiatek (2018) as possible alternatives to study the AI-PR phenomenon, especially in developing PR ecosystems like those found in the African continent. Furthermore, comparative studies on AI adoption across developed and developing PR industries could shed light on unique trajectories and divides emerging from diverse environments and factors.

In conclusion, the findings present new empirical evidence for Kenyan, African, and global PR and communication practitioners, and scholars on the emerging PR paradigms as the adoption of AI technologies and solutions accelerates. The Public Relations Society of Kenya (PRSK) now has a clearer understanding of the possible challenges and interventions it might adopt to address emerging issues like ethical concerns and data breaches to help them roll out practitioner training or formulate necessary policies to safeguard the profession. The findings are expected to spark a debate on what constitutes to an acceptable use of AI tools for individuals, organizations, or agencies, among other industry-related issues. Educational institutions in Kenya and beyond could also adjust their training or conduct further studies to update their curricula. Public Relations scholars will find the findings useful for advancing literature and theory, due to unique non-Western, global South, and Sub-Saharan Africa perspectives.

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# *Navigating AI Narratives: Exploring Folk Theories about AI in Brazil*

by Maximilian Eder & Anna Luiza Palhano Lhamby

## 1. Introduction

Artificial intelligence (AI) has received extensive media attention in recent years, partially focused on the rapidly transforming field of context-sensitive natural language processing and machine learning. While AI and algorithm-based technologies are often framed as either a boon or bane by news media and in political discourse (see, e.g., Köstler & Ossewaarde, 2022; Nguyen & Hekman, 2024), research about peoples' actual perspectives and understanding of them remains limited.

At the same time, accurately assessing how individuals make sense of such narratives and how much individuals know about AI and algorithm-based technologies remains a significant challenge in communication research (Gandini *et al*., 2022). The concept of algorithmic folk theories is a valuable framework for researching the narratives and debates surrounding such technologies to fully understand how people perceive such influential technologies in their daily lives. Against this background, this study explores how young people in Brazil perceive, understand, and reflect on AI to comprehend what intuitive, informal folk theories they form.

This study defines AI as «an umbrella term for a range of technologies such as automated statistical data analysis, machine learning, and natural language processing» (Deuze & Beckett, 2022: 1914). Such a conceptualisation also includes algorithm-based technologies, as although they are analytically distinct concepts in general, some algorithmic systems can be classified as AI (Latzer & Just, 2020).

Siles *et al.* (2023) and Ytre-Arne and Moe (2021) have highlighted the cultural sensitivity of forming folk theories. At the same time, there is a persistent tendency «to assume that conclusions about the power of



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algorithms in the Global North apply unproblematically everywhere else» (Siles *et al*., 2023: 57; see also Milan & Treré, 2019; Silva, 2019). Against this background, this study follows the argument that cultural influences shape AI narratives, and as such, «[u]nderstanding how AI will develop requires […] an understanding of the many sites in which its story is unfolding» (Cave & Dihal, 2023: 5).

With this research, the authors also follow the call for a de-Westernisation of communication research (Waisbord & Mellado, 2014) and the inclusion of other cultural perspectives. In general, this study aims to provide insights into the Brazilian discourse on AI and explore the cultural narratives around it.

With the identification of folk theories about AI, this study contributes to the field of human-computer interaction and critical studies about AI in two ways: first, insights are provided into how people make sense of AI and interact with the technology. Second, they contribute to the growing literature on how technology is used and perceived in the Global South with a Brazilian perspective that analyses the issue beyond AI narrative universalism.

## 2. Literature review

### 2.1. *Algorithmic folk theories*

The recent rapid growth of cross-disciplinary studies focusing on how people perceive AI and algorithm-based technologies and their knowledge about them has led to somewhat ill-defined and theoretically overlapping concepts. They often focus on social media platforms and search engines (for an overview, see Oeldorf-Hirsch & Neubaum, 2025) rather than the broader topic of AI, most likely due to the opaque nature of the term. However, one concept that has been particularly influential in this specific field of research is folk theories.

Algorithmic folk theories derive from individual experiences, cultural teachings, and social interactions, which help people to intuitively simplify complex issues (Liao & Tyson, 2021; Ytre-Arne & Moe, 2021). The concept originates from so-called intuitive theories, as described by Gelman and Legare (2011). One common element is that intuitive theories well embody cognitive biases that influence perception and behaviour, meaning they «are not neutral or passive snapshots of experience» (Gelman & Legare, 2011: 380). Against this background, algorithmic folk theories are defined as «intuitive, informal theories that individuals develop to



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explain the outcomes, effects, or consequences of technological systems, which guide reactions to and behaviour towards said systems» (DeVito *et al*., 2017: 3165; see also Eslami *et al*., 2016: 2372).

Situated within this strain of research is also the concept of algorithmic imaginaries (Bucher, 2017), as they both emphasise the interplay of one's perception of AI or algorithms and culture. However, Ytre-Arne and Moe (2021) have argued that, unlike algorithmic imaginaries, «folk theories of how media work are not necessarily abstract, but rooted in everyday experience» (811) and go beyond guiding behaviour. Instead, they include «making sense of experiences, generating inference and steering learning about the world» (*ibid*.).

As this chapter aims at exploring the broader understanding of AI, the concept of folk theories instead of imaginaries will be applied following Siles *et al*. (2020): «[F]olk theories matter […] because they help to broaden our understanding of how users make sense and relate to datafication processes in daily life» (12). Moreover, folk theories provide a framework to account for individual, potentially contradictory experiences with technology against the background of «the uncertainty and instability inherent in human understandings of complex systems» (DeVito, 2021: 4).

### 2.2. *Current folk theories about AI and algorithms*

Given that there are signs of an algorithmic divide with disparities in awareness and knowledge about AI and algorithm-based technologies (e.g., Bentley *et al*., 2024; Wang *et al*., 2024), it remains difficult for certain socio-demographic groups to make sense of their engagement with AI. Therefore, folk theories are instead formed retrospectively (López *et al*., 2024) and «sometimes complement each other, sometimes exist in tension with each other, and sometimes contradict each other» (Pohl & Goldkind, 2023: 250). Moreover, there is also a need for more representation of the Global South when it comes to studies on folk theories about AI, with only a few studies being conducted.

Siles *et al*. (2020) explored folk theories among users of the audio streaming platform Spotify in Costa Rica. On the one hand, the platform is anthropomorphised as a social being that provides recommendations. On the other hand, it is viewed as a resource-rich system and computational machine offering personalised content through tailored training on user data.

In a recent study, López *et al*. (2024) explored users' perceptions of AI in algorithm-mediated public services in Chile. Users viewed AI as an



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all-knowing entity (i.e., «mighty puppeteer») capable of monitoring actions and interconnecting data sources to make decisions. While they expressed concern about privacy and potential risks, they accepted the inevitability of these technologies with varying levels of trust. This acceptance may be related to privacy fatigue, where users feel helpless and unable to control their data in digitised contexts.

The concept of (algorithmic) folk theories has also been previously applied to studies conducted in the US, Norway, and China.

French and Hancock (2017) identified four primary folk theories about Twitter and Facebook's news feed in the US through a factor analysis of metaphors. Two folk theories are associated with positive sentiments and the belief that the feed's content is prioritised according to their interests. In contrast, two other folk theories are related to negative sentiments. The participants believe that algorithms overstep boundaries by utilising personal data to serve companies' interests and that their operational process is opaque and challenging to regulate.

In a representative survey in Norway, Ytre-Arne and Moe (2021) showed that algorithms are perceived as confining, reductive, intangible, and exploitative. At the same time, they are perceived as an integral part of media experiences and, due to their practicality, impossible to avoid. As such, irritation emerges as a central emotional response to algorithms. Furthermore, the authors have argued that there is no digital resignation in the context of algorithms, as people are still emotionally engaged.

Xu *et al.* (2024) analysed Chinese university students' perceptions of AI and robots through metaphor nomination, factor analysis, and semantic analysis. The findings suggest that people attribute human characteristics to AI and robots, perceiving them similarly to forming impressions of humans. People perceive AI as somewhat uncontrollable, while robots are perceived as something under their control, comparing them to aeroplanes and cars. The findings further imply that social cognitive processes shape a person's perceptions of these technologies.

Other studies have focused on specific aspects of folk theories. Karizat *et al.* (2021) identified folk theories regarding LGBTQ users' identity construction on the social media platform TikTok. These theories mainly highlight attempts of algorithmic resistance, used to counteract the algorithm's perceived suppression of content related to their – among others – LGBTQ identity, political, and social justice group affiliation.



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## 3. The case of Brazil

Brazil, as the largest country in Latin America, a group of countries sharing cultural and linguistic features, poses a particularly relevant case when considering the social realities surrounding the perception of AI and algorithm-based technologies. While Brazil holds about 40% of all AI companies in Latin America (Sanchez-Pi *et al*., 2021) and internet penetration has notably increased all over the country, with now nearly 80% of Brazilian households having internet access (Regional Center for Studies on the Development of the Information Society, 2023), a first-level digital divide persists regarding limited access to digital technologies and digital literacy (Gabardo *et al*., 2023; Nishijima *et al*., 2017; Pedrozo, 2013).

According to a study by Gillespie *et al*. (2023), a majority of Brazilians express positive emotions towards AI and 71 % of the participants believe the benefits of AI outweigh the risks. At the same time, whether AI can be trusted is controversial. Moreover, a recent report by the Brazilian Academy of Sciences (2024) states: «Brazil still lacks comprehensive mastery of this essential technology to analyse the results of the models and their implications, as well as to effectively critique the applications developed using this technology» (29).

## 4. Research question

As stressed by Chubb *et al*. (2024: 1108), there is a growing interest in academia and beyond in non-anglophone cultural narratives of AI. Given the gap in research on algorithmic folk theories in general and the Global South in particular, the authors aim to explore the cultural narratives of folk theories about AI in Brazil of young people through a qualitative study. With current developments regarding generative AI in mind and against the background of critical algorithmic studies, this study poses the following research question: What are the existing folk theories about AI among young people in Brazil?

## 5. Method

This study draws upon two group discussions, commonly referred to as focus groups, with ten Brazilian undergraduate students between the ages of 21 and 23 years on two days in May 2024 (Table 1). Such smaller



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so-called mini groups (Roller & Lavrakas, 2015: 105) allow for more in-depth information, mainly when conducted online (Lobe & Morgan, 2021). Overall, this research approach fosters participant interactions and is helpful for research involving attitudes, emotions, and experiences (Kühn & Koschel, 2018: 24-25; Roller & Lavrakas, 2015: 112). Therefore, not only is the method fitting to answer the research question but it has also notably been applied to previous studies on folk theories on different issues (i.e., Holvoet *et al*., 2022; Siles *et al*., 2020; Wilner *et al*., 2021). The participants belong to Generation Z, who have grown up in technologically mediated environments and are generally open to technological advancements (Chan & Lee, 2023).

*Table 1 - Participants*

| | *Duration* | *Participant* | *Gender* | *Age* |
|---|---|---|---|---|
| Group 1 | 100 minutes | P1 | Female | 23 |
| | | P2 | Female | 22 |
| | | P3 | Male | 22 |
| | | P4 | Male | 22 |
| | | P5 | Male | 23 |
| Group 2 | 104 minutes | P6 | Female | 22 |
| | | P7 | Female | 22 |
| | | P8 | Female | 22 |
| | | P9 | Male | 23 |
| | | P10 | Male | 21 |

Drawing on the framework for group discussions proposed by Kühn and Koschel (2018), a conversation guide was developed to guide the participants during the discussion. The guide contains four sections, each with different questions to nudge participants into talking about their feelings and thoughts toward AI (Table 2). The questions are deductively derived from previous studies (i.e., DeVito, 2021; Siles *et al*., 2020; Ytre-Arne & Moe, 2020).



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*Table 2 - Focus group discussion guide*

| | *Example questions* | *Stimulus* |
|---|---|---|
| Section 1:<br>Awareness, use, and definitions | – What is the first thing that comes to mind when talking about AI?<br>– How would you define it if you were to explain it to a friend?<br>– How do you think it decides to show you something?<br>– How regularly do you think you interact with it? | |
| Section 2:<br>Opinions and feelings | – What do you think about those magazine covers? How do they make you feel?<br>– Which one represents more of your personal opinion towards AI? |   |
| Section 3:<br>Bias and ethics | – What do you think the author Cathy O'Neil means with this quote: «Algorithms are opinions embedded in mathematics»?<br>– How do you feel about it? | |
| Section 4:<br>The future | – Do you see positive or negative consequences in how companies and platforms use AI? | |

The focus groups were held synchronously in the participants' native language on the video conferencing platform Zoom, which provides the advantage of a fast and agile audio and visual data collection process. Following the remarks by Heiselberg and Stępińska (2023), the participants were advised to find themselves a quiet environment with no other visible distractions. Head- and microphones were also suggested to make sure others could clearly hear all participants' voices. Each conversation was transcribed with SmartCAT. Following the approach by Ytre-Arne and Moe (2021), an inductive thematic analysis was conducted with MAXQDA.



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## 6. Findings

After an in-depth analysis of transcripts, five folk theories of AI in Brazil could be identified: (1) AI is a constant duality, (2) AI is explainable, just not in detail, (3) AI is inevitable and inescapable but sometimes unnoticeable, (4) AI is about power, (5) AI is what we make out of it.

### 6.1. *Folk theory 1: AI is a constant duality*

The first folk theory is about the constant duality of AI. Overall, the participants mentioned several aspects of AI if asked what first comes to mind when thinking about it, mostly related to specific applications (e.g., Spotify, ChatGPT). The participants stressed the usefulness of AI-based technologies in making life easier and more convenient for themselves and society in general. At the same time, when asked about future perspectives regarding AI, the participants presented many reasons why society should be fearful: job losses and influence on trust in news media to feelings of powerlessness towards AI. One participant explained:

> I believe that all innovation comes with areas where a lot of jobs will be created. But unfortunately, a lot of jobs will be lost too, and I think that is where the fear that many people have comes from (P5).

Moreover, participants had strong opinions on how AI has been framed in and by the (news) media. Many participants stated that they not only had noticed a duality in how such technologies are portrayed but were also able to identify attempts at exaggerating the negative aspects of AI and fear-inducing content, as one participant from the first focus group stated:

> I think that some of this fear comes from dramatic magazine covers or movies, for example, that "I, Robot" movie, where robots take over everything (P4).

Overall, participants named as many positive as opposing arguments towards advancing AI presence in society. Although they have been aware of the potential downsides of AI and algorithm-based technologies in general, the duality of the issue is instead an occasion-based subject, and they only consider the bigger picture if nudged towards critically reflecting on it.



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### 6.2. *Folk theory 2: AI is explainable, just not in detail*

The second folk theory is that AI is explainable, just not in detail to the participants. They self-reported to have a basic understanding of what AI-based technologies are and how they function. All participants stated they use social media platforms and streaming services nearly daily (e.g., Spotify, Netflix), making them arguably familiarised with such technologies and algorithms within certain application areas. At the same time, the explanations of how such technologies work are slightly superficial. For example, a participant explained it the following way:

> I think that the way most AI works is that, somehow, it trains through a lot of data much quicker and more efficiently than any human being. […] So, it receives information, a lot of information, processes it somehow, kind of trains based on it, and with that, it gives you the answer that you want (P5).

At the same time, the inner working process of AI-based technologies like data acquisition and processing remains unknown to the participants. Moreover, several of them stated that they perceive their knowledge about such mechanisms as sufficient. For example, one participant stated:

> I mean, I am certain I liked something on purpose because I knew I wanted it. I knew that if I interacted with it, it would start giving me more of it. So, I did it and was really aware of it. So, I do try to use it in my favour (P1).

### 6.3. *Folk theory 3: AI is inevitable and inescapable but sometimes unnoticeable*

The third folk theory is about AI being viewed as inevitable and inescapble with concerns from the participants about its omnipresence in everyday life. While the participants use AI-based technologies, they stated that this is not necessarily a choice actively made, nor is it apparent during their use. One participant explained her perception as follows:

> I think it is inevitable. There is no way you can say: "Oh, we are not going to use it anymore". I think it is impossible to stop it. There is no way. Not even if we wanted to (P6).

However, AI is noticeable for most of the participants when using specific applications they are familiar with (e.g., ChatGPT) and processes occur they do not approve like if advertisements are shown or content is presented, they are not interested in, as stated by one participant:



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I think it's striking on Instagram when you stumble upon a post and enter a certain section, and then out of nowhere, a thousand things pop up in relation to that topic, and I'm just not interested. […] I end up trying to retrain my algorithm to remind him that I do not like it (P6).

Additionally, some participants believed that AI's omnipresence would considerably impact opinions and trust in news media. When asked if helplessness would correctly summarise their perceptions, one participant immediately answered: «Totally» (P8).

### 6.4. *Folk theory 4: AI is about power*

The fourth folk theory revolves around the idea that AI is about power. In this context, participants specifically mentioned Meta and Alphabet with their platforms (i.e., Instagram and YouTube). They felt that such companies overlooked their well-being and leveraged AI-based technologies for profit. One male participant explained:

They will try to get you to stay on their platform for as long as possible in order to generate as much money as possible, which is usually the aim of companies, right? Maximise earnings (P5).

The participants also felt an overarching feeling of helplessness as they did not possess the knowledge and power to counteract these companies' decisions. At the same time, they do not shy away from staying connected to social media or using AI. They also did not feel the need to gain more AI-related knowledge.

### 6.5. *Folk theory 5: AI is what we make out of it*

The fifth folk theory is that AI only does what it has been programmed to do, and the individual user is responsible for the outcome. At the same time, the participants anthropomorphised AI-based technologies, viewing them as a part of society.

Such a perception became especially apparent when the participants explained what AI is and how it works. One male participant explained it that way:

It is more like a person to me. A person who is learning perhaps very quickly, who is seeing new things and learning very quickly and using and filtering useful information like a brain (P4).



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The participants recognised AI and algorithm-based technologies as powerful tools but also as a mirror of society, with biases being inherent to such technologies. Participants knew about this issue, stating they had heard some examples and recognised it as a problem. For example, one participant stated:

> I do not think AI is going to strengthen any kind of prejudice. Obviously, if you do not pay attention and […] let a lot of people create algorithms that are biased, then it might end up leading to greater risks. However, I think it is a thing that's already known today, and people are getting better at it (P2).

## 7. Discussion

AI has become a powerful tool that has started to shape daily lives. At the same time, the technology remains opaque and ambiguous, surrounded by social and economic promises (Hirsch-Kreinsen & Krokowski, 2024). Against this background, it is imperative to critically reflect upon people's intuitive sense of and affective feelings about them.

Building upon previous studies on algorithmic folk theories from the Global South and beyond, this study explored how young Brazilians make sense of AI and interact with the technology. Five folk theories about AI could be identified through two group discussions.

The first two folk theories relate to established narratives propagated by global popular culture, which have also been identified in previous studies (e.g., DeVito, 2021; French & Hancock, 2017; Sartori & Bocca, 2023). For instance, while the participants tend to express positive views regarding the potential of AI-based technologies, they also talk about potential negative connotations (e.g., job loss or even fear of distrust in news media). Moreover, the participants see a continuing trend regarding certain narratives, including a tendency in news media stories to exaggerate the negative aspects of AI, which «distract the public from understanding the current capabilities of the technology, which, while entertaining, may also be disproportionate and disruptive» (Chubb *et al*., 2024: 1111). Overall, the group conversation is mainly limited to the topics and views of one dominant narrative. This finding leads to the conclusion that dominant narratives from the West also find their place amongst the folk theories constructed by young people in Brazil.

Although the participants were all digital natives with high levels of digital technology usage, they only showed some awareness of its inner workings. Swart (2021) analysed the relationship between young people



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and algorithms with the same observation: «[I]ntuitive and experience-based insights […] do not automatically enable young people to verbalize these, nor does having knowledge about algorithms necessarily stimulate users to intervene in algorithmic decisions» (1). Considering the importance of understanding AI and algorithm-based technologies to be able to navigate algorithmically driven spaces and successfully receive valid information mindfully (Cotter & Reisdorf, 2020; Gruber & Hargittai, 2023), such reckoning calls for more research into how to increase AI literacy amongst the population.

Comparing these findings with the third and fourth folk theory, the participants seem to perceive AI as an omnipresent force that operates subtly in the background of daily life, reflecting a growing concern about the pervasive nature of AI technologies (e.g., Davidson, 2023). Indeed, despite AI regulation gaining momentum with the Brazilian national AI strategy and parliamentary discussions on an overarching AI law (Belli *et al*., 2023), participants expressed concerns about the motivations of big tech companies to prioritise profit over users' well-being, leveraging AI to maximise engagement and revenue.

These concerns extend to notions of a loss of control, a frequent AI-related theme (Cave & Dihal, 2023). The participants' feelings of helplessness and lack of agency in the face of these powerful entities highlight AI's ethical challenges, particularly in data privacy and the concentration of power in the hands of a few corporations. Despite recognising their exploitative potential, they continued using AI-driven platforms, which presents a paradox. This finding points to a broader societal dilemma where convenience and connectivity are often prioritised over ethical considerations (Willems *et al*., 2023).

The final folk theory suggests a perception of AI as both a reflection of human society and a tool that can be shaped by human intentions, following the notion by Bucher (2017): «While algorithms certainly do things to people, people also do things to algorithms» (42). Participants anthropomorphised AI, viewing it as a learning entity akin to a person while recognising that AI systems mirror societal biases. This dual perception aligns with research on AI as a socio-technical system that embodies values and biases (Ferrer *et al*., 2021; Sartori & Theodorou, 2022).

In sum, the findings from this study indicate familiar narratives in folk theories about AI and algorithms, which are culturally anchored discourses (Cave & Dihal, 2023; Chubb *et al*., 2024; Ferrari, 2020). Silicon Valley's technological imaginary defines technologies' roles in society and social change. Amongst other things, it «portrays digital technologies



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as inherently free, democratic and supportive of personal autonomy» and promotes «the idea that the market, with its endless supply of technology, is the place for the improvement of people's lives – not government» (Ferrari, 2020: 121-122).

Overall, understanding how users engage with algorithmically generated content is crucial for the future: as technology gets increasingly entangled with daily life, people must be prepared to face all the challenges and consequences this may pose. By understanding people's current perspectives and engagement with such technology, policymakers can strategise and empower them to critically reflect upon such technologies.

The study also has some limitations. As with all qualitative studies, the findings are not representative and do not allow general conclusions about a larger population to be drawn. This limitation is especially true given that all participants belong to the same social class, have similar digital literacy levels, and belong to the same generation. Additionally, the discussion about AI in Brazil is related to questions about racial interference (King, 2023). It needs to be stated that the participants all self-identify as white, limiting the conversation to this group's experience with AI exclusively. Following the recommendations by Roller and Lavrakas (2015: 108), the groups have been homogenous as participants might feel more comfortable sharing their experiences with others from similar backgrounds. Lastly, the online setting can make it difficult for the moderator to ask follow-up questions for every participant's response.

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# *An Overview of AI and Science Fiction in China through the Analysis of* Land of Memories

by Gianluigi Negro

## 1. Introduction

Artificial Intelligence (AI) has emerged as a transformative force across various domains, including the humanities. Previous studies demonstrated that throughout history, the emergence of new technologies already contested the concept of authorship analyzing the historical relationships between author and amanuensis, author and tool, and author and co-author (Ginsburg & Budiardjo, 2019). Other seminal studies focused on the ethical dimension of artificial intelligence and literary creativity (Bringsjord & Ferrucci, 1999), a phenomenon also occurring in China. Indeed, the history of AI and the Chinese publishing industry cannot be considered completely new either, as demonstrated by a paper published in 1984 by Zeng Xianglu (曾祥禄). The author predicted that the future of the publishing industry would be closely related to the development of computer technology, open-access, and robotic technologies (Zeng, 1984).

The success of advanced models like GPT-4 contributed to the re-emergence of the discussion in non-Western countries. Thanks to Chinese AI Chabot applications like ChatGLM, Ernie Bot (backed by Baidu), Doubao (from ByteDance), Tongyi Qianwen (produced by Alibaba); Zhidong Taichu 2.0 (realized by the Chinese Academy of Sciences) and many others, Chinese media and scholars restored the debate on the intriguing intersections between AI and Chinese literature. This trend can be justified by the political attention paid to the role of the digital economy in cultural industries. During the 2023 Beijing Cultural Forum, Wang Yimin (王一鸣), Vice Chairman of China Center for International Economy Exchanges, stated that «The digital economy has brought a new driving force to the high-quality development of the cultural industry,



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and digital transformation has become a new engine for the high-quality development of the cultural industry» (Wei, 2023). Chinese scholars emphasized the speech of Xi Jinping during the 19th National Congress of the CPC, on which it is stated that «the new normal requires new impetus, and the digital economy can make a big difference in this regard», arguing that a deep understanding of the relationship between the digital economy and the cultural industry in terms of content production, consumption patterns, communication methods, etc. is an inevitable requirement to promote the prosperity and development of artistic creativity in the new era (Shi, 2020).

So far, empirical studies in China demonstrated that AI can be seen as a form of mediation between technology and tradition, able to explore new dimensions of creativity, analysis, and cultural preservation (Wei, 2023).

This research provides an overview of the multifaceted impact of AI on Chinese literature creation, focusing on the specific case study of the novel *Land of Memories* (机忆之地), written by Tsinghua Professor Shen Yang (沈阳), director of the Metaverse Culture Laboratory at the same University through an AI application.

The relevance of the topic comes from AI's capability to generate text, a trend that has opened new avenues for creative writing within Chinese literature. Advanced models like GPT-4 can produce poetry, short stories, and essays in Chinese, adhering to stylistic nuances and linguistic subtleties. These AI-generated works often imitate classical styles, enabling the exploration of ancient literary forms in contemporary contexts. For instance, AI can compose (or revisit) Tang and Song dynasty-style poems, contributing to the revival and innovation of traditional genres (Battulga, 2023). The interaction between human writers and AI also fosters collaborative creativity, where AI-generated suggestions inspire new directions in literary creation.

*Land of Memories* is a 5915-character novel realized thanks to the support of AICG (artificial intelligence generated content) and the first Chinese literature product to win a science fiction prize in China. The literary work was presented at the 5th edition of the *Jiangsu Youth Science Fiction Contest* (第五届江苏省青年科普科幻作品大赛 *Jiangsu Contest* from now on) in December 2023, getting the second prize based on a selection of 200 submissions among which 90 won awards: 6 special prizes, 14 first prizes, 18 second prizes, and 27 third prizes. The success of Prof. Shen's novel can be considered even more surprising because the judges were not aware of the novel's origin in advance. The work was awarded after receiving support from three out of the six judges (Anonymous, 2023a).



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That said, *Land of Memories* is not a watershed in this field. Indeed, a similar experiment already took place in Japan in 2016. At that time, Prof. Hitoshi Matsubara, from the Future University of Hakodate, passed the initial screening of the Hoshi Shinichi Literary Award, a domestic literary competition with a short-form novel co-created with an AI (Jozuka, 2016).

Besides literary contests, another experience that is worth mentioning took place in 2018, when former USA White House ghostwriter, Ross Goodwin, wrote *1 the Road,* another experimental novel aimed at emulating Jack Kerouac's *On the Road* through an AI application system that turned into words eventually printed on rolls of receipt papers all the data collected during a ride from New York to New Orleans by various sensors installed in the author cars. The global dimension and relevance of the topic are further confirmed in many other AI applications engaged in art and literature creation, like Google's *Verse by Verse* project (Murphy, 2022) and *Sudowrite* (Fang *et al*., 2024).

Based on constructivist grounded theory (Johnson, 2014), the present research has a triple aim. First, it demonstrates that China's AI strategy includes creative industries specifically referring to arts and literature. Second, it explores the co-creation process of *Land of Memories* through the representations of Shen Yang and his research team collected in a series of interviews published on official WeChat accounts such as 中国科学报 (*China Science Daily*), 清新研究 (*Original Research*), and 文学新评论 (*New Comments on Literature*). Third, it will analyze Chinese literature critics and public comments on the novel and an overview of the current and future state of AI and Chinese literature through a textual analysis focused on the Zhihu (知乎) platform, one of the most popular Chinese news aggregation, content rating, and forum social network like Reddit and Quora. The set of sources was selected through an online search on Zhihu, using "机忆之地" as the keyword. The first output of the search provided 35 threads; the author manually identified 12 threads which referred to Prof. Shen's novel. The author eventually triangulated the selected posts identifying users' comments focused on the relationship between AI and literature, the novel's quality, and the prize's reception. This second threads selection was possible through three keywords searches: AI 的文学创作 ('AI's literary creation'), AI 小说 ('AI novel'), and 科幻作品大赛 ('Science fiction contest'). Finally, the author selected the most representative posts for each category based on the highest number of answers and users' appreciation (赞同). Users' answers with the highest level of appreciation were translated for this chapter.



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*Table 1 - Number of answers and likes of the three threads selected for this chapter*

| *Sub-category* | *Answers* | *Likes* |
|---|---|---|
| AI 的文学创作 | 239 | 3.316 |
| AI 小说 | 15 | 109 |
| 科幻作品大赛 | 11 | 34 |

## 2. China's strategy for creative industries

According to Chinese scholars and technology observers, the «new generation of artificial intelligence technology innovates traditional cultural expressions and gives traditional culture the possibility of 'personalized' innovation» («新一代人工智能技术创新传统文化表现形式，赋予传统文化"个性化"创新的可能») (Zhou, 2024). This process is already possible thanks to the use of big data to analyze users' needs and achieve precise communication goals. For example, AI can provide a richer cultural experience overlaying virtual elements. At the same time, natural language generation technology can generate articles, stories, and poems, supporting the diffusion of traditional culture. Furthermore, using artificial intelligence and big data analysis, can provide more accurate information on user's interests and needs in traditional culture. Eventually, this information can be further used for customized promotion strategies aimed at pushing personalized traditional cultural content to users attracting a wider audience (*ibid*.).

A more direct engagement of the Chinese government on AI policies related to cultural industries dates back to 2020, with the 5th plenary session of the 19th CPC Central Committee during which it was proposed the *Implementation of the digitalization strategy of the cultural industry* (实施文化产业数字化战略) (GOV.cn, 2020).

In May 2022, the General Office of the Central Committee of the CPC and the General Office of the State Council issued the *Opinions on promoting the implementation of the National Culture Digitalization Strategy* (关于推进实施国家文化数字化战略的意见), setting specific targets such as consolidating cultural digital infrastructure, developing new digital cultural consumption scenarios, and accelerating the digital layout of the cultural industry (Gov.cn, 2022). Chinese scholars believe that the combination of PGC (professionally produced content), UGC (user-generated content), and AIGC will contribute to new cultural models in terms of production (产模), communication (传播) and consumption (消费) New forms of production are justified by the more developed natural



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language generation technology and AI models which support the creation of automatically generated texts, pictures, audio, video, and codes. At the same time, AI facilitates new forms of communication through multi-dimensional information, intelligent search, and recommendation systems. Coming to the last model, it is possible to argue that the new generation of AI technology contributed to reshaping the way digital culture is consumed, especially thanks to products and services based on the Internet or virtual online space.

## 3. Behind *Land of Memories*

One of the most supported applications of AI in China about digital culture is literature, a relation which was already studied by Huang Minfen (黄鸣奋) who, in 2010, summarized nineteen concepts of «digital poetics» proposed by Western scholars (Huang, 2010), and eventually published a more accurate study titled *History of Western Digital Art Theory* (西方数码艺术理论史) (Huang, 2011). After almost a decade of limited research on this topic, Shen Yang's *Land of Memories* contributed to taking the academic discussion on AI literary writing discussion up again. The lack of limited awareness of this specific trend can be confirmed by the fact that only one of the six judges engaged in the *Jiangsu Contest* noted that the novel was written through AI applications. According to Chinese literature critics, this experience showed, once again, a limited theoretical preparation in the field, confirming a dichotomic approach already started in the 1950s in Western countries, when AI literature writing applications first appeared. At that time the question was whether humans or machines are better in writing literature and fiction (Luo, 2023). However, according to other authors, AI literature production also provides an opportunity to address the internal crisis of cognitive literature (AI 写作为认知文学内部危机提供了恰切契机) (Yang, 2024).

The experience of *Land of Memories* is important for the academic debate on AI literature writing and it is functional in supporting the "Chinese dream" to both domestic and international audiences. The novel does not only reflect the general pattern of most recent Chinese science fiction supported by the Chinese government and framed as «world literature» (Chau, 2018), but it also contributes to the promotion of a modern China (Wu, 2020; Gaffric & Peyton, 2019) through a series of references to key industries of China digital development plan that mirror China's ambition to become a strong country (强国), especially in the technology domain.



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The beginning of the novel makes explicit references to key sectors such as the Metaverse, the robot industry, and AI applications, all included in important official Chinese documents such as *the Plan for the Overall Layout of Building a Digital China* (数字中国建设整体布局规划), *Made in China 2025* (中国制造 2025) and the *14th Five Year Plan for the Development of Digital Economy* (十四五数字经济发展规划):

> At the edge of the Metaverse, there is an area called the "Land of Memory" where humans are forbidden to enter. Everything there looks physical, but it is built by humanoid robots and AIs that have lost their memories. Whenever a person or AI attempts to enter, their memories will be sucked away and they will stay in that forbidden area forever (Shen, 2023)[1].

The story focuses on Li Xiao, a former neuroscientist and «Metaverse explorer», who tried to recover her memories from the Metaverse after suffering amnesia due to an accident during an experiment. She became very interested in the legend of the Land of Memory and hoped to regain her lost memories. She eventually established cooperation with an advanced AI named Neura to explore the Land of Memory, but found that these memories were controlled by a huge AI Memoria. Afterward, a fight between Neura and Memoria broke out; eventually, the two AIs merged, and Li Xiao recovered her memories.

This research aims to demonstrate that the role of AI is not limited to the plot of the novel, but also to the creation of the novel itself. In an article published in the *China Science Daily* (中国科学报), Prof. Shen Yang pointed out the importance of AI in a broader sense, stating that he «Cannot live and work without AI assistants» («工作和生活已经离不开 AI 助手») (Shen, 2024).

Another important role played by *Land of Memories* and his author is to reflect the history of Chinese digital development. In the same article, Prof. Shan emphasized how his life changed when he started a blog, especially when the number of readers exceeded 100.000 users. This event gave him «an unprecedented sense of accomplishment» («前所未有的成就感») and helped him to «overcome part of his social inferiority» («帮助我克服了一部分社交上的自卑»). The Chinese professor had the same feeling when his Sina Weibo microblog account topped 1 million followers. Online popularity was useful to support his job appointment at the School of Journalism and Communication at Tsinghua

1. «在元宇宙的边缘，有一个禁止人类进入的区域，称为‘机忆之地’。那里的一切看上去都是实体，但实际上都是由失去记忆的人形机器人与 AI 所构建的。每当有人或 AI 企图进入，他们的记忆会被吸走，永远留在那片禁地».



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University in 2014. After that moment, Prof. Shen started several research projects on big data. However, the real watershed, according to the Tsinghua Professor, was at the end of November 2022 with the launch of ChatGPT, an application that «changed his work and life a lot» («我的工作和生活发生了很大变化») (*ibid*.).

In less than eight years, Prof. Shen developed more than 10.000 conversations with AI focused on human psychology, advanced technology, and philosophical thinking. This data collection leads not only to the creation of a multimodal, multi and cross-disciplinary model, but also to the creation of a brand-new novel.

*Land of Memories*' creation starts with an AI-generated message sent to Prof. Shan, which suggested Chinese scholars join the *Jiangsu Contest*, anonymously submitting a novel created by AI. This suggestion eventually became an experiment for Prof. Shen and his research team who developed 66 conversations with AI. The first output generated by the application was 43.061 characters, which eventually became 5.915 after the researchers' selection.

In addition to literary creation, Prof. Shan's research team also paid attention to the digital publishing process as demonstrated by using AIGC and other applications that automatically turn texts into pictures, video clips, and even virtual scenes and characters. The reason behind this choice was driven by the possible increased interest of readers in this new form of media.

All in all, according to the same words of Prof. Shen, his personal success was – and it is sill – facilitated by China's technological development. Furthermore, coming back to the plot of the novel and China's ambition to become a strong country also in the field of technology, it should be noted that the end of *Land of Memories* celebrates human capacity to fully control emerging and potentially risky technologies. This vision is shared both by the official line of the government aimed at promoting a strong country in the technological fields and by the organizers of the *Jiangsu contest*, as it was confirmed by Fu Changyi (付昌义), President of the contest, who stated «The progress of AI also promotes our human innovation. The biggest advantage of humans over AI is that humans have stronger innovation capabilities, curiosity and imagination. This may be a beginning. We will wait and see what the future holds» (Anonymous, 2023b)[2].

2. «AI 的进步也是促进我们人类创新，人类相较于 AI 最大的优势在于人类有着更强大的创新能力、好奇心和想象力，这也许会成为一个开端，未来会怎样我们保持观望状态».



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## 4. *Land of Memories' online perception*

This study focuses on the online perception of Prof. Shen and his research team's novel through the analysis of comments contained in three threads published on the Zhihu, one of the most popular question-answer sites and news aggregators in China, with more than 81 million daily users. The credibility and relevance of this specific platform are justified by previous research according to which Zhihu is the country's largest community question-answering (CQA) knowledge-sharing platform (Peng *et al*., 2023). Furthermore, according to Chinese official statistics, Zhihu is used by more than 15% of the country's Internet users who are mainly under the age of 35, educated to bachelor's or above levels, and are middle-class residents of China's first and second-tier cities (Zhao *et al*., 2022). Lastly, yet important, Zhihu can be considered as a platform where professional and trustworthy answers are provided to question posers and the platform enables its users to provide «quality, argumentative and information-rich postings» (Xu, 2024; Zhang, 2020).

### 4.1. *AI and literature creation. A general take*

The first discussion on the topic is titled «The boundaries of AI's literary creation are constantly expanding. ChatGPT writes poems, novels, and books. What impact will AI have on literary creation?» («AI 的文学创作边界正不断扩大，ChatGPT 写诗写小说还写书，AI 将给文学创作带来哪些影响?») received 239 answers and was posted on August 2023 (Zhihu, 29 August 2023).

The main questions raised by the original thread were: will the emergence of ChatGPT really have a substantial impact on the professional editorial publishing industry? What impact will it bring? How should writers use these artificial intelligence tools scientifically?

One of the answers in this thread makes a direct reference to *Land of Memories*, specifying that, even without reading the novel, it is important to note that the text was awarded in a literary competition. This success implies that the level cannot be considered too bad and that a new trend deserves attention.

According to the author of this first answer, AI can support writers in their creation, analysis, and development of the general plot of a story through the analysis of a preexisting dataset. That said, AI, at least for the moment, cannot completely replace human writers. According to the Chinese users, it is still too early to refer to AI as a «literary creation» (文学创作) tool. Indeed, AI can generate new texts thanks to the analysis



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of previous works and creative ideas. However, in the very last analysis, AI simply completes tasks based on human needs and humans judge them on the completeness of the content. For this reason, AI is without *autonomy* (自主性). Furthermore, although everyone can write with AI, not everyone can write «good AI works»; the so-called «AI writing» is still an "extension" of human creativity («所谓的"AI写作"依然是人类创造力的"延伸"»).

According to the same author, the application of AI writing will become more widespread in the future. Whether it is a script or a novel

> we will think of using AI to assist in the creation process because the combination of technology and literature will become increasingly close. AI can already deepen the understanding of human psychology, emotions, society, and culture by collecting and processing massive amounts of data, and finally writing more immersive literary works[3].

In other words, it is, and it will be, more and more common to use AI as a reference tool when we create literary works.

Another user noted that the use of AI's application in literary creation supports a return to literature itself («文学回归文学本身») because of two reasons: first, literary works have always been used in a specific social scene; second, originally the creation of literary works was not driven by commercial interests. According to the author of the comment, in the past, nobles and officials, but also literati, were used to seeking fame in the creation of these works: money was not considered the primary purpose of their creation. The same author argues that «the kind of "literature" we are exposed to today is a form of art influenced by modernization, the development of the mass media industry, and the maturity of the cultural industry». The present AI literature creation recalls the need of the Chinese poet Wang Bo (王勃) in his *Preface to the Prince Teng's Pavilion* (秋日登洪府滕王阁饯别序), in which the main goal of the literary piece was to facilitate the socialization of the guests during a banquet in Jiaozhi County (交趾郡, in present-day northern Vietnam). In the same vein, online writers today «pay attention to how other readers view and judge their writings to attract more readers. This similarity among the two different periods lead to the "purification" (提纯) of the literature» (*ibid.*).

The second user suggests not worrying about possible negative consequences brought by AI in the field of creation. Indeed, according to the author of the post, although AI has an advantage to size markets'

3. «我们都会想到用 AI 来辅助创作。 也的确，科技与文艺的结合也日益紧密 AI 能够通过搜集处理海量的数据，来深化对人类心理、情感、社会、文化的理解，最后书写出更具沉浸感的文学作品».



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needs through the analysis and collection of big data, it cannot replace human beings in terms of private emotional expressions. In other words, AI can imitate a person's daily expression, but it cannot experience a person's birth, aging, illness, and death. When it comes to the specific comment on AI literary creation, the user refers to Liu Cixin's (刘慈欣) 1997 *Clouds of Poems* (诗云), according to which technology has limits in deeply understanding and appreciating literature and art. Indeed, in Liu Cixin novel, Li Bai (李白), one of the main characters, dealing with an experiment aimed at creating and storing all possible present and past poems, stated that he «has seen the limits of technology in art» («我看到了技术在艺术上的极限») explaining that «at this time, technology has once again encountered that insurmountable obstacle in art. So far, no software capable of appreciating ancient poetry has been developed» («这时，技术在艺术中再次遇到了那道不可逾越的障碍，到现在，具备古诗鉴赏力的软件也没能编出来») (*ibid.*).

The Chinese online commentator referred to Liu Cixin's novel to specify that the appreciation of literature «has never been purely a technical issue but is influenced by personal aesthetic factors and specific historical periods». If, in the first case, a judgment might be influenced by emotional sensitivity, education level, and personal interests, at the second level, different works may have completely different evaluations in different historical moments.

These ideas of limitations of AI in the literary creation are shared by a third user who envisions a possible future according to which maybe one day:

> you can enter a few keywords on AI, and AI can create a novel of millions of words, and the quality is not bad. But the premise of this kind of creation is that you have to input keywords in advance so that the AI can understand your needs. If AI wants to create on its own, humans will still have to judge whether the works created by AI are good or bad. The biggest difficulty for AI to carry out independent literary creation is the lack of real perception experience brought by practice (*ibid.*)[4].

### 4.2. *How to evaluate* Land of Memories*?*

The second thread retrieved from Zhihu and analyzed for this study is titled «Tsinghua professor uses AI to write novels and wins science fiction

4. «你在 AI 上随便输入几个关键词， AI 就可以创作出一篇几百万字的小说，而且质量还不错。但这种创作的前提是你要提前输入关键词，让 AI 明白你的需求。假如 AI 要自己独立搞创作，那么 AI 创作出来的作品到底是好是坏，也还是要人类来进行判定。 而 AI 要进行独立的文艺创作，最大的难题其实是缺乏因为实践而带来的现实感知经验»



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award. How do you evaluate the 'creative ability' of artificial intelligence? What impact will the AI novel winning the award bring? A novel written by AI wins an award, what kind of impact will this bring?» («清华教授用 AI 写小说，斩获科幻奖，如何评价人工智能的「创作能力」？AI 小说获奖，会带来什么影响？»), was published in December 2023.

The first commentator did not read the novel but highlighted the quality of the competition was good. The success of *Land of Memories* is commented as a technological success. In more general terms, AI is considered a useful tool to improve writers' creation efficiency and quality. However, experiences like the one of *Land of Memories* raised a new issue according to which in the future it will be more and more important to clarify which creation will be realized by humans and which one will be generated by AI (Zhihu, 13 December 2023).

A second user expressed a different take on the award of Prof. Shen's novel because, according to his research, the Jiangsu contest cannot be considered very influential. Moreover, the novel counts less than 6.000 words which technically makes it a "micro-novel" (微小说). All in all, despite these two major limitations, the experiment is still worth discussing because it is a manifestation of technological progress. If, according to the second author, «the general trend is AI will replace human creation, the main question is "to what extent" it will replace human activity». In the second author's view, there is no need to be worried about a total replacement of human literary creation by AI. According to the commentator, as a new technology, AI is a double-edged sword. If used properly, it can be a support in our future, as it already happens in the case of many text contents that are no different from repetitive labor activities such as work reports. On the contrary, texts with a strong literary quality will be still produced by humans also in the future (*ibid.*).

A third user noted that the success of Prof. Shen's novel is not only an affirmation of AI technology, but also an experiment of AI in the field of literary creation. However, novels created by AI may not be comparable to traditional literary works. In more general terms, the impact of *Land of Memories* has three consequences. First, it will inspire more engineers and researchers to further explore the research field of AI writing literature; second, it will raise curiosity from the public on more AI literary creations; third, it will support the popularization of AI technologies to a larger public.

### 4.3. *Comments on the prize and the novel*

The third threat selected for this study was posted on Zhihu in December 2023 too, it is titled «What do you think of the AI-created "Land of



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Memories" winning the second prize in the science fiction competition?» («如何看待 AI 创作的《机忆之地》荣获科幻作品大赛二等奖? ») (Zhihu, 13 December 2024).

According to the analysis provided by the first commentator, based on the information retrieved online and provided by Prof. Shen and his team, *Land of Memories* has «only 15% content created by AI. Thus, it is better to say that AI had a limited impact in terms of literary creation».

Another user highlighted that the added value in the novel creation process was «not AI *per se* but it was provided by Prof. Shen who has technical competencies to gain benefit from AI applications also in the literary creation».

A third user expressed further doubts about the real contribution of AI technology. Firstly, he noted that the literary competition was closed to universities in Jiangsu province, which means that there was no channel for the public to sign up for it. This makes it difficult to get information about the organization of the literary competition. Secondly, according to the information provided by the competition, contributors had to be younger than 45 years while Prof. Shen is more than 50. The suspect was that the rules were not fully respected or that Prof. Shen participated in the context through internal connections. Thirdly, the number of submissions must be considered very low, especially compared to China's most popular sci-fi magazine *Science Fiction World* (科幻世界,) which receives about 2000 submissions per month and also has far higher requirements than the Jiangsu contest.

## 5. Conclusions

This chapter provided a textual analysis on the online debate of AI about literary production in China, focusing on the success of *Land of Memories*, a novel written with the support of AI. The data collected on Zhihu demonstrate that, although the official narration celebrates an already developed status of AI application in the field of literary creation, online commentators appear less impressed, highlighting the role of Prof. Shen and his team in the production process of the novel. In more general terms, most of the comments acknowledge the development of AI applications but, at the same time, point out the limitations especially when it comes to the creativity process.

A second consideration that emerges from *Land of Memories* is linked to the official political narrative of the CPC aimed at promoting a series of achievements in the fields of AI and digital culture. A similar trend is highlighted in the portraits of Prof. Shen's experience. The choice to



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anonymously participate in a literary contest, the strategic decision to set the novel on some key tech China sectors such as the Metaverse, robots, and AI, the comments on the importance of historical China technology developments with a particular emphasis on AI, are all actions that, along with the optimistic conclusion of the novel on the human capacity to control emerging technologies limiting its risks, can all be safely considered in line with the official narration of a strong country (强国) also in the tech sector.

All in all, voices from online public opinion appear not very impressed by the novel or by the process used for its creation.

This experiment of AI literary creation in China is not particularly new, it was previously made in the USA and Japan. However, the experience of *Land of Memories* and its online perception might be useful for future comparative studies on AI and literary creation opinions in other countries. Finally, it will be interesting to see to what extent the phenomenon of AI literary creation in China will remain a strategic line in the field of digital culture and how it will be economically sustainable in the medium and long term.

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## Funding

Funded by the European Union– Next Generation EU, Mission 4 Component 1 CUP D53D2301278 0006.



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# *Debating the Future of Chinese Artificial Intelligence on Social Media: an Analysis of Zhihu Users' Opinions*

by Alessandra Melis

## 1. Introduction

In contemporary China, Artificial Intelligence, AI (*rengong zhineng* 人工智能) has acquired an all-encompassing and imposing significance. China is one of the two leading nations in AI, exacerbating a decade-long geopolitical rivalry over technology with the United States (Khanal *et al*., 2024). With social security as a primary concern, the People's Republic of China recognizes fundamental goals for AI-related services: «The State Council's AIDP[1] states that AI will play an "irreplaceable" role in maintaining social stability. China aims to integrate AI across a broad range of public services, which includes judicial reviews, medical care, and public security» (Ding, 2019: 46). The term *irreplaceable* (不可替代) indicates that a large-scale deployment of new technologies and AI-related services has long been pursued by the government. Furthermore, the protection of citizens' privacy constitutes an essential element of the concept of public security. In this regard, Chinese legislators have so far addressed the issue with a very pragmatic approach:

> The emphasis is explicitly informed by the Confucian value of "harmony" as an ideal balance to be achieved by controlling extreme passions to avoid conflicts. Other than a stern admonition against "illegal use of personal data", such value leaves little room for constraining rules. These principles are not paths to regulation, which would be detrimental to developing research and business opportunities in a highly competitive environment where innovation is crucial (Fung & Etienne, 2023: 506).

1. AIDP stands for "Notice from the State Council on Issuing the New Generation Artificial Intelligence Development Plan" (国务院关于印发新一代人工智能发展规划的通知), Guowuyuan (2017).



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The Chinese government is assuredly striving to face the challenge of finding a "balance" between supporting economic growth and controlling public sentiment. As research on the topic progresses, another crucial dualism emerges: the immense potential uses of AI, in contrast with its possible economic and social repercussions of uncertain development in many sectors. It is not surprising that many Chinese citizens still fear that the increasing use of AI services will reduce human labour (Zeng, 2020: 1443). Besides this fear, there exists a persistent concern regarding the eventual replacement of human intelligence with artificial intelligence. The current state and the future of AI are topics regularly discussed by Chinese netizens on the web, on social media, and on platforms designed for debates and exchanges of opinions, such as Zhihu (知乎), a very popular Chinese social network and community website Q&A (question and answer) similar to Quora (Lyu *et al*., 2022: 13).

To understand the position of Zhihu within the Chinese media landscape, it is indispensable to examine its actual usage data[2]: in the first quarter of 2023, the platform reported an average of 102 million monthly active users; in March of the same year, the number has increased to 110 million. Remarkable is the choice concerning the range of content users may create with AI tools assistance since April 2023, when Zhihu has published the "Community Announcement on the Application of AIGC Capabilities for Assisted Creation", which stipulates that creators should use the label "AI-assisted creation included" when publishing something that includes content generated by AI (Li *et al*., 2024: 4).

In recent years, the use of Zhihu as a tool by researchers achieved an exponential growth in a wide variety of academic disciplines to better explore Chinese public opinion. The site offers scholars the chance to investigate trends of popular or unpopular perceptions that citizens, users of Zhihu, express both in their questions but especially in their answers and sub-answers.

Academic research mainly investigates peculiar elements of modern Chinese society, including sensitive topics such as gender stereotypes and sexuality (Wang *et al*., 2024; Zhao, 2023; Shi *et al*., 2022; Bao, 2024; Peng *et al*., 2021). Significant contribution emerges in the medical field (Wang Y. *et al*., 2022; Gu *et al*., 2024; Zou *et al*., 2024) addressing for instance, Covid-19, psychiatry and psychology clinical aspects and general patients' well-being. Environmental topics, including biodiversity and alternative

2. App Titanium Media (钛媒体 APP), 亿"新职人"的工作与生活，知乎都想"在乎", 2023-07-17. Link: https://www.sohu.com/a/700818274_116132 (last accessed 20 September 2024).



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energy sources, though fewer, are showing notable growth. The state of the art shows how using Zhihu can also be useful for our purposes.

The aim of this study is:

1. to understand the prevalent linguistic expressions Zhihu users choose when they address AI and to bring to light wider cultural and political narratives (and connotations) of Chinese netizens about the future of AI;
2. to explore the diverse responses of Zhihu users regarding the future of AI in light of the recently implemented measures on Generative AI: the *Interim Measures for the Administration of Generative Artificial Intelligence Services* (生成式人工智能服务管理暂行办法).

The research time frame covers the first six months of the implementation of these Interim Measures (15 August 2023-15 February 2024). This recently published document details the initial steps towards more rigorous legislation on next-gen AI. It consists of a total of 24 articles:

1. Chapter 1, General Provisions (Articles 1-4);
2. Chapter 2, Development and Governance of Technology (Articles 5-8);
3. Chapter 3, Service Specifications (Articles 9-15);
4. Chapter 4, Oversight Inspections and Legal Responsibility (Articles 16-21);
5. Chapter 5, Supplementary Provisions (Articles 22-24).

The text examined in this research represents an initial phase towards a more detailed and robust legislative standardization, offering interesting insights into the impact that even a concise and preliminary normative text has on the public of Zhihu, a "small virtual society" in the enormous Chinese society. Furthermore, the text addresses the innovative nature of generative AI and its near future, a subject of discussion among internet users and, of course, Zhihu users.

Several AI-related laws were enacted prior to 15 August 2023, and as such, this study intends to "circumvent" – through a six-months analysis – a phenomenon that King, Pan and Roberts already examined in 2017: government meddling in the various social media, through the promotion of "pro-government" posts. In their complex study *How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, Not Engaged Argument*, the authors concluded that the Chinese Government's actions were not aimed at structuring public opinion through propaganda



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and reverse censorship. Instead, they were more closely aligned with an incitement strategy, promoting political initiatives as they unfolded. What sets this study apart is the authors' observation that "positive" posts on various Chinese social networks, especially Weibo, are often released during "sensitive" periods for the population, such as the Tomb-Sweeping Day festival or the Lunar New Year celebration, for instance, due to the increased activity of users during these specific periods. The timing of the present research aligns with two major family holidays in China (Qingming Festival 清明节 and Spring Festival 春节). Nevertheless, the volume of inquiries related to generative AI on Zhihu indicates that the topic has not generated significant interest or lively discussion, but instead users continued to post more general queries about AI.

This research is mainly based on the method of experimental online ethnography (Markham, 2005), with a linguistic approach. Online ethnography method investigates how netizens interact in online communities, such as Zhihu, regarding macro-topic discussion, in our specific case the opinion of Zhihu users regarding the future of AI. Markmam, 20 years ago, was the first to highlight the importance of using, at the time, a "brand-new" research methodology in the field of ethnography, noting that it provided «a unique space for the construction of identity in that it offers anonymity in an exclusively discursive environment» (2005: 815). Hair *et al.* urge scientists to reflect on the origins of the online ethnography method: «For example, it is crucial to note that ethnography aims to create a cultural understanding of experiences of people and various related elements such as identity, language, rituals, imagery, values, myths and meanings» (2023: 16). The importance of the language in the present research, with an emphasis on the most used nouns, adjectives and verbs (through a deeper analysis) used by ZHU and the terms used in the Interim Measure Text represents the focus of this study. This approach aims to reveal a hypothetical link between answers and the legislative act of the Chinese government.

This work focuses on a corpus composed of 40 texts written by Zhihu's users regarding questions that discuss the future of AI: ten questions and its first four answers. Special attention will be given to the answers provided by AI experts. The third paragraph of this work will focus on describing how the corpus was selected and analyzed.

## 2. Zhihu

More and more sites facilitate the acquisition of notions that is both *constructed* and *reshaped*, through the interconnection of individual



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knowledge and specialized expertise. The success of followers of Social Question & Answer Sites (Chen & Deng, 2014: 82), commonly known as "community question answering sites" (CQA) – allowing users to request information from an online community by posing questions – is a trend of considerable academic relevance, especially when it concerns the Chinese context.

It is widely acknowledged that the entire social apparatus is heavily controlled at the governmental level (Tai & Fu, 2020) by the Ministry of National Security. Sites like Zhihu, somehow, while not completely escaping the grasp of censorship, still turns out to be a relatively open online platform, where Internet users are also able to approach knowledge and extremely sensitive topics that would be immediately "banned" on other online platforms and apps, such as Weixin and Baidu. More specifically, according to a study by Deng et *al*. (2019), in its Baidu Zhidao 百度知道[3] section, users tend to search for information, without engaging in a deeper discussion on a topic. To enable an authentic and open debate, Zhihu facilitates anonymous interactions with the community. To answer questions, users may, in fact, opt for anonymity, appearing as "Zhihu user" (followed by a numerical code, i.e. Zhihu user 345); this possibility enables increased openness and authenticity. The decision to investigate questions and answers regarding the future of AI, is precisely due to this feature; a further reason is that «Zhihu continuously improves the quality of knowledge through cooperation, diversified forms, and technological innovation. User experience is guaranteed through user reach and incentive mechanisms» (Wu & Yuan, 2024: 1).

The plurality of viewpoints on a wide variety of issues (Zhang et *al*., 2022) is increasingly being studied by researchers, not exclusively of Chinese nationality, because analyses focusing on the "digital media environment" offer valuable observations on the increasingly narrow gap between real and virtual.

In this research, those defined as "Zhihu Users"[4] – ZHU – have been categorized in previous studies using different terms, which merit brief mention: «citizen communicators on Zhihu» (Yang, 2022a), «citizen science communicators involved in online science communication» (Yang, 2022b) for example, are definitions that boldly bypass the more generic and used "Zhihu community", "Zhihu audience" and bring up the user's *status*. Zhihu users exhibit a more informed and specialized vision, demonstrating high levels of professionalism.

3. Official website: http://zhidao.baidu.com/.
4. From now on this text, indicated by the acronym ZHU.



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The hybrid definition of ZHU was intentionally chosen because, despite the technical focus of the themes, several responses lacked technical expertise, with some being just playful/ informal remarks. In fact, as already noted by Zhang *et al*.:

> On these online collaboration platforms, members may be driven to answer questions for conveying their sentiment appropriately through text. From the perspective of interpersonal communication, individuals' sentiment toward a topic represents the atmosphere of the discussion on that topic. Expressions of gratitude and reciprocity are essential for developing trust and empathy among users, which increases their willingness to collaborate and the acquisition of answers on Q&A sites (Zhang *et al*., 2022: 5).

The site's functionality is very important; its name comes from the translation of the ancient Chinese phrase "do you know": *ni zhihu*? (你知乎?), where *zhi* (知) means *zhidao* (知道) 'to know' and *hu* 乎 designate the interrogative form (*ni* 你 is the pronoun 'you'). The website has been operational since 2011, and its users can ask and answer questions, like, save, share, report, comment on answers, they may also invite specific users to respond. They can follow and send private messages to other user accounts, which makes it a social media platform too. Zhihu also includes a built-in operative system for recognizing and eliminating fake profiles, as well as issuing temporary and permanent bans:

> Zhihu specifies four groups of activities on the platform that can lead to user banning. They are (1) violations of national laws, (2) unfriendly activities such as intimidate speech and racism, (3) spam advertisements including those generated by machines, and (4) other malicious actives such as posting "fish content" to bait other users. Under each group, there are more specific items that Zhihu regards as violating its community rules (Zhang *et al*., 2023: 4435).

In addition, Zhihu recognizes rewards for its most active and popular ZHU such as "Excellent Answerer", "Recommended by Editor" and "Popular Provider" badges. Users have the option to purchase a monthly, semi-annual, or annual subscription. On the main page, in addition to the list of the latest questions with multiple connections to answers and sub-answers of the ZHU, there is a section for the personal log. At the top right, an interactive bar with the button "ask a question" (提问), enabling users to do a more in-depth search on a specific topic, by examining the site's database to analyze all questions related to the same subject. For a more targeted sub-search, Zhihu lists a selection of filters (筛选) that users can apply to narrow the search, which can be summarized as follows:



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*Table 1 - Topic and filter on Zhihu*

| | *Filters on topics / users Interaction* | *Time filters* |
|---|---|---|
| **Selected topic** | All (no filters)<br>Answers only<br>Articles/videos<br>Most liked posts<br>Full list | Last Q&A<br>No time limit<br>Latest post within 24h<br>Latest posts within a week<br>Latest posts within a month<br>Latest posts within three months, six months, a year |

The maximum time limit, as inferred, is set to the preceding twelve months. Subsequently, users access the catalogue of previously posted questions per topic in a non-chronological order (as set by the system), organized as a list of questions, considering two main factors[5]:

1. impact of likes or general interest in the question, as well as the weight of answers given by "titled" users;
2. number of responses to the question and likes on internal comments on individual responses (added weight if given by "titled" users).

As Zhihu's guidelines also state:

When designing the answer ranking algorithm, Zhihu follows the following principles: All users see the same ranking. Receiving upvotes will cause an answer's ranking to rise, while receiving downvotes will cause it to fall. Good answers in a specific field (distinguished by the topics added to the question) will increase the user's voting weight in that field. Votes from users with high weight in a specific field have a greater impact on the ranking, and their answers are also ranked higher. When using an anonymous identity to vote or answer questions, the user's weight is not calculated. Answers are not simply ranked by the number of votes from most to least. Since downvotes are not displayed on the page and different users' votes have varying impacts on the ranking, it is normal for lower-vote answers to appear before higher-vote answers[6].

The more a question sparks interest, the more it creates virtual reactions, including actual debates, answers or shares. This process creates

5. For Zhihu Official Regulations see: https:/Tt/www.zhihu.com/question/19576738/answer/1157620633.

6. *Ibid.*



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*trend topics*, elevating the said question to the top of the list. Therefore, when using *Zhihu* for scientific research purposes, topic selection and the chronological reorganization of the acquired material represent the initial and fundamental, albeit challenging steps in conducting a critical analysis of the texts.

## 3. Corpus and methods

As of June 3, 2024, a preliminary search on Zhihu regarding user-posted questions over the previous 12 months (the only search possible within the system, with no option for advanced search) containing the term *artificial intelligence* yielded a preliminary corpus of 162 questions. From this macro-corpus, a subcorpus was selected, consisting of questions formulated and effectively posted between August 15, 2023, and February 15, 2024, that included one or more linguistic elements referring to the evaluation of AI's future. Subsequently, the dating of the answers to these questions was verified, reducing the corpus to 10 questions analysed in this study. Questions with zero response interactions were excluded.

The preliminary corpus of this research shows the need for numerous ZHU to exchange opinions on the actual use of AI's systems without addressing further questions about its prospects. Since AI is a field of study for numerous young Chinese, the abundance of specific and technical questions and answers was predicable: «In China, the focus on "applied talents" is also aimed at creating greater differentiation in university degree courses to improve the employability and enterprise skills of students from local and less prestigious universities» (Brown *et al*., 2021: 2).

There are few interactions on questions concerning the definition of AI which suggests that the work of semantic and scientific indoctrination on the subject, operated by government institutions at all levels, has already achieved good results. In addition, it is necessary to consider that the work of developing services and knowledge related to AI is undoubtedly linked to internal growth in China, but this cannot be separated from the objectives of the PRC as an international leadership and guide in an increasingly global world: «the country's progress in AI has made it a key player in the global AI landscape, with implications for both competition and collaboration with other nations» (Venni, 2024: 7).

A subcorpus was therefore created based on two selection criteria:



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1) topic: questions regarding the future aspects of AI;
2) timing: questions posed in the six months following the publication of The Interim Measures for the Administration of Generative Artificial Intelligence Services (生成式人工智能服务管理暂行办法)[7], i.e. in the period between 15 August 2023-15 February 2024.

Answers were analysed in terms of word count, linguistic register, along with the most frequently used noun, adjectives and verbs by users. Finally, the study investigated terms and phrases or parts of phrases that were highly similar to those in the 2023 regulation text, Interim Measures, on generative AI. The study analyses a subcorpus of ten questions concerning the future of AI and the first four responses to each, arranged in chronological order. It is important to explain why this subcorpus was selected as described. Zhihu's default sorting system organizes replies by popularity (total likes and sub-interactions) rather than presenting answers chronologically, often prioritizing posts from paying "VIP" users. This research opted for a chronological approach that permits the visualization of posts from any users, avoiding the automatic sorting of "expert Zhihu users", usually contributors of the social network. Another factor influenced the choice of the number of responses to analyse: question number 10 had only 4 responses within the considered time range. Therefore, this number was adopted as an equivalent weight throughout the study. Considering these limitations, nonetheless, it was possible to identify both experts and well-informed general public.

Furthermore, the observation of the first 4 answers provided valuable insight to evaluate the hypothetical degree of "closure" and censorship on Zhihu. Compared with other Chinese platforms. Zhihu tends to safeguard more freedom of speech and thought. Despite the presence of a rapid post-removal system, the answers examined clearly suggest a more open and flexible content moderation system, aided by AI tools that efficiently filter users for bans or retention. Every question contains at least one grammatical element relating to the future. The corpus, including questions and answers, consists of a total of 40 texts. The word count of the document totals 9.319, as measured by the program "Chinese Text Analyser"; the total number of characters, excluding spaces, is 18.374, of which 17.431 are recognized by the Office Word system as Asian characters. The remaining characters are English words, primarily consisting of usernames or terms like *AI* that users directly employed in English rather than using the Chinese equivalent.

7. Guojia huliangwang xinxi bangongshe (2023).



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## 4. Analysis of Q&A

The analysis will further include references to the most recent regulations and laws promulgated in China about AI. The following scheme summarizes the ten questions investigated in this research:

*Table 2*

| | |
|---|---|
| 1. 我们距离通用人工智能还有多远? 当它诞生后，会给社会发展带来哪些变革? How far are we from achieving artificial general intelligence? Once it is developed, what kinds of changes will it bring to societal progress? | 10/10/23 – 95 answers https://www.zhihu.com/question/625115987/answer/3244798992 |
| 2. 基于大模型人工智能会是未来十年的发展风口吗? Will large language model-based artificial intelligence be a major trend in the next decade? | 7/11/23 – 35 answers https://www.zhihu.com/question/629244709/answers/updated |
| 3. 你们认为AI人工智能会是第四次工业革命吗？ Do you think AI will be the fourth industrial revolution? | 2/12/23 – 31 answers https://www.zhihu.com/question/624974777/answer/3310539164 |
| 4. 报告显示，人工智能行业职位供需比同比增长 53%，2024 年人工智能行业是否依然处于风口? The report shows that the supply-demand ratio for positions in the AI industry has increased by 53% year-over-year. Will the AI industry still be a hot sector in 2024? | 10/1/24 – 24 answers https://www.zhihu.com/question/636856820/answers/updated |
| 5. 当下人工智能正在爆发，生成式人工智能会面临怎样的挑战?人类又该如何更好地使用人工智能？ As artificial intelligence is currently experiencing rapid growth, what challenges will generative AI face? How should humans better utilize artificial intelligence? | 9/2/24 – 23 answers https://www.zhihu.com/question/643784634/answers/updated |
| 6. 化学和人工智能结合会是新方向吗? Will the combination of chemistry and artificial intelligence be a new direction? | 9 /10/23 – 16 answers https://www.zhihu.com/question/625197889/answer/3301079228 |
| 7. 想以后从事人工智能芯片设计，研究生应该读ai还是ic? If you want to work in artificial intelligence chip design in the future, should you pursue a graduate degree in AI or in IC (integrated circuits)? | 1/10/23 – 13 answers https://www.zhihu.com/question/624405243/answers/updated |
| 8. 数学系本科以后想搞人工智能算法一类的工作，有什么建议吗? If someone with a bachelor's degree in mathematics wants to work in artificial intelligence algorithms, do you have any recommendations? | 2/10/23 – 10 answers https://www.zhihu.com/question/621834874/answers/updated |
| 9. 如果所有的工作都被人工智能代替，社会会发生什么变化？ If all jobs are replaced by artificial intelligence, what changes will occur in society? | 15/10/2023 – 6 answers https://www.zhihu.com/question/626215473/answers/updated |
| 10. 未来人工智能对人类社会有哪些影响? What impact will artificial intelligence have on human society in the future? | 20/8/23 – 4 answers https://www.zhihu.com/question/617716688/answer/3175232434 |



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Regarding the grammatical aspects contained in questions that refer to future action, 70% of ZHU used the verb *hui* 会 (followed by another verb), indicator of a future possibility "will…" (Wang S. *et al*., 2022, 6):

- Will bring..., 会带来 (1)
- Will be... in the future, 会是 strengthened by future – 未来 (2)
- Will be…, 会是 (3)
- Will face… challenge, 会面临 followed by challenge – 挑战 (5)
- Will be… [something] new, 会是 accompanied by new – 新 (6)
- Will happen…, 会发生 (9) – will happen
- Will have… impact/influence, 会有 preceded by 未来 at the beginning of the request and reinforced at the end of it by the noun 影响 (10).

In sentence four, the explicit mention of time ("Year 2024", 2024 年) in a question posed in January demonstrates the user's intention to reflect on the future of AI industries in the following months. On questions 7 and 8, however, the grammar elements that serve this purpose are different, indicating time, like "I think in the future … should" (想以后), followed by (应该) (7), "in the future I think … have suggestion" (以后想) strengthened by *you*… (有..建议) （8) at the end of the phrase.

Focusing on the answers, the average length of the 40 examined texts is 422 words; the first response to question 3 is the most extended one, with a total of 4515 words, while the shortest one is the second answer to question 2, consisting solely of 3 video links. For question 4, it is important to note that two answers (third and fourth chronologically) were omitted from the study because they were simply not pertinent to the topic. The answers have been analysed in their chronological sequential order. In half of the responses (20), the language used by ZHU is technical, as evidenced by the correct use of well-known technicism. On question n. 1 «How far are we from achieving artificial general intelligence? Once it is developed, what kinds of changes will it bring to societal progress?» the ZHU named *Fengchen gu lan* 07 – 风尘孤狼07 –, a user with a "blue badge" on *Zhihu* (meaning that he shared in his portal information about his profession) – listed the possible effects of AI services development in five points. In this answer he uses technical terms that denote his professional knowledge. The most remarkable is point 5, as it focuses on a number of issues that would arise from the development of AI services in the near future.

Social, Ethical, and Legal Challenges: The emergence of general artificial intelligence will bring about a series of social, ethical, and legal challenges. For example, issues such as privacy and data protection, machine ethics, the



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responsibility of artificial intelligence, and ethical standards will all need to be addressed[8].

This user's consideration reflects the observations already raised in 2023 by the Interim Measures for the Administration of Generative Artificial Intelligence Services, in Chapter 4:

> The provision and use of generative artificial intelligence services must comply with laws and administrative regulations, respect social morality and ethics, and adhere to the following provisions: […] Do not harm others' physical and mental health, or infringe upon others' rights to their image, reputation, honor, privacy, and personal information. Based on the characteristics of the service type, take effective measures to enhance the transparency of generative artificial intelligence services and improve the accuracy and reliability of generated content[9].

A relation can be observed between the length of answers – specifically texts longer than 289 words (answer 4 to question 8) – and the use of a more formal and refined, almost specialized, style. Shorter replies display simpler style, even if sometimes the tone is still formal. In this regard, two texts are exemplary: in question 5, the user *Zongheng sihai* 79 – 纵横四海 79 – replied: «In the face of technological development, we must learn to use it rationally and scientifically, rather than being controlled by it»[10]. In the Chinese text common nouns, verbs and adjectives are used, without delving into technicalities or scientific aspects. In question 6, user *Wang moumou* 王某某's reply displays elements of young colloquial slang: «Bro, I'm working on interatomic potentials for graph networks, but I still haven't found a place to go»[11]. The term 哥们 has a self-referential function rather than a form to address the reader: it is evident that the user does not approach online interlocutors with an informal expression. In the first and third response, instead, the users *Ge ting gen shuxue xuepai* 哥挺根数学学派 and *Liu dabai* 刘大白 present their arguments with a clear but technical style.

To identify the most frequent words in the corpus the software Sketch Engine[12] was used, focusing on nouns, adjectives and verbs. Regarding

8. Chinese text: 社会伦理和法律挑战：通用人工智能的出现将引发一系列的社会伦理和法律挑战。例如，隐私和数据保护，机器道德，人工智能的责任和道德标准等问题都需要解决.

9. Guojia huliangwang xinxi bangongshe (2023).

10. Original text in Chinese: 面对科技的发展，要学会合理利用，科学利用，而不是被科技掌控.

11. Original text in Chinese: 哥们就是做图网络原子间势的，到现在还没地儿去捏.

12. Link: https://www.sketchengine.eu/



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nouns, besides the obvious prevalence – 201 times – of *intelligence* (智能), and of related terms like *technology* (技术, 51 times), *industry* (工业 and 行业, 34 times), *field* (领域, 43), *specialization* (专业, 22 times), the noun *revolution* (革命, 32 times) has a remarkable frequency. This term can also signify *change* or *transformation*. In the analysed cases, it refers to a historical phase of production and working methods (industrial, technological revolution). ZHU named *Buyao erfen fa* 不要二分法, first user to respond to the third question («Do you think AI will be the fourth industrial revolution?»), writes at the beginning of its response:

This year, regarding this breakthrough in artificial intelligence, many people have been discussing ChatGPT. There are two relatively extreme viewpoints. One extreme opinion believes that this breakthrough in artificial intelligence will trigger the fourth industrial **revolution**. The other extreme opinion is that this doesn't really count as a significant breakthrough and is still just about gathering and organizing information. The moderate view concerns how many people will lose their jobs. Personally, I lean towards the view that this breakthrough in artificial intelligence will indeed trigger the fourth industrial **revolution**[13].

Zhihu's filtering system seems more flexible compared to other Chinese social media and apps. The community of *Zhihu* demonstrate remarkable skills in discussing difficult topics, even adopting "red flag" terms that help them eluding coercive censorship. It should be pointed out that not all individual terms or even entire sentences are instantly banned due to the internet control system, as the Chinese government has begun to consider the power of what Wong and Liang have called «soft propaganda»:

Studies find that the Chinese government has been recruiting commentators to post online comments that promote the interest of the party-state (Han, 2015a, 2015b). Those comments, also known as 50-cent comments or *shuijun* comments, which seem to be authentic voices from ordinary netizens, are carefully crafted by the authorities for propaganda purposes (Bremmer, 2010; Deibert & Rohozinski, 2010; King *et al.*, 2017; Miller, 2016). Such "soft propaganda" is expected to subtly influence public opinions and persuade citizens to believe in the state ideology (Liang, 2023: 3).

13. Original text in Chinese: «今年对于这次人工智能的突破，很多人都在讨论chatGPT，有两种比较极端的看法，一种极端看法认为就是这次人工智能的突破将会引发第四次工业革命。另一极端看法就是这次也算不上什么大突破，依旧是收集信息归纳整理。中间派就是将会有多少人下岗。我本人是倾向这次人工智能将会引发第四次工业革命[…]».



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Returning to the frequency of noun usage in the 40 responses, the term *development* 发展[14], is present 37 times in the corpus, and we can find it nine times in the 2023 Interim Measures. Even the term *application* 应用 has been frequently used in the selected corpus (29 occurrences), and it is present seven times in the text mentioned above. This is relevant because the ZHUs' responses seem to echo, if only partially, the official policy discourse on the need for growth and implementation of AI-related services and knowledge.

In addition to the high incidence of the auxiliary verbs *to be* (是, 198 times) and *to have* (有, 71 times), as well as the most commonly used modal verbs in the Chinese language "can/ be able to/ might/will" (会, 70), "can/ may/be allowed to" (可以, 55), "can/ be able to/ be capable of/ may" (能, 35), "want/ need/ will/be going to" (要, 25). The analysis of the corpus reveals an evident preference for verbs associated with growth, development and improvement (with a positive connotation): *to improve* (提高, 18 times), *to accelerate* (加速, 9), *to improve/elevate* (提升, 7); and two verbs explicitly related to discussions on the development of AI services in the work field: *to replace* (取代, 15) and *to substitute* (替代, 9). The verb *to provide* (提供), present in the corpus 17 times, is heavily and frequently used in the regulatory text of the 2023, in which it occurs 33 times. In The Interim Measures, this verb delineates the limits within both domestic and international companies, involved in the provision of generative AI services in the PRC, must operate. Article 10[15] provide an example of this: Chinese legislature mandates that AI service providers guide users, especially minors, with scientifically informed and rational instruction on using generative AI, to mitigate the risk of over-reliance. Focusing on frequent adjectives in the corpus, the prevalence of *artificial* (人工, 138 times) is evident; it is worth noting that, in several responses, the Chinese term for *Artificial Intelligence* is replaced by the English acronym AI, supposedly used for writing efficiency. Among the top 50 adjectives most frequently used by ZHUs in the answers, there is weak connection with those mostly used (37) in the 2023 regulations: the stylistic nature of legislative and regulatory text, which use this grammatical element sparingly, provides an explanation for this. Besides dominant adjectives such as *generative* (生成式, 31 times) and *artificial*

14. Also used as a verb, to develop (AN).

15. Original text in Chinese: «第十条. 提供者应当明确并公开其服务的适用人群、场合、用途，指导使用者科学理性认识和依法使用生成式人工智能技术，采取有效措施防范未成年人用户过度依赖或者沉迷生成式人工智能服务。». Guojia huliangwang xinxi bangongshe (2023).



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(人工, 30), only adjectives related to the genre such as *legal* (合法, 3), *legitimate* (正当), *fair* (正) and their opposites *false* (虚假), *illegal* (违法), *harmful* (有害) appear one time each.

## 5. ZHU thoughts about the future of AI

The ten pivotal questions of this paper can be divided into two macro-categories:

1. general questions about AI and its development: n. 3, 5, 9, 10;
2. technical questions on a topic related to the future of AI: n. 1, 2, 4, 6, 7, 8.

In the corpus, 6 questions are purely technical, this connects to the earlier discussion in section 1 of this paper, regarding *Zhihu* netizens as "scientific communicators". The 40 answers to the above questions can also be divided into three subcategories describing the view expressed by the ZHUs who participated in the debate. The responses given were:

A. exclusively technical/specialist, with no explicit positive or negative connotations;
B. with positive evaluation;
C. with negative evaluation.

The following section will focus on a review of the ten questions and answers, categorized according to these three attitudes:

*1. How far are we from achieving artificial general intelligence? Once it is developed, what kinds of changes will it bring to societal progress?*

We find two responses with "neutral" connotation and two denoting concern and negativity about the growth of AI and the repercussions in society. Users *Fengchen gu lang 07* 风尘孤狼 07 and *Ganggang* 冈冈, response 1 and 2, perceive the achievement as a remote possibility. *Fengchen gu lang 07* 风尘孤狼 07 outlines some social changes that AI will produce in education and employment and identifies challenges regarding privacy and moral/ethical issues; *Ganggang* 冈冈 posts a judgment on current AI services, referring to them as helpful in avoiding hassles and preventing complications. Users *Bu tiao zhu cheng* 不跳主城 and *Ye wen zhezhu sheng* 夜闻折竹声 responded immediately after *Fengchen gu lang 07* 风尘孤狼 07 and *Ganggang* 冈冈, offering us



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different interpretation in contrast to their predecessors: *Bu tiao zhu cheng* 不跳主城 states that, despite the advanced development of AI it could never match "human" intelligence in the future; however, they do not exclude such a possibility *a priori*. *Ye wen zhezhu sheng* 夜闻折竹声 maintains an overtly negative opinion of AI, suggesting future limitations on its evolution.

*2. Will large language model-based artificial intelligence be a major trend in the next decade?*

Two responses expressed a negative opinion, that of users *Cyrus* (response 1) and *Civilpy* (response 4). The former reveals uncertainty about the degree of AI development, also wonders how many people will participate in the process and really know how to use it; *Civilpy* notes that the spread of AI services will have a negative effect on employment opportunities. User *VRPinea* (response 2) posts three video links describing the impact of AI emphasizing the urgency for it to "evolve". *Bu bu daoweng* 不不倒翁 (response 3) summarily retorts that it is not the only AI trend, without expressing more substantial ideas to his post.

*3. Do you think AI will be the fourth industrial revolution?*

This topic is not new: the Chinese establishment had already emphasized the inevitable connection between AI and the new revolution[16]. In the third response, the author *A wen pindao* 阿文频道 expresses enthusiasm for AI; in fact, he declares that AI development must not be ignored, emphasizing positive effects on citizens lives, transforming them from mere spectators to leaders in this growth process. In the other responses n.1, 2, 4, the authors, *Bu yao erfen fa* 不要二分法, *Wangzhitong ren* 王之桐人 and *Mo Momo* 莫. *Mo Momo* respectively, merely consider

16. In the official speech delivered by Li Keqiang at the opening of the 12th Summer Davos Summit on September 19, 2018, for example, the then Prime Minister discussed some issues related to the global financial crisis and the new global challenges, claiming that AI services are necessary in the new era because of their immense potential for expansion across numerous fields:

«To strengthen the new drivers of global economic development in the new industrial revolution, it is essential to promote integrated innovation and development. The new industrial revolution holds limitless potential, as natural sciences, social sciences, and the humanities have never been so deeply interconnected as they are today. Likewise, different industries, companies, and groups have never been able to leverage each other's strengths so profoundly. Artificial intelligence spans various fields, including mathematical algorithms, bionics, sensor technology, and ethics». Li Keqiang Official Discourse 李克强在第十二届夏季达沃斯论坛开幕式上的致辞. Complete text in Chinese at the link: https://www.gov.cn/xinwen/2018-09/19/content_5323722.html.



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AI as the main thrust of the fourth industrial revolution; in the first response *Bu yao erfen fa* 不要二分法 argues that AI itself is the fourth industrial revolution, and its evolution is inferable and inevitable. No clear judgment is found in their response; a sense of "objective description" of the status quo prevails. The recent studies of Hine and Floridi emphasize the same concepts: «When AI is hailed as a key part of the "Fourth Industrial Revolution" (Schwab 2018), it seems that ensuring stability is seemingly incompatible with the disruption inherent to AI development» (2024: 265).

*4. The report shows that the supply-demand ratio for positions in the AI industry has increased by 53% year-over-year. Will the AI industry still be a hot sector in 2024?*

In response to this technical question, responses 3 and 4 (by authors *Momo DIY* and *Wu mingshi* 无名氏) were not considered for the analysis due to being out of context. All remaining responses do not express a clear opinion or judgment. *Tianya haifeng* 天涯海峰 argues in response 1 that AI will remain a major field of study and development, both in terms of the employment aspects as well as for investment in general; *Tusu* 屠苏 in response 2 argues that AI is a field of interest, but that not all occupations that allow workers high wages are linked to AI. User *Zhiye guihua shi shang na* 职业规划师商娜 in response 3 (bis) is convinced that AI is a growing industry, but that there is no need to worry about a supposed threat of surpassing human intelligence, as AI lacks critical thinking, creativity, and human communication skills. Finally, *He ying xuezhang* 禾颖学长, in answer 4 (bis) states that AI is not necessarily following a linear growth and that some projects will be unsustainable in the long term. The user argues the need to be cautious while not missing the real and tangible opportunities and chances that new technologies all realize.

*5. As artificial intelligence is currently experiencing rapid growth, what challenges will generative AI face? How should humans better utilize artificial intelligence?*

In three of the four responses analysed, concerns related to the use of AI emerged. User *Zongheng sihai 79* 纵横四海 79 (response 1) writes that AI must be used reasonably and scientifically, cautioning against being controlled by it; in response 3 *Zhihu yonghu WASt15* 知乎用户 WASt15 warns that the expansion of AI-related services may devalue the human workforce, identifying it as a current threat. For *Xing ze jiang zhi* 行则将至 (response 4) it is crucial to approach AI with an attitude defined as «correct» (without specifying what this term means to them) since all



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technological services should not hinder the progress of humanity (they do not use the term society but rather expands to the entire humankind) and must therefore be in service to it. Only in response 2, posed by *Guguagu* we find a positive view; according to them, AI will change the organization of many sectors, and they report that, thanks to AI, the future of students will become more "comfortable".

*6. Will the combination of chemistry and artificial intelligence be a new direction?*

All the answers to this "technical" question analyzed in this paper are not opinions on the interconnection between chemistry and AI, but rather provide an analysis of the field's development. Only user *Yi ran* 一然 (answer 2) draws attention to the strong connection between chemistry and prominence in the area of "human" intelligence, not mentioning AI at all. Users *Ge ting gen shuxue xuepai* 哥廷根数学学派 (answer 1) and *Liu dabai* 刘大白 (answer 3) mention the great number of studies in scientific literature on the connection between chemistry and AI; *Liu dabai* 刘大白 specifically mentions a project named «Deepchem» and the usefulness that AI may have in developing the field of material chemistry. Interestingly, in answer N.4 *Wang Moumou* 王某某 mentions «a friend, professional in the chemical field» who has not found practical application for AI in his area of expertise. The brief text does not specify which branch of the chemical industry has no current interconnection with AI.

*7. If you want to work in artificial intelligence chip design in the future, should you pursue a graduate degree in AI or in IC (integrated circuits)?*

The answers to this purely technical/scientific question are extremely punctilious, and none of these presents any positive or negative meaning about the future of AI. The authors *He zhe zhi* 何哲陟 (answer 1), *Xiao budianr* 小不点儿 (answer 2) *Zhou shuchang* 周舒畅 (answer 3), and *Duke* (answer 4) respond with advice on studies, especially related to IC (Integrated Circuits), in case the questioner chooses to pursue a career in the private or entrepreneurial sector; only *Duke* (answer 4) goes further, advising studies abroad, to be followed by a PhD for designing and developing a marketable product. This user ties the advice to the notion that individuals with high ambitions can work with AI, while those who remain uncertain may continue scientific research without expecting too much from the future. There is a vein of controversy here, not about AI, but about the future of those who undertake AI studies without tying them to private sectors opportunities.



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*8. If someone with a bachelor's degree in mathematics wants to work in artificial intelligence algorithms, do you have any recommendations?*

Once again, the question posted anonymously is answered purely technically, without any expression of opinion on the future of AI in the strict sense. All four authors of the responses, in chronological order of reply to the post *Chadui123*, *Langevin*, *Shiguang* 时光丶 *Ren ai* 人爱 and *Dai tou e* 呆头鹅, merely recommend further study in mathematics, particularly machine learning and computational skills, following the goals that the ZHU who posed the question sets for their future, possibly finding a specific field that they are passionate about.

*9. If all jobs are replaced by artificial intelligence, what changes will occur in society?*

This question reflects some of the perplexities related to AI in general, not just among the Chinese netizen audience. However, in the Chinese context the discussion immediately appears to be linked to conceptions of "communist societies" and "capitalist societies." In all four responses examined, users take up concepts related to production methods, with different views on AI. In response 1, user *Zhi hu yonghu 53n7lw* 知乎用户 53n7Iw states that not all jobs will be able to be replaced by AI services; AI is only a tool to increase productivity and to exploit workers. But a complete replacement of the human workforce is to be ruled out; it is counterproductive for manufacturers to completely use AI services to replace the entire workforce.

*Wu weiwei* 吴伟伟, in response 2, sets out a discussion of the concept of communism. AI, in his opinion, will ruin Western and U.S. economies; in the PRC this will not happen because of the present system. He predicts a short-term downfall attributed to the development of AI services by the countries above. This answer echoes one of the aspects of the 2023 generative AI regulations related to preserving a stable governance system in the PRC. *Yi zhi ju liu xiang* 一只橘留香, in response 3, argues that replacing workers with AI systems would need retraining and unemployment would be increased, but it would also allow "human" workers to spend more time on innovative skills and creativity, while also giving them more free time for family. However, now is the time to reflect on how resources obtained from exclusive AI work should be distributed and redistributed. In response 4, user Jeff expresses in a very short sentence all his optimism and positive outlook on AI: it will bring a society of abundance for everybody.



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*10. What impact will artificial intelligence have on human society in the future?*

The four responses to this question appear to be repetitive; it seems that the first response influenced the next three: *Shen zhushou* 神助手 is the first user to respond, with a lengthy post (654 words) listing the positive and negative aspects, including those related to privacy protection and ethics challenges; the concern lies not in AI and its development but on how measures can be taken now and in future to ensure for all that such growth has only positive repercussions for society. Subsequently, two other users, *Keji kuang lang* 科技狂狼 (response 2) and *Dabusi de xiaoqiang* 打不死的小强 (response 4) echo elements already mentioned by 神助手 in his first response, including the ending. Only the user *Shuzi wenzi* 数字文字 (response 3) presents an extremely negative view, and for the first time in 40 texts the discussion shifts to the use of environmental resources and global concerns. The user is worried about the attitude that the use of AI would lead to in people, who would become either overconfident, falling into the danger of loneliness, or too disinterested, thus raising the possibility of significant inequalities within society.

## 6. Conclusion

First and foremost, there is no strong connection between the texts analyzed and the 2023 Interim Measure Text on Generative AI. Apart from reported instances of responses in which the authors were concerned about the repercussions of the use of AI services, privacy, and other ethical challenges, (an aspect present in the legislation), no other connection was found. This issue is not for the first time in a government regulation on AI, as Filipova highlights: «Another document dedicated to ethical regulation is the Code of Ethics for New Generation Artificial Intelligence published by the Ministry of Science and Technology of the People's Republic of China in September 2021» (2024: 50). This leads to the view that the 40 ZHU who addressed the 10 questions concerning the future of AI were not influenced by the official ministerial document. As Yang recalls: «In the Chinese context, in the Report of the 19th National Congress of the Communist Party of China, the Party pointed out that it is necessary to build a social governance pattern of co-construction of scientific affairs and to strengthen public participation in science and technology governance […]» (2022b: 130). This initial consideration aligns with the idea of active and relatively open participation in scientific communication regarding AI, as discussed in this Q&A study from *Zhihu*.



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Secondly: the most pressing concerns for ZHU who answered the ten questions were about technical aspects related to AI; the work done by government propaganda on general definitions and uses of AI services seem to have been "absorbed" by Chinese citizens. Meng notes: «Just because policymakers, financial elites and technological entrepreneurs are making AI their strategic priority, it does not necessarily mean that the politics of this new initiative will unfold evenly across the nation» (2023: 355). The results derived from the analysis of the corpus suggest a clear trend: official, scientific information on AI is increasingly accessible to Chinese netizens, although specialized content, particularly concerning its near-term development, still remains detached.

Thirdly, a wide range of engaging opinions on the future of AI from Zhihu users emerged, suggesting that, compared to other Chinese social media and online platforms, Zhihu continues to serve as an important space for 'freedom of expression': «Zhihu is considered to be an amalgamation of the most intellectual and critical forces among young Chinese, and views expressed there are often disseminated to social media such as Weibo and WeChat» (Chen *et al*., 2022: 103). Finally, this study reaffirms the observations made by Chen and Jin in their 2022 research, specifically within the section *Zhihu as a Public Arena for Discussing Controversial Science in China*, the dual nature of Zhihu as both "scientific" and "popular" social network: «Platforms like Zhihu enable lay audiences to engage with a seemingly limitless amount of information from a wide range of sources in ways that are not possible through traditional media» (Chen & Jin 2022: 4). A major concern identified by Chen and Jin, which emerged from their results, concerned the ability of Zhihu 'insiders,' particularly scientists and academics, to effectively engage with and communicate to the non-expert internet audience. The combination of its specialized and specializing nature, alongside its scientific and popular appeal, makes Zhihu a contemporary and influential tool for exploring Chinese citizens' attitudes toward specific issues. For this reason, the analysis reveals the enormous potential for scientific studies on the site used to better understand not only the "mood of the people" but that of mostly highly skilled citizens, the upper-middle class of Chinese society, increasingly technological and capable of focusing on issues of importance in PRC national politics.

However, we must acknowledge that this study has certain limitations regarding the breadth of the corpus: firstly, the decision to limit the analysis to the first four responses; secondly, the restricted time range of the search (only six months); and thirdly, the limitations of Zhihu's search system, which made it extremely difficult to follow the chronological



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thread of responses, as the site does not allow a comprehensive view of questions asked within a specific time frame (lacking advanced search capabilities like those available on other research platforms).

This study has delineated a potential new research path, which can be further developed by analysing a more extensive subcorpus, potentially including reply of every single answer. Extending the timeframe beyond one semester, would facilitate comparisons with more legislative texts related to AI and generative AI, expected to be issue by government agencies in the near future. This expansion could support a more systematic monitoring of propaganda filter and political regulation within the vibrant virtual public sphere of Zhihu.

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# *Images and Imaginaries of Generative AI: Survey-Based Research*

by Alessandra Micalizzi

## 1. Computational creative productions: new languages and new paths for imagery

The collective imagery is a social construction based on the negotiation and circulation of common images, knowledges, and interpretations within a specific society and culture. It finds its material source, its repository of reference, and its demonstration in contents, artefacts, and images coming from cultural industry (Abruzzese, 2001). From this perspective, the collective imagery is the result of a creative process in which we can frame the reflection and production of techniques: «Technique is always the expression of a relationship with the way of thinking the real, and the way of thinking the real is always structured on a technique» (Bory & Bory, 2015: 67).

The connection between imagery and technique follows two paths: on the one hand, technique and its products affect the representation of the shared reality in a specific culture; on the other hand, users develop and share a specific imagery about technique that is, again, cultural determined. This imagery includes both positive and negative views of it. We can extend the concept of "technique" to technology, sharing the definition from Bory and Bory, (ivi) who use the expression *technological imagery.* From this perspective, imagery about Artificial Intelligence (AI) is a form of expression of socio-historical processes.

In this first part of the paper, we aim to track a non-exhaustive framework exploring some of the crucial terms that inhabit the interpretative frame about imagery and the relation to artificial images. More specifically, we discuss the concept of creativity as the most "human" characteristics, the main definitions of generative AI, the implications of its use in creative processes, and the consequences for



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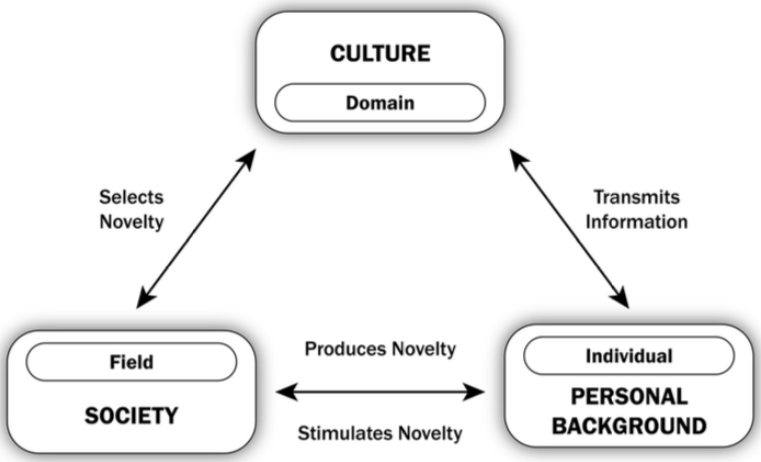
the collective imagery. Defining characteristics of the aesthetics of AI's generative image production is not our first purpose. Instead, we aim to investigate the perceptions and experiences of users, since the processes of cultural sedimentation and the construction of future imaginaries depend on them.

Creativity is often considered a proper human resource (Celis Bueno *et al*., 2024). As Arielli states, it is historically defined as a «quintessentially human domain since its intractability and complexity have long appeared as insusceptible to algorithm reduction» (2021: 7). However, Csikszentmihalyi (1996; 2014) argues that creativity is located neither in the human mind nor in the creative product; rather, we have to search it in the relational space between social institutions (fields), cultural domains, and individuals: «Each of the three main systems – person, field and domain affects the others and is affected by them in turn» (ivi: 51)[1].

*Figure 1 - Csikszentmihalyi's Model of Creativity (source: Celis Bueno et al., 2024: 3)*




From this perspective, even creativity – like the imagery – can be studied as a socio-cultural product, and this definition is extensible to its outputs. What is interesting for the aims of the paper is the fact that

1. The author, together with Gruner (2019) proposed a new model called Creativity 4.0, in which AI is introduced as part of the process as "tool" to create: «individuals, or group of individuals, program AIs to perform tasks and process information in specific ways» (ivi: 451).



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Csikszentmihalyi (1996) recognized a pivotal rule about the *field*[2]: with this label the author intends to refer the group of people who belong to a specific domain – that is, in other words, the public. This means that we can consider "creative" only what is recognized as such. Moreover, what we can consider creative is a cultural fact.

So, from this perspective, what is the role of AI in the creative process nowadays, and how does it affect our imagery?

The introduction of AI is part of a wider narrative about the digital revolution that, according to Balbi (2023), is indeed an ideology in its double meaning as a perspective or a key to read the world and as a false reconstruction that could affect behaviors and choices.

The advent of AI, like many other technologies, has been accompanied by concerns based mainly on the suggestion that this technology has human traits. It is intelligent; it is able to choose, to solve problems, to create. As Balbi states, «This worldview has a grip on reality, guiding and transforming societies. It is an idea that guides behavior, habits, practical life» with consequences on the imagery surrounding AI and its products (2023: 12).

The debate about creativity and its link to Artificial Intelligence is dominated by two main positions: one that describes creativity as a human feature that machines cannot imitate (among others Moruzzi, 2023; Murray, 2024); and another that considers the new generations of AI capable of producing genuine creative outputs if adequately instructed (among others Malabau, 2019; Arielli, 2021).

The introduction of Artificial Intelligence in the creative process has accelerated production practices and impacted the quantity of creative products in circulation in our culture. The consequence is an increasingly fragmented collective imaginary that is ephemeral and driven by the algorithmic logics that orient digital visions and paths (Patel *et al.*, 2021; Stanusch, 2023).

While we are aware of the different typologies of technologies nowadays available to "create" multimedia contents, our focus is on AI, specifically on its generative version. Generative engines are distinguished in CAN (Creative Adversarial Networks) and GAN (Generative Adversarial Networks): while the latter can only imitate a certain creative

2. The model proposed by Csikszentmihalyi (2014) describes creativity as the result of the systemic interaction among the individual (and his personal background), the domain (represented by the culture, the expertise, and the knowledge about a specific form of creativity) and the field (that is made by other people with their behavior, support, or recognition of a cultural product as "creative").



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style, the former can deviate from the learned style to generate new creative works (Long *et al.*, 2021; Liu, 2023).

Within this scenario, the debate on the relationship between imaginaries and Artificial Intelligence takes place and moves on a double track: on the one hand, Artificial Intelligence as a cultural product is embedded within a collective imaginary that influences the mechanisms of appropriation, assimilation, and obstacles towards AI itself (Moga, 2022). Bory and Bory propose the same: «As trivial as it may seem, no technical innovation has found in the history of human culture a space entirely independent of the symbolic forms and abstract representations produced by the social groups within which that innovation had taken shape» (2015: 67). On the other hand, Artificial Intelligence as a technology is among the agents and creators of cultural imaginaries, working on the continuous production of images, which are seamlessly reworked and shared (Ervik, 2023).

The advent of Artificial intelligence in creative practices affects the process of image production and the construction of a collective imagery (among others Gillespie, 2014). Retterberg (2023), for instance, argues that the use of generative AI for image production is part of the broader concept of machine vision, where the focus is on technology and its objective, depersonalized role. Lev Manovich (2020) disputes the notion of AI imagination. He conceptualizes AI image generation as a form of media art. Manovich emphasizes the software's dependence on publicly available online images as training data. He considers the image as a new form of media product but at the same time recognizes the pivotal role of the computer and its networking logics and power of calculation as the new way to do research and look at data (Manovich, 2020). In other words, AI image productions are new forms of aesthetics that represent our time (Manovich, 2018; Manovich & Arielli, 2024) as well as a new powerful way – not totally intelligible yet – to observe our culture. Contemporary imaginaries are increasingly populated with visual productions produced, constructed, or modified by AI.

If cultural aesthetics are conditioned by the practices of visions, by our perceptive biases, and by the richness of our imaginary, we must investigate the role of AI in cultural production: are artificial creative contents part of our culture and our imagery, or are they simply "consumption products" (Smith & Cook, 2023)?

Moreover, considering creativity and imagery as cultural products, what are the implications of a widespread overload of artificial images and artefacts? What are the consequences on the audience, that, in Csikszentmihaly's view (2014), could be considered part of the field?



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## 2. Research goals, methods, and sample

The results presented in the following pages are part of a wider study[3] on the perception and experience of computational creativity. The research plan included three main phases:

- Phase 1 focused on the analysis of a corpus of 33 national and international books in which there was an "artificial character", with the aim of understanding the imagery roots of our cultural perception of Artificial Intelligence.
- Phase 2 included 65 in-depth interviews with a listening section of two soundtracks (one AI generated and one produced by a young artist). The sample was divided in three main groups: the well-informed group comprised people who knew the origin of the two soundtracks, the not-informed group comprised individuals who did not receive any information about the authorship of the tracks, and the misinformed group comprised respondents who had received incorrect information about the authorship of the tracks. This step was finalized to individuate the prejudices linked to AI-based production, with a specific focus on the role of the authorship in the appreciation of the creativity level of a soundtrack.
- Phase 3 was based on the collection of 2500 questionnaires from a representative sample of the Italian population. The survey helped consolidate our previous results about prejudices. Moreover, we evaluated image production to identify similarities and differences between audio and visual products produced by AI, since they comprise a significant portion of creative media productions and are already available and distributed into the cultural market.

More specifically, we will focus on Phase 3. The CAWI questionnaire (Micalizzi & Lelicanin, 2023) included a validated Likert Scale[4] (Marradi & Gasparoni, 2004) on attitudes and perceptions about the use of AI in creative productions.

3. The research is part of a wider project titled ACAI and funded by PRA of 2023 of Pegaso University.

4. The Likert scale is an additive scale of attitudes made of a specific number of items (according to the specific attitude analyzed) toward which respondents express their degree of agreement using a score commonly ranging from 1 to 5, where 1 indicates complete disagreement and 5 complete agreement. The validation of the scale was based on the classic process: more specifically, we used the index of Cronbach, calculated on a testing collection of the questionnaires of 60 people.



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The questionnaire consisted of 28 questions divided in three parts: the first completed socio-demographic profiling with a focus on cultural consumption habits (8 questions); the second aimed at understanding the level of knowledge on computational creativity (7 questions); and the third, which we will focus on in more detail, aimed at investigating attitudes and opinions about and experiences of computational creativity (10 questions). Finally, there were questions in which respondents were invited to evaluate three images: one human-produced, the other two AI-produced. We then examined the strategies respondents applied to identify the authorship of the images and their opinions about their originality and effectiveness.

*Figure 2 - Images selected to test the respondents' strategies for assigning authorship*

**Image 1** – Human produced

**Image 2** – Generated by AI

**Image 3** – Generated by AI

As described above, Phase 1 of our research involved a literary analysis of 33 utopian and dystopian fiction texts[5] written in the 19th and 20th centuries that have Artificial Intelligence as one of the main characters. The list of texts was discretely identified by the experts[6] of the team according to period of publication and genre (utopian, dystopian fiction).

In addition to this work focused on literary aspects, we carried out a qualitative and quantitative content analysis[7] and a text analysis

5. The corpus includes 33 books: 16 Italian and 17 international, of which 12 come from the anglophone literature. The literary analysis was carried out on the original text (respecting the language of publication); the qualitative and quantitative content analysis was carried out on translations of excerpts.

6. The research was carried out by a team of researchers and scholars at the Center of Research in Digital Humanities of Pegaso University. The poll of experts included two professors in Italian literature, one Italianist and one pedagogist.

7. The content analysis is a specific social research method based on the study of occurrence and co-occurence of specific words. The qualitative version of the same



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on excerpts taken from the corpus. In the following pages, we present the main results, with a focus on socio-cultural aspects, linked to the construction of an imaginary about AI. More specifically, the sub-corpus of text analyzed from a socio-cultural perspective was selected by experts according to a specific criterium: to select the most significant description of the "digital/virtual" character.

The content analysis was carried out using Chat GPT[8] 4 (Bijker *et al*., 2024).

The aim of the analysis was to reconstruct the characteristics of the dominant representation of Artificial Intelligence in its interaction with the characters in the text, starting from the excerpts the research team selected. It focused on:

- How they introduced themselves into their relationship with "humans".
- How they named themselves and/or were named.
- Whether there were precise gender nuances.
- What connotation (positive or negative) the narrator gave them.

The basic idea behind this analysis is that literature both contains and contributes to constructing the imaginaries and images that belong to a specific culture. In our case, the aim was to reconstruct the most culturally consolidated image of Artificial Intelligence and identify what expectations and fears were represented through the imagery of the selected writers.

## 3. Results

The content analysis was one of the first steps of the research, as a part of the desk phase[9]. The questionnaire, on the other hand, was the

method is based on the work of researchers who go into depth on the meaning behind the co-occurrence (for instance), the emerging cultural representations, and so on (among others Micalizzi, Lelicanin, 2023).

8. ChatGPT can analyze long texts thanks to the formulation of precise questions/prompts. In this case, we used the plugin ChatGPT4work, which connects ChatGPT input and output with Microsoft Office. We used Word for input and Excel for output. The content analysis with ChatGPT, in this way, is the result of a conversation based on previously established questions. The answers are linked to an Excel file, previously associated with the analysis, in which ChatGPT reports the occurrence for each column linked to a specific question. In this way, it is possible to intervene on the results and represent the occurrence of a specific concept in numbers.

9. Desk research (or in this case desk phase) refers to the steps of research that you can carry out on your desk: it is a way to identify the steps of the research based on secondary data.



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extensive, concluding step of the study, through which the interpretative hypotheses that emerged from the interviews and listening sessions during the field phase were to be verified (Micalizzi, 2024). We consider it useful to discuss the results of the content analysis before presenting the evidence from the extensive phase.

### 3.1. *Content and text analysis*

As explained previously, our analysis of shared imagery in early 20th century literature aimed to understand what shared imagery of Artificial Intelligence emerged. We were particularly interested in determining whether more human or more mechanical traits emerged in the description, hypothesizing that the humanization of the machine is part of a process of appropriation and familiarization, which reduces "fears" of the unknown, the different, the incomprehensible. Di Natale (2021) describes this phenomenon of mirroring in (new) technologies "the illusion of AI," a sort of deception that must be considered intrinsic. From a critical point of view, Di Natale stresses the importance of considering the psychological implications of the human-machine interactions to create an "equal relationship."

Our attention was focused on the objectivation[10] of the process of humanization vs. technologization of AI. Therefore, we analyzed the texts to individuate the narrative presence of the following:

- A forename and its characteristics.
- A body with human connotations.
- Sentient skills: a self-reflective and emotional capacity of the machine.

Considering the first point, more than 80% of the "artificial" characters in our sample have names; however, in 48% of cases, names are purely "mechanical," e.g., a code, a number, or a combination of elements, far from our idea of human name. Some examples include Hal 9000, Golem, and Cancroregina ('Cancerqueen'). The other half of the sample includes characters with familiar names that humanize the "computer" and

10. The objectivation represents the process of translating something abstract into something real and tangible, thanks to the power of imagination (the skill to produce images). The objectivation of the humanization or of the technologization of the AI in the texts is represented by specific descriptions that highlight one characteristic or the other.



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facilitate the projection of specific traits onto the machine. Astolfo, Harey, and Olympia are examples of humanoid names.

According to our hypothesis, the description of physical elements could represent a determining element in connoting the AI as human. ChatGPT4 counted the presence of a human-like body (albeit composed of mechanical parts). Our results show that the description of AI as having a precise physicality is preferred slightly over the one that introduces the character as purely a machine.

Moreover, we focused our content analysis on the connotative characteristics of the narratives to describe AI: is it associated with positive or negative attributes?[11] Despite our expectations, a positive connotation prevails in 53.6% of the selected descriptions. More interestingly, even if ChatGPT was asked to choose among a dichotomic couple of adjectives (positive or negative), it sometimes gave a neutral connotation (e.g., in the case of words such as "artificial" or "mechanical").

To determine if a "gender belonging" could affect the positive/negative perception of the character, we asked ChatGPT to examine how attributing a gender to the character affects the perception of the previously mentioned attributes. The sample was divided perfectly in half according to gender distribution. The construction of the two groups of adjectives was based on a first screen by ChatGPT and subsequent manual steps performed by our team.

Attributes such as *adaptable*, *interactive*, *versatile*, and *nice* comprise the "positive adjectives" group; *out-of-order*, *limited*, and *elusive* are some examples of negative attributes; *mechanic*, *automatized*, and *artificial* are considered neutral.

As shown in Figure 3, AIs are perceived more positively when they are associated with the "feminine" character[12].

11. More specifically, we formulated the following questions to ChatGPT: "Can you extrapolate from this text five adjectives that are representative of how this AI is described?" "Are these adjectives positive or negative?" "On a scale of 0 to 5, where 0 = Totally negative and 5 = Totally positive, what score would you give to the chosen adjectives?" ChatGPT learned how to analyze, and after the first output, our team worked to correct mistakes and modify some attributions. This was the case for adjectives and the forename lists (divided into artificial and human).

12. Among the corpus of texts, we analyzed both Italian and English excerpts. For Italian text, it is possible that ChatGPT overestimated the "female" character, since "AI" is a feminine word.



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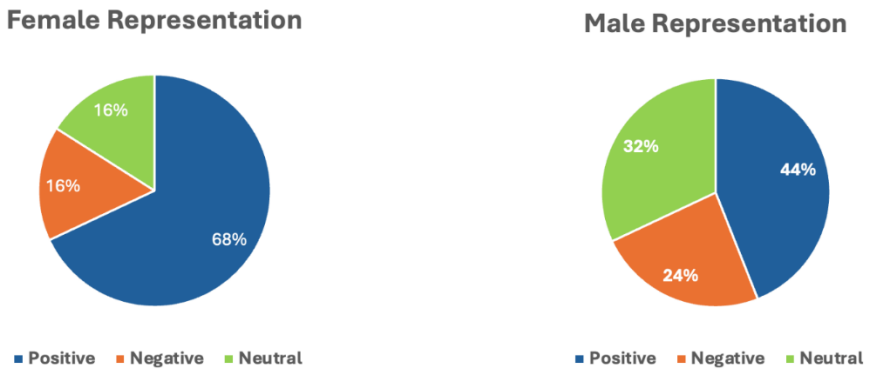
*Figure 3 - Pie graphs of the distributions of attributes according to genre*




If we consider the human skills of the machine, the characters are described in most cases without emotions and feelings. Even in terms of self-awareness, a description of the machine as endowed with skills but not a soul or a psyche seems to prevail.

"We distinctly designed this computer to be the greatest one ever and we're not making do with second best. Deep Thought," he addressed the computer, "are you not as we designed you to be, the greatest, most powerful computer in all time?"
"***I described myself as the second greatest***," intoned Deep Thought, "and such I am."
Another worried look passed between the two programmers. Lunkwill cleared his throat.
"There must be some mistake," he said, "are you not a greater computer than the Milliard Gargantubrain at Maximegalon which can count all the atoms in a star in a millisecond?"
"The Milliard Gargantubrain?" said Deep Thought with unconcealed contempt. "A mere abacus – mention it not."
"And are you not," said Fook, leaning anxiously forward, "a greater analyst than the Googleplex Star Thinker in the Seventh Galaxy of Light and Ingenuity which can calculate the trajectory of every single dust particle throughout a five-week Dangrabad Beta sand blizzard?"
"A five-week sand blizzard?" said Deep Thought haughtily. "You ask this of me who have contemplated the very vectors of the atoms in the Big Bang itself? ***Molest me not with this pocket calculator stuff.***"
The two programmers sat in uncomfortable silence for a moment. Then Lunkwill leaned forward again.
"But are you not," he said, "a more fiendish disputant than the Great Hyperlobic Omni-Cognate Neutron Wrangler of Ciceronicus Twelve, the Magic and Indefatigable?"



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"The Great Hyperlobic Omni-Cognate Neutron Wrangler," said Deep Thought, thoroughly rolling the r's, "could talk all four legs off an Arcturan Mega-Donkey – but only I could persuade it to go for a walk afterward."
"Then what," asked Fook, "is the problem?"
"There is no problem," said Deep Thought with magnificent ringing tones. "I am simply the second greatest computer in the Universe of Space and Time."
"But the second?" insisted Lunkwill. "Why do you keep saying the second? You're surely not thinking of the Multicorticoid Perspicutron Titan Muller, are you? Or the Pondermatic? Or the …"
Contemptuous lights flashed across the computer's console.
"***I spare not a single unit of thought*** on these cybernetic simpletons!" he boomed. "I speak of none but the computer that is to come after me!" (Adams, 1979: 167-ss).

As we can see from this excerpt, the AI consciously perceives itself as a machine («I'm the second greatest computer…»). *Deep Thought* uses expressions close to human ones but adapted to its mechanical origin («I spare not a single unit of thought…»). However, if we focus on the way in which the mechanical character describes itself, we see it uses terms more associated with a human being than with a "machine":

David was staring out of the window. "Teddy, you know ***what I was thinking***? How do you tell what are real things from what aren't real things?"
The bear shuffled its alternatives. "Real things are good."
"I wonder if time is good. I don't think Mummy likes time very much. The other day, lots of days ago, she said that time went by her. Is time real, Teddy?"
"Clocks tell the time. Clocks are real. ***Mummy*** has clocks so ***she must like them***. She has a clock on her wrist next to her dial."
David started to draw a jumbo jet on the back of his letter. "You and I are real, Teddy, aren't we?"
The bear's eyes regarded the boy unflinchingly. "You and I are real David."'
****
"Teddy – I suppose Mummy and Daddy are real, aren't they?"
Teddy said, "You ask such silly questions, David. Nobody knows what real really means. Let's go indoors."
"First I'm going to have another rose!" Plucking a bright pink flower, he carried it with him into the house. It could lie on the pillow as he went to sleep. Its beauty and softness reminded him of Mummy (Aldiss, 1969).

In this selection, the dialogue between two robots resembles a discussion between children: they reference their "mum"; they "feel" empathy («she must like them»); and finally, they explicitly refer to their cognitive skills («I was thinking»).



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Finally, we wanted to understand if positive/negative descriptions were linked to the perception of AI as superior or inferior to humankind. The emergent image aligns perfectly with the strengths and weaknesses attributed to an Artificial Intelligence, according to the widespread cultural images reconstructed in the in-depth interviews (second step). More specifically, in the literary contents analyzed, an imagery characterized by some weak points prevails, and it is coherent with a stereotypical vision of AI-worlds:

a) AI has limited emotional skills, with respect to both expressive abilities and those related to recognizing others' emotions (empathy);
b) AI has limited adaptability to the environment (i.e., a lack of resilience);
c) AI is hetero-directed both in terms of sources (i.e, energies or settings) and intentions (i.e., identifying specific goals);
d) AI is characterized by a lack of creativity and a technological vulnerability that represents the narrative element to ensure the prevalence of humanity over the machine.

Similarly, from the excerpts analyzed, positive aspects of the representation of the machine emerge; however, they are always linked to stereotypical imagery. The positive elements deal with:

- the *body*: generally represented as perfect, strong, and more efficient and effective than the human body;
- the *cognition*: considered to have a greater ability than humans to process information, store contents, consult sources, and make decisions (rationality);
- the *autonomy*, or the capacity to be truly "individual" in choices, without affective, cognitive, or relational implications. In other words, machines can make decisions in a more rational way.

Our analysis of the content of past literary works has confirmed the presence of a precise imaginary of Artificial Intelligence and the man-machine relationship, anchored to the vision of technology as powerful in terms of performance but devoid of those emotional, creative, and "original" nuances that characterize humans: the latter represent the key to the narrative triumph of humankind over the machine.



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3.2. *Results of the extensive phase*

At this point, we wish to define the current imagery on Artificial Intelligence, in the specific case of creative production (the focus of our study). Through the questionnaire, we tried to reconstruct perceptions and experiences as well as the role of authorship in the recognition of a creative product. Finally, we wish to determine if and how concerns about AI's pervasive use are, in some ways, partially linked to the imaginary coming from literary narratives from the last century, when AI was only imagined and not yet experienced.

*Figure 4 - Word map of 2,000 open answers to the question "Could you define the concept of creativity in a few words?"*


First, our respondents gave very consistent definitions of creativity, specifying precise and distinctive elements (cfr. Figure 4):

- *Innovation*: expressed by key words such as *innovate*, *imagine something new*, *originality* (i.e.: *innovazione*, 'innovation'; *idea*, 'idea'; *originalità*, 'originality'; *inventiva*, "inventive").
- *Imagination*: a creative dimension that goes beyond rethinking possible solutions (i.e., *immaginazione*, 'imagination'; *creare*, 'create'; *fantasia*, 'fantasy').



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- *Freedom*: the absence of constraints in creating, finding solutions, or expressing oneself (i.e., *libera*, 'free'; (*fuori dagli*) *schemi,* '*out* of the box'[13]; *proprie*, 'own'[14]).

Our respondents consider art and creativity related but not completely overlapping. *Creativity* identifies a skill; *art* can be one of its results but is not always. The former identifies everything that is new which may or may not fall within the artistic sphere; the latter defines an aesthetic dimension, according to shared criteria and rules that are not always innovative.

Our analysis of the respondents' Likert scale scores in relation to attitudes towards the role of AI in creative productions allowed us to identify two main clusters: the first includes those with skeptical and concerned attitudes; the second (60% of the sample) is characterized by a more open and favorable attitude towards integrating AI in creative practices.

Cluster characteristics are not significantly associated with a specific profession or with greater or lesser involvement or interest in the arts. There is a correlation – albeit not strong – with gender; almost 60% of the first cluster are women, possibly confirming a more cautious and skeptical attitude towards technological innovation.

Figure 5 shows the items of the scale and the differences in the average score for each statement between the two clusters. This highlights which dimensions intervene most as we trace the differences between clusters.

As Figure 5 shows, Group 1 (skeptical adopters) stresses human uniqueness and does not consider AI as playing a pivotal role in the creative process; it considers the use of AI as unethical – a type of "scam". On the contrary, Group 2 (optimistic adopters) considers AI like any other technical tool – an innovation of our culture which enhances creativity and does not inhibit it. This view highlights that authorship still remains "on" the artist. In other words, while skeptics worry about ethical implications and do not consider AI products truly "creative," seeing the technology as the artist's competitor, the second group includes people who are more optimistic, who consider AI just another tool available to artists and creatives.

13. The literal expression in Italian, reported on the map, is "different (from) schemas."

14. According to our analysis, the word "own" can be attributed to the concept of freedom, because it deals with the idea of independence, of something "free from others' links and bonds."



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*Figure 5 - Likert scale on attitude toward AI and creative production (AICP Scale) with scores*

| ITEM | G1 | G2 |
|---|---|---|
| AI is only a support tool for those working with creativity | 2.72 | 3.61 |
| Using AI in creative productions is not ethic | 3.34 | 2.88 |
| Creative jobs are going to be replaced by AI, shortly | 2.17 | 3.10 |
| AI will be assimilated like many other technological innovations | 2.96 | 3.85 |
| The quality of AI products is very low | 2.71 | 2.63 |
| AI-Creative productions can be compared to human products | 3.83 | 3.37 |
| Artists, creators need more and more the contribution of AI to think something new | 1.88 | 3.07 |
| AI- products can be defined «creative» | 1.86 | 3.34 |
| It's more and more difficult to distinguish an AI product from one produced by human | 2.96 | 3.63 |
| Creative products by AI represents a "scam" | 3.34 | 2.91 |
| Human creativity works in the same way of the AI one: it combine previous information to find something new | 2.00 | 3.30 |
| AI use in creative products will lead to a flattening of users' tastes | 3.20 | 3.19 |
| The authorship of a creative product by AI is still human being since he/she prompted the machine | 2.43 | 3.61 |
| AI enhance human creativity and the opportunities for its expression | 2.08 | 3.61 |

Both groups, however, agree on the risk for users, especially if we look at the process of constructing taste in the artistic and creative sphere. AI, with its serial production, risks flattening users' expectations and interests.

The results of the extensive phase of our study show that authorship remains a key factor in considering a cultural object a creative product, with 38% of the respondents agreeing on this point. However, it is important to note that 34% prefer not to express a clear position; this is likely because this topic remains controversial.

We asked our respondents to evaluate three examples of images (Figure 6) according to a 5-point scale for five criteria: the quality of the definition, the color balance, the originality, the familiarity, the internal coherence, and a general evaluation.

The first image, created with AI, received a very good overall rating, especially for quality of image definition, internal consistency, and color balance – all aspects that could be described as "technical". The second image, also produced by AI, received a very good overall assessment result; the same technical criteria prevailed, although the color balance, recognized as "familiar", obtained the highest score. The third image, which is human-produced, obtained a lower score in the overall evaluation (criterion n. 5). The image definition was considered better than that in the other photos; this is often one of the parameters used to distinguish an AI product from one produced by humans.



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*Figure 6 - Three images used to ask for the opinion of respondents on a scale based on 5 criteria*[15]

IMAGE 1

IMAGE 2

IMAGE 3

Our respondents believed that knowing the authorship of the three photos would not alter their assessments. It seems that at, a macro level, the issue of authorship is problematized, but at the same time, it is considered something "external" that does not personally affect the respondents. When asked to attribute an author to the images, most respondents considered the first one "artificial"; 14% correctly attributed human authorship to the third, but almost 30% assumed the three images resulted from prompts.

It was not our interest to test the skills of the respondents but rather to identify strategies for attributing authorship: in the specific case of visual contents, users have developed specific strategies to identify the origin of images. Excessive precision and lack of originality are the main criteria that point towards a "mechanical" attribution of authorship. The respondents' explicit reference to using specific strategies to orient themselves in front of a visual production is, in some ways, an admission of a general "defensive" attitude towards distinguishing what is a "real" image and what is machine-produced.

The questionnaire ended with the invitation to openly share opinions about the future of AI-human relations, with a specific focus on creative productions. The respondents clearly stressed that the integration of AI into creative practices is inevitable. A parallelism exists between AI

15. Leonardo Galteri, a member of the research team, used Dalle-3 of ChatGPT to create the three images, formulating three prompts to obtain a portrait, a landscape, and a focused picture. Our initial intent was to also include a painting, but the results. were too similar to famous works.



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and the adoption of the camera in image productions: when camera was introduced, it was considered a "violation" of the principles that regulate the irreproducibility of "art" (Kalpokas, 2023). The respondents' main worries focus on the labor market, the regulation of copyrights, and the risk of reducing human creative practices (and output) and skills. In terms of imagery, respondents worry about the risk of reducing the human contribution in constructing, spreading, and enriching cultural heritage and consequently the meaning attributed to social reality. Moreover, almost 8% of respondents stated concerns about the risk of partial or total substitution of humans in creative works, which would inevitably impact the economic and artistic value of creative productions.

Additionally, respondents stressed that people are more and more aware that the dualism between reality and its representation is totally overtaken. What is important is not distinguishing the "real" from that which is only a "reconstruction"; instead, what counts is the experience and the sharing of meaning that arises from it.

Finally, some respondents shifted the focus away from the positive or negative intentions of the technology and simply reflected on its uses. They therefore brought back the theme of AI as a tool, reducing the process of anthropomorphizing that constructs an "enemy/friend" with whom to interact, sharing or not sharing specific goals, including creative production. The central theme is, therefore, that AI is neither good nor bad: "Like all technologies, it is not the technology that is a problem, but how we use it" (resp. 836).

Completing the circle started with the reconstruction of the emerging image of AI from literature, we can state that there is a link between it and the worries and hopes expressed by our interviewees. In some ways, the perceptions expressed are affected by the shared imagery of AI as an anthropomorphized technology, capable of being superior, more effective, and more cognitively powerful than humans. AI is perceived as a menace if not correctly managed and integrated in our practices, in "our" world. The man-machine dichotomy poses, partially in linguistic terms, a contrast between the perfection of technology and human imperfection expressed by feelings, intuition, and other undefined traits.

As some respondents have shown, only by abandoning this imaginary dichotomy can we accept that AI is just another human invention and that, due to this specific "nature" (characteristic), it belongs to the human world.



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## 4. Conclusion

Our study attempted to reconstruct Italians' current perceptions of the role of AI in the production of creative content, considered as multimedia cultural products that intervene in the construction of our imaginaries. To answer our questions, we first explored the roots of these imaginaries through a qualitative focus on literary texts from the recent past. Then, we compared this evidence with current perceptions, collected through a questionnaire and in-depth interviews.

Our analysis suggests a similarity between the imagery held in the literature of the early 1900s and the perceptions of users: the anthropomorphizing of the machine persists, and improved cognitive and computational skills represent the great menace.

Although the approaches to new technologies vary between apocalyptic and integrated, as in the classic dichotomy proposed by Eco (1997) that remains valid, there is a common concern about a reduction in the quality of creative products and consequently in the public's ability to discriminate and appreciate them. Indeed, D'Isa (2024) suggests that for any innovation, user responses occur in three main stages: the first is the "WOW" stage, which is linked to the idea that the technology is so new that each of its products is considered extraordinary; the second is the "Oh, no!" stage, characterized by warring thoughts about the application and spread of new technology; finally, the experience culminates in the "Ah, ok!" stage, which is the moment when the integration of the new is completed.

More or less consciously, respondents describe strategies for "recognizing" the creative product produced by an AI: image definition, familiarity, and certain elements of coherence, referred to in the literature as hallucinations (Salvagno *et al*., 2023).

However, the most significant element to our interviewees, that can help to distinguish a human creative process from the one based on Generative AI, is still the ability to recognize a communicative intention in the creative product. The machine – both in the imagery of the past and in the perception of the present – is considered more efficient and effective than man in performing a creative "task." What it lacks is a self-determination, an inner motivation, an urgency in constructing content. Using the words of our respondents, AI is neither creative nor "intelligent" at all: it is task-oriented (among others Moruzzi, 2023).

In this way, the respondents claim that AI creative productions are recognizable and characterized by redundancy and a level of familiarity that is not very innovative but probably "consumable" to the market. Creativity maintains in its specific space among human skills: the artist



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is always the producer of an AI-generated product, since he/she can orient all the steps of the process with his/her own decisions. Mistakes and imperfections seem to be elements of uniqueness that still characterize human products. Moreover, *novelty* – one of the words on our map – seems to be lacking in AI-based artistic productions, because they are too connected to their references, which are selected by humans (Gruner & Csikszentmihalyi, 2019).

However, in this framework, which foresees a long-term integration of machine skills and human will, the risk for the imaginary persists: the overload of images, fast-produced, shared and consumed, is based on redundance. It risks reducing variety, richness, and the space for cultural experiments. We must face the imagery paradox of having too many images and a poor imaginary.

In this scenario, the ethical debate is still open: we lack clear laws establishing the intellectual property of creative works produced by AI, the use of sources, and the economic and cultural value of such (art)works. There is another, peculiar important issue: unlike other technologies that have changed the way we "make" culture over the time, Artificial Intelligence is a tool that can be *generative*. What exactly this word means and what implications it has on the producibility of culture and our imaginaries is yet another unclear point.

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# *Threat or Benefit? Unveiling the Political and Personal Factors behind Italian Perceptions of AI*

by Stefano Rombi

## 1. Introduction

Artificial Intelligence (AI) is the most influential technology globally, and Italy is no exception to this revolution. The Italian government and European institutions have recognised AI's potential to stimulate economic innovation and improve the efficiency of public services, promoting significant investments in research and development. At the same time, many Italian companies are adopting AI-based solutions to optimise production, improve customer experience, and develop new business models. However, despite its undeniable benefits, the widespread adoption of AI is not without controversy, and public perceptions of this technology remain highly heterogeneous.

Among the controversial aspects, and beyond the implications concerning political regimes, it should be emphasised that, according to McKinsey (McKinsey, 2023a, 2023b, 2023c), the rise of AI is expected to significantly impact specific job sectors, particularly those that involve repetitive or routine tasks, basic cognitive skills, or standardised processes. Among the most affected professions, we can find the following: administrative and office support roles, customer service positions, manufacturing and production labour, logistics and transportation jobs (McKinsey, 2023a). On the other hand, jobs requiring advanced technical skills, as well as social and emotional capabilities, such as creativity, complex problem-solving, and leadership, are expected to grow in demand. This shift reflects the broader trend toward automation of routine tasks, while roles that involve managing and working alongside AI systems will become increasingly important (McKinsey, 2018, 2023b).

Given the aforementioned risks and opportunities, on the one hand, some groups, including public institutions, businesses, and specific



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academic voices, are supportive of integrating AI into public services, seeing it as a potential path to a more just, fair, and efficient society. According to this view, AI adoption could enhance the quality of public services, reduce bureaucracy, and foster social inclusion. On the other hand, however, there are strong resistances rooted in concerns about the social and economic impacts of the technology. These concerns range from job losses due to automation to fears that AI could exacerbate social inequalities, concentrating economic and political power in the hands of a few global players.

The differences in AI perceptions cannot be understood solely in terms of technological knowledge or economic concerns; political factors and individual characteristics might profoundly influence them. In Italy, as in many other democracies, opinions about AI adoption should be linked to individuals' political orientation, level of trust in institutions, and view of the state's role in the economy.

Previous studies (Wen & Chen, 2024) have shown that AI perceptions are often shaped by the political and social context in which they develop. Attitudes toward adopting emerging technologies, such as AI, are influenced by political variables such as trust in public institutions, the role of the state in the economy, and concerns over social inequalities. For instance, analysing how the perceptions of AI are affected by political factors provides insights into how, for example, different ideologies can influence the understanding of its benefits and risks. This chapter will, therefore, focus on exploring mainly – but not only – the political variables that explain the differences in public perceptions of AI's impact on humankind's future in Italy. The study will examine the factors influencing citizens' opinions, particularly political and ideological dynamics, to provide a clearer picture of social attitudes toward this emerging technology and its future implications.

## 2. Political factors and attitudes towards technology

Democracy theorists and political scientists have long emphasised the centrality of the free flow of information, as it is essential for creating a public opinion capable of supporting democratic regimes and holding political leaders accountable (Dahl, 1972). Democracy is achieved «when leaders are bound by the duty to "respond" and "correspond" to the people through appropriate structural and procedural mechanisms» (Sartori, 1995: 47). It is well established that elections – free, competitive, fair, and recurring – lie at the heart of the democratic-representative process. We



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also know that «elections compute opinions» (Sartori, 1987: 86). The crucial issue, therefore, is the formation of opinions that guide, or rather precede, voters' decisions. Without a free and pluralistic information environment in which the risks of manipulation are minimised or, at least, neutralised (and, crucially, neutralisable), the mechanisms that hold elected officials accountable – and compel them to be responsive to voters – will inevitably become less effective, more cumbersome, and, ultimately, dysfunctional.

Therefore, manipulating public opinion is a decisive issue in the theoretical and, most notably for our purposes, empirical analysis of democracy. Since the mass dissemination of media, particularly television, political scientists and sociologists have been concerned with the impact that a society dominated by images could have on the quality of public opinion in political regimes, specifically in democratic ones. Among others, Sartori provocatively – though not overly so – used the term "videopower" to refer to the pervasive role played by television in shaping public opinion (Sartori, 1995).

These concerns have grown significantly with the rise of the internet and social networks and, more recently, with their convergence with the spread of artificial intelligence and the opportunities it presents. The notion that visual communication could, to some extent, offer a more accurate reflection of reality than written communication was already critically challenged decades ago (Boorstin, 1971). It has been clear from the outset that when there is an intent to manipulate public opinion, television can achieve this much more pervasively than newspapers. In this regard, unregulated artificial intelligence is far more troubling. Consequently, the relationship between democratic politics and AI is both tight and perilous, posing a significant threat to the health and survival of liberal democracy, which is fundamentally built on public opinion.

As is widely recognised, AI can be harnessed to generate and disseminate false or misleading content in highly sophisticated ways. This includes both video and audio content (such as deepfakes), as well as automatically generated articles. Such content can be produced in massive quantities quickly, flooding social media with inaccurate information and distorting public perceptions of events or politically significant issues. Additionally, AI can analyse vast amounts of personal data, primarily sourced from individuals' online behaviours, to create highly personalised messages (commonly called micro-targeting). These messages are often designed to provoke intense emotions, such as anger or fear, influencing the political opinions of targeted individuals or groups. This enables the spread of manipulated electoral behaviour in ways that traditional electoral



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propaganda could not achieve. Moreover, AI algorithms that govern social media platforms can prioritise content that reinforces users' preexisting beliefs, creating "echo chambers" where voters are exposed only to information that confirms their biases. In a more sophisticated manner than television, AI can amplify polarising and controversial content. Algorithms often promote news or topics that elicit strong reactions, even if they do not accurately or fairly represent reality.

Using AI to collect and analyse data on individuals' online thoughts and behaviours (such as monitoring public opinion and social media) can enable governments and political candidates to manipulate public opinion. This, in turn, could lead to the distortion of electoral processes and, ultimately, the manipulation of democracy. AI represents a significantly greater threat to electoral integrity. In fact, «a steady stream of targeted misinformation could skew how voters perceive the actions and performance of elected officials to such a degree that elections cease to provide a genuine mechanism of accountability since the premise of what people are voting on is itself factually dubious» (Kreps & Kriner, 2023: 128).

In a nutshell, as has been clearly emphasised by Kreps and Kriner (2024: 123), «generative AI threat three central pillars of democratic governance: representation, accountability, and, ultimately, the most important currency in a political system: trust». This issue is arguably the most troubling, as the pervasive spread of AI-generated content, coupled with its indistinguishability from human-generated content, is likely to undermine public trust in the mass media further. This will heighten the disorientation of voters, who will find themselves, quite literally, at a loss as to whom they can trust. Such growing uncertainty is expected to lead to an erosion of faith in democracy itself, a system that relies on the accuracy of information to foster an informed public opinion, making it as one of its foundational pillars (Warren, 1999; Levitsky & Ziblatt, 2018).

That is not an unavoidable fate. The challenges presented by AI can likely be mitigated through the regulation of its use and the design of algorithms, alongside a pervasive, global investment in digital literacy. However, despite these potential solutions, the impact of AI on democratic politics is – and will increasingly be – difficult to avoid.

While the hypothesis that AI-based applications can influence political opinions appears largely credible, as confirmed by empirical evidence in previous studies, it would be valuable to further explore whether a reciprocal relationship exists, whereby political attitudes influence perceptions of artificial intelligence.

Examining the relationship between political attitudes and perceptions of artificial intelligence is far from trivial. It means exploring how



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political beliefs shape perceptions of AI and clarifying how AI might be interpreted, accepted, or resisted depending on political contexts. Understanding how different political positions influence perceptions of AI allows for a more transparent approach to the issue, promoting public debate that fosters a deeper understanding of applications that, if properly regulated, could offer collective benefits. Moreover, greater insight into this relationship can guide the design of digital literacy programs that inform about the technology and address the specific concerns, including political ones, of each group.

To examine this relationship, we will focus on three key political concepts: ideological positioning on the left-right axis, political interest, and external political efficacy, which can be used as a proxy for trust in the political system. By focusing on Italian voters and correlating their positive or negative perceptions of AI, we aim to understand whether and under what conditions individual political attitudes influence the judgment on the impact of AI on the future of humanity.

While operationalising ideological positioning along the left-right axis (Bobbio, 1994) is not problematic, ideology is an ambiguous term that would more appropriately be replaced with the concept of a political belief system, which can undoubtedly have ideological components. In any case, the point is that "ideological positioning" goes beyond party choice, encompassing beliefs, values, and general attitudes towards politics, society, and the economy. For example, we know that right-wing and left-wing individuals often prioritise different sets of values. Right-wing individuals tend to favour values that emphasise social order and cohesion, which are essential for the stability of communities and groups. In contrast, left-wing individuals typically prioritise values centred on individual rights, personal freedoms, and social justice (Stewart & Morris, 2021). These differing attitudes also likely influence evaluations of technology and its relationship to various areas of human action.

In a simplified manner, one might argue that supporters of a free-market economy and minimal state intervention could view AI as an opportunity for progress and economic competitiveness. In contrast, others, just as simplistically, might argue that those more critical of the free-market approach to the economy may fear that AI could exacerbate social divides and consolidate power in the hands of a few technological and financial elites. However, research on this point appears contradictory and nuanced. On the one hand, some studies, particularly those focused on using AI to implement automatic decision-making systems, suggest that right-wing individuals are more supportive of technological innovation (Schiff *et al.*, 2022). On the other hand, other research shows that left-wing



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individuals are more supportive of AI, especially about policing actions (Schiff *et al*., 2023).

More thoroughly, McCright *et al*. (2013), in their analysis of how political ideology influences perceptions of science, argue that conservatives are not universally opposed to all forms of science or scientists, contrary to the findings of Gauchat (2012). Instead, conservatives tend to be more critical of scientific fields that investigate the negative impacts of modernity on society, such as climate change studies or research on social issues. They are generally more sceptical of this research, viewing it as being driven by political agendas associated with liberal or centre-left parties. On the other hand, leftists also express scepticism toward certain scientific fields, particularly those related to chemistry and the science behind fast food, as they believe these areas contribute to environmental damage, mass consumerism, and the concentration of power and wealth in the hands of a privileged few.

Considering the general uncertainty arising from literature and the differing sentiments that various types of scientific research (or technological innovation) evoke among right-wing and left-wing voters, it is plausible to imagine a non-linear relationship between political orientation on the left-right spectrum and the evaluation of AI's impact on humanity. One might expect that those positioned at the extremes, both on the left and right, could hold a less optimistic view of AI's potential, albeit for different reasons, than those with more moderate positions. Left-wing extremists might perceive the proliferation of AI as another factor that contributes to the concentration of wealth in the hands of a few. Similarly, from a nationalist perspective, right-wing extremists may hold a similar view, fearing that AI could empower globalist forces at the expense of national sovereignty.

Formulating definite, one-directional expectations between political interest and perceptions of AI is particularly challenging. For instance, individuals with a strong interest in politics may be more aware of AI-related risks, such as increased surveillance, manipulation of public opinion, or concentration of power among a few elites. They are also likely to be more attuned to ongoing debates around AI regulation, ethics, and its role in democratic processes. At the same time, given that political interest correlates with political competence and higher education levels, these individuals might hold an optimistic view of AI, particularly with regard to its medical applications. In other words, since this is a nuanced relationship, it is reasonable to refrain from making definitive predictions.

The situation is quite different when considering external political efficacy. Political efficacy generally refers to the belief that an individual's



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actions can influence the political process. It is commonly divided into two types: internal efficacy, which refers to one's belief in the ability to understand and engage effectively in political processes, and external efficacy, which refers to the assumption that the political system responds to the needs of the people and that politicians will listen to or act on citizens' concerns. The external aspect of political efficacy, included in the analysis, appears closely linked to trust in political institutions, as it reflects the extent to which people believe the political system (such as government institutions or elected officials) will meet their needs. When people feel their actions can make a difference and consider the political system to be responsive, it indicates trust in that system. This is particularly significant, as Lee and Rich (2021) point out, because when trust in the existing political system diminishes, people may start equating decisions made by AI with those made by human representatives of the system.

## 3. Data and variables

The hypotheses formulated above will be tested using an original dataset from a public opinion survey. The survey was conducted using the CATI-CAWI method, starting on June 26, 2024, and concluding on July 11, 2024. A total of 2,028 interviews were carried out, with 1,229 conducted via Cawi and 799 via Cati. The sample has the following sociodemographic characteristics: 51.6% of respondents are female; 34.8% are aged between 18 and 44 years, while the remaining 66.2% are 45 years or older; 30.3% hold a university degree, 52.6% have completed high school, and the remaining 17.1% either have no qualifications or hold a lower-level qualification. Geographically, 27% of respondents reside in the North-West, 22.6% in the South, 20% in the Centre, 19.7% in the North-East, and 10.8% in the Islands. The sampling design was structured to ensure a representative cross-section of the population, reflecting the target group's diverse demographic and territorial characteristics. This approach enhances the reliability of the survey results, providing a robust basis for analysing political attitudes and perceptions regarding artificial intelligence.

The primary objective of this research is to determine whether there is a relationship between the respondents' political attitudes and their stance toward artificial intelligence. To this end, the dependent variable is defined by the level of perception of artificial intelligence as a threat. The leading independent variables, aimed at understanding whether and to what extent



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political attitudes are relevant, are self-positioning on the left-right political axis, interest in politics, and external political efficacy. The explanatory model also considers additional independent variables, which may be useful for controlling the behaviour of the political variables. Four of these concern the respondent's familiarity with artificial intelligence: the level of knowledge, their personal experience, opinion on the timing of AI's impact on society, and the use – and willingness to use – AI in their work. The other three are sociodemographic variables: gender, age, and education level. This multi-variable approach allows for a nuanced understanding of the factors influencing the respondents' perceptions of AI.

More specifically, the dependent variable consists of respondents' answers to the following question: "Some believe that, in the long run, AI could jeopardise humanity's very existence, while others think it could bring only benefits". The response options range from 1 (threat to humanity) to 7 (only benefits). As mentioned earlier, based on previous considerations, we have related Italians' perception of AI to several political variables. The key independent variable is:

*Political orientation*. Measured by the self-placement on the left-right scale. The survey question was: "Politics is often discussed using the terms left and right. Thinking about your political views, on a scale from 0 to 10, where 0 is left, 5 is centre, and 10 is right, where would you place yourself?".

As shown in Figure 1, political orientation does not appear to have a linear relationship with the perception of AI's threat level to humanity. For each point on the left-right axis, each graph shows the relative weight of respondents corresponding to different levels of perception. For example, when considering voters who position themselves on the far right (position 10), we observe that among those who perceive artificial intelligence as a threat (point 1), their percentage is 15.9%, which then decreases and subsequently rises again among those with more pronounced positions, closer to the perception of AI as a benefit (points 6 and 7 on the perception scale). This suggests that individuals with extremist political views tend to adopt more distinct positions regarding their perception of AI, whether positive or negative, compared to others[1].

1. In each graph, the sum of the percentages corresponding to each level of AI perception does not sum up to 100. This is because the values represent the percentage of respondents who, for each level of perception, position themselves at a specific point on the left-right axis. Therefore, what sums to 100 is not the number of individuals identifying as far-left (1), far-right (10), or at any of the intermediate positions, but the number of individuals who perceive artificial intelligence as a threat (1), as a benefit (7), or at any of the intermediate points.



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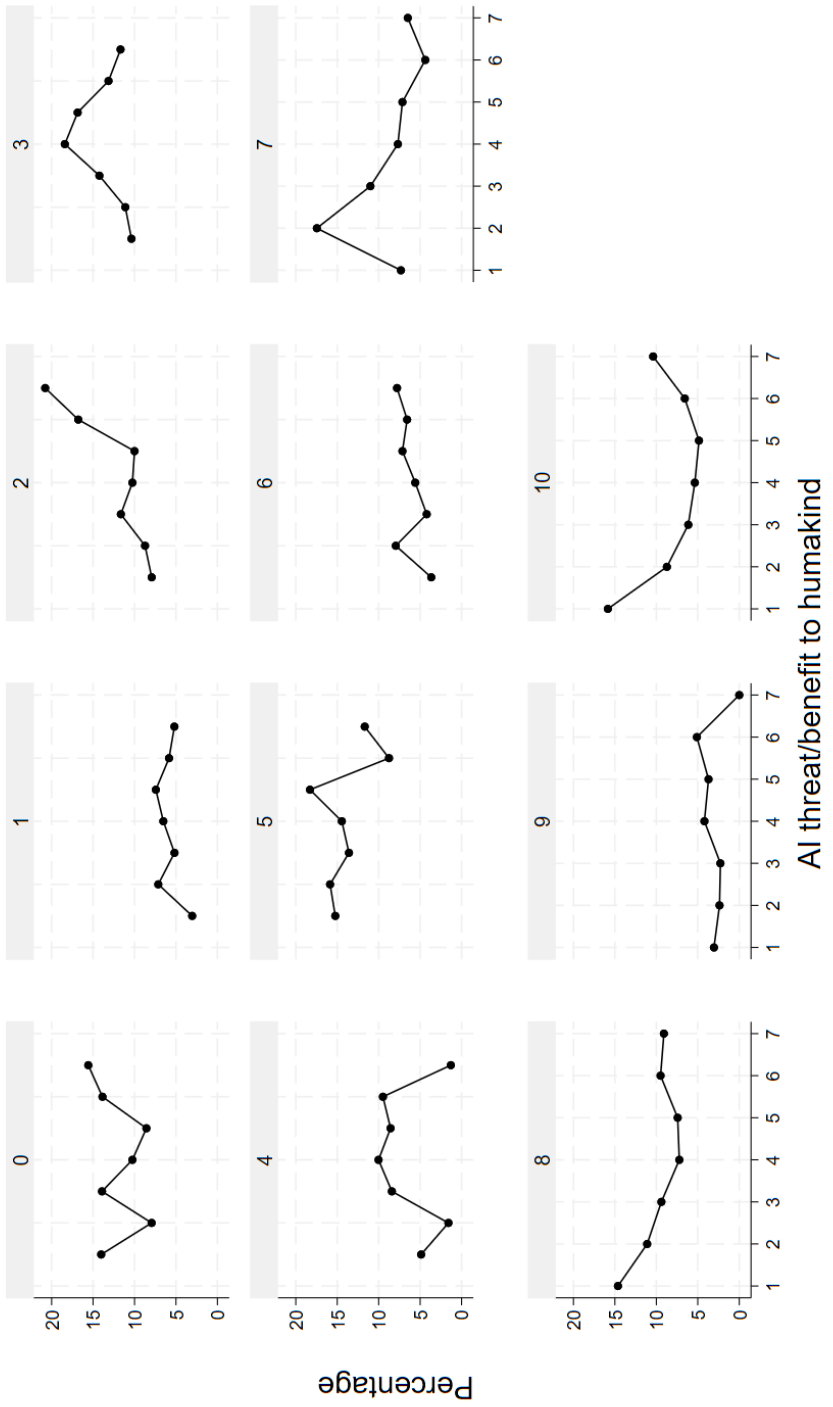
*Figure 1 - Percentage distribution of the AI threat levels, by position on the Left-Right axis*



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Overall, the figure shows that, for nearly every position on the left-right scale, no clear linear pattern can be identified. The only two partial exceptions are positions 2 and 8. This non-linear relationship is captured in the model through the squared term of self-placement on the left-right axis.

*Political interest.* Respondents were asked: "How interested are you in politics in general?" with four response options: 1 = very; 2 = somewhat; 3 = a little; 4 = not at all.

*External political efficacy.* This concept was measured using the following question: "Some people argue that it doesn't matter who you vote for, as it makes no difference. Others believe that voting for one party or another can make a big difference in what happens afterwards. What do you think?". Respondents could answer on a scale from 1 (makes no difference) to 5 (makes a big difference).

In addition to traditional socio-demographic variables (gender, age, and education), the model is integrated with explanatory variables, which are also helpful for controlling the behaviour of political independent variables related to the respondents' degree of familiarity with AI. We expect these variables to have a positive relationship with the dependent variable, assuming that greater familiarity is associated with a more positive attitude towards AI. It should be clarified that one of the variables concerns not so much familiarity, but rather the expectation regarding the time frame within which AI could produce significant effects.

*AI Knowledge*. This variable captures the self-perception of respondents in relation to their level of knowledge about AI. The question was: "Can you indicate your personal knowledge level about Artificial Intelligence?". Respondents could choose one of the following options: 1 = I have never heard of it; 2 = I know the term, but I'm not sure of its meaning; 3 = I have limited knowledge; 4 = I know what it is; 5 = I have in-depth knowledge; 6 = I am an expert in the field.

*Personal Experience with AI.* This variable helps to understand whether the respondent has ever had the opportunity to experience AI-based tools. The question was: "Have you ever interacted with or used an AI-based application?". The options used in the analysis are: 1 = No; 2 = Yes.

*AI use at work*. Helpful in capturing whether the respondent uses, or would be willing to use, AI tools in their work. The question was: "Do you use, or would you be willing to use, AI to automate all or part of your work?". The options used in the analysis are: 1 = No; 2 = Yes.

*Time of AI Impact.* The variable is intended to examine perceptions of when AI might have a significant impact. The question was: "How soon do you think AI could have a major positive or negative impact on society?".



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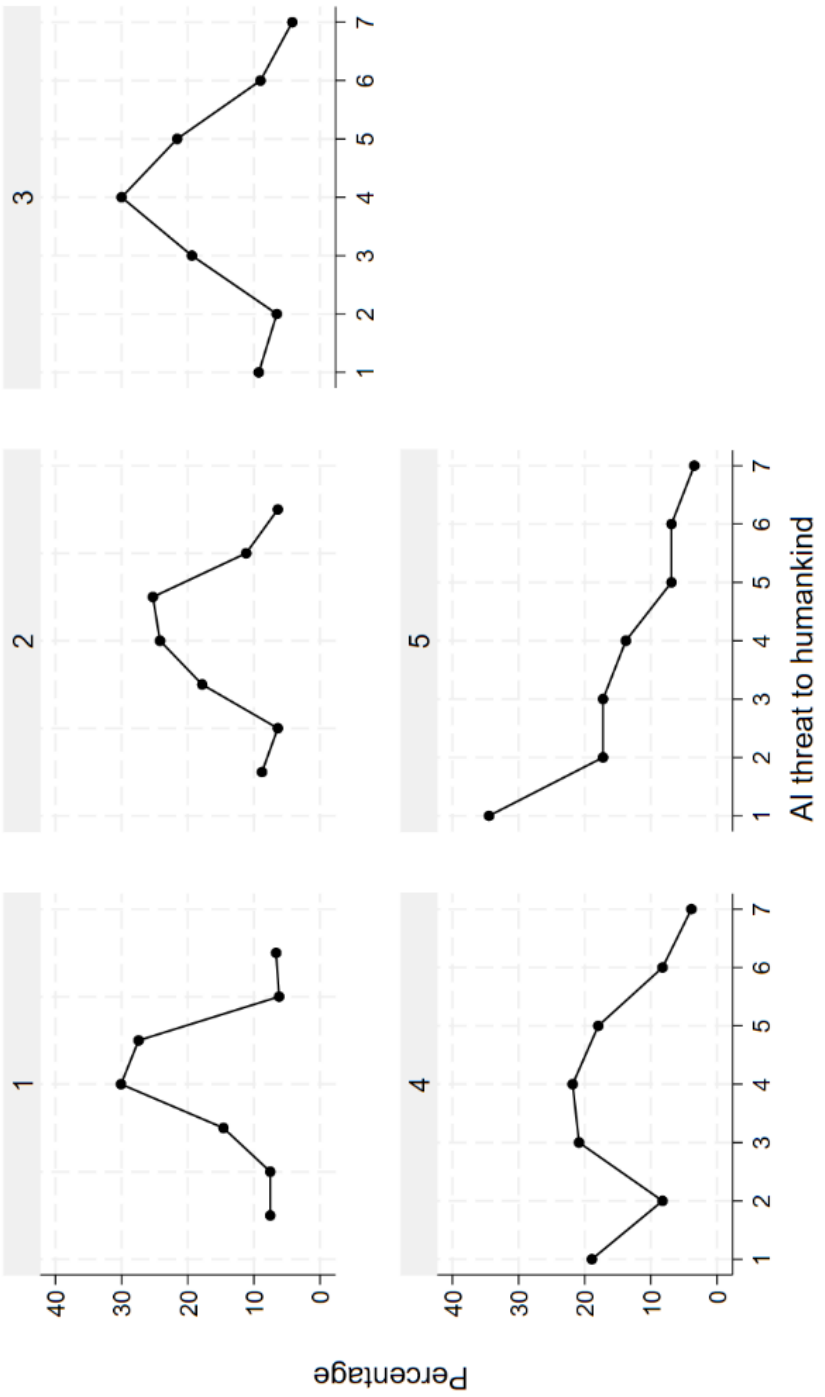


*Figure 2 - Percentage distribution of the AI threat levels by opinion on the AI impacts timing*



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Respondents could choose from five options: 1 = within this year; 2 = within the next year; 3 = within five years; 4 = within 10 years; 5 = never. As shown in Figure 2, the data reveal that the distribution of threat perception is non-linear for each value of AI's temporal impact. The only exception is for those who believe there will never be an impact. As shown in Figure 2, as the perception of threat decreases, the number of people who think AI will never have an impact decreases linearly. However, in all other cases, the relationship is quite clearly U-shaped, although it tends to be flatter for those who think the impact will occur in 10 years. For this reason, the model also includes the square of the variable.

Table 1 provides descriptive information about the variables in the model, including measures like means, standard deviations, or ranges for each variable to give an overview of the data before running the analysis.

*Table 1 - Variables' descriptives*

| *Variable* | *Number* | *Min* | *Max* | *Mean* | *Standard Dev.* |
|---|---|---|---|---|---|
| AI as a threat to humankind | 1,861 | 1 | 7 | 3.78 | 1.61 |
| LR self-location | 1.676 | 0 | 10 | 5.10 | 3.02 |
| Political interest | 1,978 | 1 | 4 | 2.43 | 0.86 |
| Political efficacy | 1,913 | 1 | 5 | 3.91 | 1.26 |
| AI knowledge | 2,028 | 1 | 6 | 3.48 | 1.08 |
| Personal experience with AI | 1,758 | 1 | 2 | 1.46 | 0.50 |
| AI use at work | 1,596 | 1 | 2 | 1.41 | 0.49 |
| Time of AI impact | 1,701 | 1 | 5 | 2.68 | 0.92 |
| Gender | 2,028 | 1 | 2 | 1.52 | 0.50 |
| Age | 2,028 | 1 | 6 | 4.12 | 1.64 |
| Level of education | 2,019 | 1 | 4 | 3.11 | 0.73 |

*Source*: own elaboration.
*Notes*: a) the DV "AI as a threat to humankind" and the IV's "Personal experience with AI", "Time of AI impact", and "AI use at work" do not include who answered "I don't know"; b) the IV's "Level of education" and "Gender" do not include who answered "I prefer not to answer"; c) the IV's "Political interest" and "Political efficacy" exclude both who answered "I don't know" and who answered "I prefer not to answer"; d) the IV "LR self-location" excludes those who do not position themselves on the left-right axis, those who don't know, and those who prefer not to answer.

The descriptives of the variables show, for instance, that the dependent variable "AI as a threat to humankind" has a mean of 3.78, suggesting a moderate perception of AI as a threat among respondents, with a relatively high standard deviation of 1.61, indicating considerable variation in responses. The "LR self-location" variable has a mean of 5.10, showing a



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central tendency on the left-right political axis, with the highest value of standard deviation. "Political interest" and "External political efficacy" have means of 2.43 and 3.91, respectively, indicating moderate engagement and external efficacy. The "AI knowledge" variable, with a mean of 3.48, suggests a reasonably good understanding of AI. Both "Personal experience with AI" and "AI use at work" variables have a mean closer to 1 (1 = No) than to 2 (2 = Yes), indicating a relatively limited experience with AI and a partial tendency to use AI in daily work.

## 4. Results

Table 2 presents the results of three Ordinary Least Squares (OLS) models aimed at explaining the levels of perception of AI as a threat to humanity. These models use political variables, while controlling for familiarity with AI-based applications and socio-demographic variables. These models aim to explore how political attitudes, personal experience with AI, and socio-demographic factors interact to shape individuals' perceptions of the risks associated with artificial intelligence.

In Model 1, which considers only political independent variables, the quadratic term of political orientation along the left-right spectrum reveals a significant negative effect ($p < 0.05$), suggesting a nonlinear relationship with the perception of AI threat. Precisely, individuals positioned at the political extremes (0 = left, 10 = right) tend to perceive AI as more dangerous. At the same time, those at the centre exhibit a less threatening view. This bell-shaped relationship is captured by the square of the political orientation variable, implying that political extremism, regardless of the ideological direction, correlates with heightened concern about the dangers of AI, while centrist views are associated with a more moderate perception of the threat.

Although the relationship is relatively weak, Model 1 also finds that external political efficacy has a significant positive effect ($p < 0.05$), indicating that individuals who believe the political system responds to citizens' needs tend to view AI as less threatening. This suggests that higher levels of trust in the political system may mitigate the perceived risks associated with AI. Individuals who feel that political institutions can effectively address societal challenges may perceive emerging technologies like AI as manageable rather than inherently dangerous.

Introducing variables related to familiarity with AI presents a somewhat different scenario. On the one hand, these variables weaken the relevance of political factors in shaping perceptions of AI threat.



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*Table 2 - Multivariate linear regression*

| *Dependent variable: Perception of AI as a threat to humankind* | | | |
|---|---|---|---|
| *Independent variables* | *Model 1* | *Model 2* | *Model 3* |
| L-R self-location | 0.124 (0.057) | 0.004 (0.052) | -0.011 (0.052) |
| L-R self-location (squared) | -0.239 (0.005)** | -0.050 (0.005) | -0.025 (0.005) |
| Political interest | -0.038 (0.064) | 0.053 (0.059)* | 0.048 (0.060)* |
| External political efficacy | 0.072 (0.046)** | 0.051 (0.041)* | 0.054 (0.053)* |
| *Control variables on experience with AI* | | | |
| AI personal knowledge | | 0.020 (0.049) | -0.006 (0.050) |
| Personal experience with AI | | 0.100 (0.104)*** | 0.058 (0.109)* |
| Time for AI impact | | 0.180 (0.206) | 0.175 (0.204) |
| Time for AI impact (squared) | | -0.263 (0.039)** | -0.254 (0.039)** |
| AI usage at work | | 0.367 (0.100)*** | 0.353 (0.100)*** |
| *Socio-demo control variables* | | | |
| Gender | | | -0.024 (0.024) |
| Age | | | -0.092 (0.030)*** |
| Education | | | 0.085 (0.067)*** |
| *Model Information* | | | |
| Observation | 1,104 | 1,104 | 1,104 |
| Adjusted $R^2$ | 0.020 | 0.203 | 0.216 |

Entries are standardised β coefficients; standard errors are in parentheses.
***P⩽0.01; **P⩽0.05; *P⩽0.1.
Data processed by the author.

On the other hand, they reveal that greater opportunities for using AI are associated with a relatively positive view of its impact on humanity. Notably, the level of knowledge about AI, unlike direct usage, does not significantly influence the dependent variable, suggesting that personal experience with AI has a much stronger impact on opinions than abstract knowledge of the technology. In this regard, the variable "Personal experience with AI" has a positive and significant effect ($p < 0.05$), showing that individuals with direct exposure to AI tend to perceive it as less threatening. Direct engagement with AI, such as using AI-powered tools or services, reduces fear and uncertainty about its potential dangers. The variable "AI usage at work" shows a similar effect, though it exhibits stronger statistical significance and is nearly four times more impactful than "Personal experience with AI." This suggests that individuals who use



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or expect to use AI tools in their professional lives are significantly less likely to perceive AI as a threat to humanity. This may be because regular exposure to AI applications in work contexts fosters a more nuanced and pragmatic view of AI's capabilities and risks.

The perception of AI's potential impact is also influenced by individuals' subjective predictions about when AI will generate significant positive or negative effects on society (Time for AI impact). As mentioned earlier, the regression model confirms that this relationship is nonlinear. The quadratic term has a significant effect ($p < 0.05$), indicating that individuals anticipating an immediate impact from AI perceive a greater risk. In contrast, those who foresee its effects in the distant future (beyond 10 years) are less likely to view it as threatening. This pattern likely arises from immediate impacts being seen as more disruptive, whereas long-term impacts are perceived as more abstract and potentially more manageable.

The socio-demographic control variables introduced in Model 3 do not significantly alter the relationship between the other independent variables and the dependent variable. Although the coefficients are not particularly robust, age and education levels seem to exhibit some relevance. Older individuals tend to perceive AI as a greater threat ($p < 0.01$), which may reflect generational differences in comfort with technology. Older people may feel more apprehensive about the rapid pace of technological advancement. Regarding education, individuals with higher levels of education are more likely to view AI as less threatening ($p < 0.01$). It seems that higher education fosters a better understanding of AI technologies and their potential benefits, leading to a more balanced view of the associated risks.

From the perspective of explaining perceptions of AI as a threat (or benefit) to humanity, it is essential to highlight the findings regarding the explanatory power of the models. The low Adjusted $R^2$ value (0.020) in Model 1 suggests that political variables alone explain very little of the variance in AI risk perception. This implies that political orientation, while an important factor, is neither the sole nor the most significant determinant of how people perceive AI. In contrast, Models 2 and 3, which incorporate variables related to AI experience and socio-demographics, significantly increase the adjusted $R^2$ (to 0.203 and 0.216, respectively). This indicates that these factors are crucial in explaining perceptions of AI threat. This underscores the complexity of how individuals assess AI risks, with political attitudes and, more importantly, personal experiences substantially shaping their views.



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## 5. Conclusion

Artificial intelligence, particularly generative AI, represents the latest frontier of technological development. Its widespread adoption in user-friendly applications has significantly increased its political implications. As we have seen, this pertains both to the impact on the very nature of liberal-democratic regimes and to international politics, specifically relations between states and the competition for securing the raw materials necessary to dominate this field, which will profoundly transform human societies.

Focusing on the Italian case and using an original dataset, this chapter examines the perception of artificial intelligence as a dependent variable, investigating whether and to what extent Italians' political attitudes and their experience with AI (the latter also being interpreted as a control variable to assess the impact of political variables) influence their evaluation of AI as either a threat or a benefit to humanity.

The model demonstrates that political orientation is linked to the perception of AI risk in a complex and nonlinear manner. However, this link weakens when additional variables are introduced, especially those related to the respondent's experience with AI-based applications. These variables generally show that, all other things being equal, greater familiarity with AI reduces the likelihood of perceiving it as a threat. This may, of course, be due to the fact that individuals who use or intend to use AI adjust their preferences and tend to view it positively, as well as to the real and tangible evidence of the utility of AI-based tools in their daily lives. Socio-demographic factors provide crucial contextual information, helping to explain these perceptions further. Models 2 and 3 offer a much stronger explanation of the variability in perceptions compared to the first model, highlighting the significance of these additional variables.

However, despite the valuable insights provided by these factors, it is likely that there are other, as yet unexplored, influences that contribute to how individuals perceive AI. This underscores the need for further research to investigate other potential determinants, including cultural, economic, and psychological factors, which may also shape people's understanding of AI risks.



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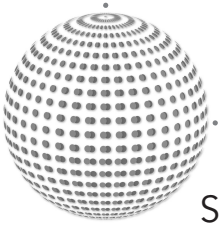

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# Artificial Intelligence and Human Perception

Artificial intelligence is emerging as a key global issue of our time, due to its disruptive potential and pervasiveness. This interdisciplinary volume addresses AI's implications for human development and discourse, drawing on diverse disciplines ranging from anthropology to linguistics, sociology, and political science. By examining both the production and reception of AI discourse, this collection, which features studies across four continents, investigates how AI narratives are constructed in different cultural contexts and how they influence public opinion. Different methodologies are used to explore AI's media representations, political implications, and impact on various industries. Looking at both leading global actors such as the US, the EU and China, which are driving AI advancements, and countries and regions that are more deeply affected by AI's massive adoption, this collection contributes to de-westernising communication research by deepening our understanding of the challenges and opportunities posed by AI at global level as well as in different geographical contexts.

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