Geopolitical, Social Security and Freedom Journal, Volume 7, Issue 1, 2024

Artificial Intelligence and Creativity: Anthropological, Sociological and Pedagogical Reflections

Anna Siri *Pegaso Telematic University, Naples, Italy – e-mail: anna.siri@unipegaso.it*
Gianluca Olcese *University of Wroclaw, Wroclaw, Poland – e-mail: gianluca.olcese@uwr.edu.pl*
Diana Spulber *DISFOR – Department of Education Sciences – University of Genoa, Italy – e-mail: diana.spulber@unige.it*

Doi: 10.2478/gssfj-2024-0001

Abstract
Artificial Intelligence (AI) is redrawing the boundaries of human creativity, challenging our traditional notions of art and expression while raising important sociological and anthropological questions. This article explores the complex relationship between human creativity and AI and how these new technologies are redefining the boundaries of art and creative expression. Starting from an evolutionary analysis of the concept of creativity, the article explores the impact of AI on creative processes and the perception of art. It shows how AI contributes to a "loss of aura" in art and changes the relationship between humans and the creative process. Finally, the article emphasises the importance of a critical and reflexive approach in analysing these phenomena and highlights the need for training in new technologies to cope with the complexity of these changes. This interdisciplinary study provides valuable tools to understand how AI is redefining not only the creative process but also our notions of art, authenticity and human expression in the digital age.

Key words: Artificial Intelligence; Creativity; Art; Sociology; Anthropology

1. Introduction

The advent of Artificial Intelligence (AI) has ushered in a new era of creative possibilities while raising important sociological and anthropological questions. We are now confronted with a widespread mythopoetic narrative. Margaret Boden (2004), an internationally recognised expert in the field of cognitive science, argues that this is no longer the exclusive preserve of humans and challenges us to rethink the nature of the creative act. This redefinition of the boundaries of creativity has meant that AI technologies have become an integral part of our cultural fabric and are profoundly influencing how we produce and consume art.

Born & Haworth (2018) provide a concrete example of this influence, that show how music genres such as vaporwave have emerged precisely through the interaction between human creativity and algorithms. This phenomenon illustrates the merging of humans and machines in the creative process and is also an example

of what Bruno Latour (2005) describes as a network of human and non-human actors that contribute to shape social reality.

However, integrating AI into the creative process is not without challenges. Natale and Ballatore (2020) emphasised how cultural myths surrounding AI influence public perceptions of these technologies, which often oscillate between utopian and dystopian visions. This ambivalent attitude is inevitably reflected in how artists and creatives engage with AI tools. This creates a tension between the excitement of new possibilities and the fear of losing human authenticity.

To better understand this dynamic, Seaver (2017) suggested examining algorithms with a socio-anthropological lens as cultural artefacts and emphasised the importance of understanding the social context in which they are developed and used. This approach allows us to look at AI not as a neutral technology but as a cultural product tainted with values and biases simultaneously, offering a deeper insight into its impact on creativity.

Indeed, the impact of AI goes beyond mere artistic production, from whose aura we are moving away in inverse proportion to the integration of humans with more advanced technological tools in the words of Walter Benjamin (2022): 'We define [aura] as a unique manifestation of a remoteness, however close it may be.' Words, too, can have an aura of their own (Benjamin, 1973). This is how Karl Kraus described it: 'The closer the look one takes at a word, the greater the distance from which it looks back' (Karl Kraus, 1912). Human perception is at the centre of the philosopher's considerations: 'The manner in which human sense perception is organized, the medium in which it occurs, is dictated not only naturally but also historically' (Benjamin, 2022). As Turkle (2011) argues, digital technologies are redefining the way we interact and express ourselves, raising fundamental questions about the nature of authenticity and originality in the digital age. These questions are at the centre of the debate on AI-enabled creativity and challenge our traditional understanding of art and human expression.

In this context, Donna Haraway's Cyborg Manifesto (1991) offers valuable aid for interpretation. The idea of the cyborg as a metaphor for our relationship with technology applies perfectly to the artist, who uses AI to extend her creative abilities, suggesting a new form of creative symbiosis between man and machine.

To decode the cultural meanings embedded in these new forms of expression, we can refer to the approach of Clifford Geertz (1973), who taught us to read culture as text. By applying this methodology to AI-generated outputs, we can begin to unravel the layers of meaning and cultural implications of these hybrid creations.

Boellstorff's (2008) work on virtual worlds also reminds us that digital realities, including those created by AI, are cultural spaces in their own right, worthy of ethnographic investigation. This perspective invites us to consider AI creations as

products and cultural environments in which new forms of interaction and meaning emerge.

The impact of AI on creativity is, therefore, a complex phenomenon that requires interdisciplinary analysis. Sociological and anthropological perspectives offer valuable tools to understand how these technologies are redefining the creative process and our notions of art, authenticity and human expression. As we move towards a future in which the line of perception between the notion of human and artificial creativity becomes increasingly blurred, these considerations will be crucial in addressing the ethical, cultural and philosophical challenges ahead, paving the way for new forms of artistic understanding and creation in the age of artificial intelligence.

2. The concept of creativity and its evolution

Creativity is a concept that has fascinated scholars and researchers for decades and has evolved considerably over time. The first formal definitions emerged in the mid-20th century when Guilford (1950), publishing his 1949 speech to the American Psychological Association, described creativity as a divergent thought process characterised by fluidity, flexibility, originality and elaboration. This view was later expanded by Paul Torrance (1966), who understood creativity as the process of perceiving gaps, formulating ideas or hypotheses, testing them and communicating the results.

The concepts of humanistic authors such as Carl Rogers, Abraham Maslow and Rollo May has dominated the most conceptual discussions of creativity, who saw its value in its perceived positive effects on personal growth, self-actualization and similar aspects of individual well-being. According to Rogers (1954), 'the creative process is that it is the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other.'

Rogers presents creativity as a fundamental human characteristic and clarifies what is required for creativity to be socially valuable and not merely instrumental or profit orientated.

"The mainspring of creativity appears to be [...] man's tendency to actualize himself, to become his potentialities. By this I mean the directional trend which is evident in all organic and human life - the urge to expand, extend, develop, mature - the tendency to express and activate all the capacities of the organism, to the extent that such activation enhances the organism or the self."

Creativity is about unfolding and developing, not just problem solving and impressing. This kind of openness through education and training, but we are only likely to do so when we deeply appreciate its importance. Moreover, according to Rogers, '(creativity) exists in every individual, and awaits only the proper conditions to be released and expressed. It is this tendency, which is the primary motivation for

creativity, as the organism forms new relationships to the environment in its endeavour most fully to be itself.'

The '4 P's' conceptual model of creativity proposed by Rhodes (1961) seems an appropriate framework for reflecting on the entirety of the concept of creativity. "The model aims to explain what it means to be creative by looking at four components: Person (pertains to a human being's personality, intellect, habits, attitudes, and other factors that affect a person's creativity); Process (pertains to the process of creating ideas and artifacts, e.g., thinking, motivation, learning, etc.); Press (refers to the human being's environment which can influence the person and the mental processes); Product (pertains to "artifacts of thought" – ideas that have been communicated to other people in observable form, e.g., as a poem, painting, or sculpture)".

Mednick (1962) defined creativity as '[…] the forming of associative elements into new combinations which either meet specified requirements or are in some way useful. The more mutually remote the elements of the new combination, the more creative the process or solution.' According to Bruner (1962), it '[…] is an act that produces effective surprise'.

Creativity, understood as the ability to produce something new or to interpret what has already been learnt in a new and original way, is found at different levels in every human being and can be realised through education (Sternberg & Williams, 1995).

In the 1980s, Amabile proposed a component-based model of creativity that encompasses intrinsic motivation, domain-relevant skills and relevant creative processes. This multidimensional approach paved the way for a more complex understanding of the creative phenomenon (Amabile, 1996).

Csikszentmihalyi (1996) introduced a 'systems model', a sociocultural model of creativity that states 'social confirmation is necessary for something to be called creative' because 'creativity does not happen inside people's heads, but in the interaction between a person's thoughts and a sociocultural context'. According to this view, creativity arises from the interaction between the individual having an idea or creating an artifact, the domain of knowledge (embedded in the broader context of culture), and the field consisting of individuals assessing the creativity of the idea or artifact before it enters the domain of knowledge (judges and institutions). This view shifts the focus from the individual to the social and cultural context in which creativity manifests itself.

At the turn of the century, Sternberg & Lubart (1999) proposed the investment theory of creativity, which states that creative people 'buy low and sell high' in the field of ideas, emphasising the strategic and contextual aspect, the capitalist interpretation of creativity.

Scholars have attempted to synthesise and refine these different perspectives in the new millennium. Runco & Jaeger (2012) formulated the two-part 'standard

definition' of creativity, stating that to be considered creative an artifact needs to be both novel (unique, original) and effective (valuable, useful).

In parallel, Kaufman & Beghetto (2009) introduced the 'Four-C' model of creativity, which distinguishes between Mini-C (personal creativity), Little-C (everyday creativity), Pro-C (expert creativity) and Big-C (outstanding/genius creativity). This categorisation proposes a model for a more differentiated understanding of creativity's various levels and manifestations.

In recent years, as already mentioned, the discussion has once again focussed on the importance of products. This includes works of art of all kinds (visual arts, literature, dance, theatre, music) and machines, structures, methods and processes in fields such as engineering, manufacturing, marketing, finance, health, agriculture and defence. This interest has been fuelled by the widely perceived role of creativity in promoting health and well-being, social justice, economic progress, social stability, peace and security. This way of looking at creative products is known as 'functional creativity' and contrasts with the earlier emphasis on aesthetic creativity.

The socio-cultural aspect of creativity gained further importance with the work of Glăveanu (2013), who emphasised the role of action, interaction and cultural systems in creative production. This perspective emphasised the importance of considering creativity as an individual phenomenon and a process deeply rooted in the social and cultural context.

More recently, Corazza (2016) introduced the concept of 'creative potential' and suggested that creativity should be viewed as a developing construct rather than a finished product. He reminded us that we only perceive what we perceive as potential when we study the past, i.e. something only has power when that power is actually realised later. This dynamic view of creativity has opened up new avenues for research by focussing on the creative process and not just the outcome.

Finally, Glăveanu & Lebuda (2019) examined creativity as a distributed and situated phenomenon, emphasising the role of context and social interactions in creating and developing creativity. The term 'creativity' is used by the authors in three ways: It refers to a set of processes (e.g., 'creative' thinking), to the personal characteristics of a group of people (e.g., 'creative' personality), and to outcomes (e.g., a 'creative' product). In this way, creativity is treated both as a cause (e.g. creative processes generate products; people's creativity causes them to behave in a certain way) and as an effect or outcome (a certain type of product resulting from the person and the process). This is the 'classic' 3Ps approach (person, process and product), which was soon expanded to include a fourth P - 'pressure' (i.e. pressures from the environment that can encourage or block creativity).

The Greek word *poiein*, Agamben (2019) reminds us, refers to creation in the simple sense of 'producing':

'And just like the poet and the painter, so also the carpenter, the shoemaker, the flute player, and finally every human being are not the transcendent title-holders of a capacity to act or produce works: they are rather living beings who, in the use and only in the use of their members and of the world that surrounds them, gain experience of themselves and constitute themselves as forms of life. Art is only the way in which the anonymous ones we call artists, by maintaining themselves constantly in relation with a practice, seek to constitute their life as a form of life: the life of the painter, of the carpenter, of the architect, of the contrabassist, in which, as in every form-of-life, what is in question is nothing less than their happiness.'

This evolution of definitions reflects a shift from an individual-centred view to a broader and more complex understanding of creativity that includes social, cultural and contextual factors. Contemporary research tends to view creativity as a multidimensional, dynamic and socially embedded phenomenon, opening up new perspectives for its understanding and cultivation in different areas of society.

3. Creativity and Artificial Intelligence: a controversial and evolving relationship

In pre-industrial societies, creativity was often linked to rituals, myths and social functions, with the oral transmission of knowledge and the visual arts being the main means of human expression. With the advent of modernity, however, there was a process of rationalisation and secularisation, which Max Weber (1919) described as the 'disenchantment of the world'. In this context, magical and animistic explanations of reality were replaced by rational and scientific explanations, and society's religious and spiritual aspects gave way to a rational work ethic centred on the pursuit of profit.

AI, with its ability to create written, visual and musical forms and to reproduce art, can be seen as a further step towards this disenchanted world. Creativity once considered a human mystery and a space for interpreting the world, is in danger of becoming a rationalised and automated process.

Pier Paolo Pasolini, known for his criticism of consumer society, offers an interesting perspective on this topic. He defined advertising as an aberrant form of expressiveness because it uses language's power for purely commercial purposes (Pasolini, 1975). Pasolini pointed out how the new tools of advertising appropriated traditional values and re-functionalised them to create a technological form of expression, as opposed to the power of expression understood as an intimate human need through which new ideologies can emerge.

In this sense, AI creations could continue this trend, where art risks becoming a product to be consumed rather than a transformative experience. This development fits into the context of the 'liquid modernity' theorised by Zygmunt Bauman, which is characterised by constant change and the uncertainty of social and cultural structures (Bauman, 2000). In this framework, AI creations not only continue the

process of commercialisation of art, as highlighted by Pasolini, but also contribute to the fluidity and instability typical of liquid modernity, in which even cultural and artistic values are subject to constant redefinition and consumer orientation.

AI-mediated creation fits into a society that is already extremely dependent on technology in all areas of daily life. It is characterised by rapid dissemination, open access to information and the ability to reach a global audience. Generative AI promises a fusion of artistic sensibility and technology, creating new forms of expression whose paradigm is already marked by the media society attracted by a bulimia of images and information.

At a time of rapid technological advancement, the debate about the relationship between human creativity and artificial intelligence (AI) is becoming increasingly heated and complex. A recent article in the New York Times by Noam Chomsky, Ian Roberts and Jeffrey Watumull (2023) highlights that modern generative artificial intelligence technologies are often celebrated in the media with the prediction that these technologies will soon surpass the human brain not only in terms of processing speed and memory capacity but also in terms of traits such as intellectual intuition, artistic creativity and other typically human capabilities. However, the authors point out that, in contrast, the human mind is an amazingly efficient and elegant system that works with small amounts of information. The mind does not simply derive correlations from data but tries to find explanations. Moreover, the authors point out some critical ethical and practical issues related to AI, such as problems of accountability, transparency and algorithmic bias. These aspects raise important questions about the need to maintain human control over AI decision-making processes, especially in the absence of true 'artificial morality' as already effectively implemented by various platforms to block different categories of responses.

Luciano Floridi, one of the most significant voices in philosophy, offers an insightful perspective on this topic. He emphasises the need to philtre the content generated by AI to prevent it from feeding on itself in a distorted way. Floridi is critical of the alleged intellectual capabilities of this AI and emphasises that while these technologies expand the possibilities for action, they are not an imitation of human intelligence. In his opinion, the term 'artificial intelligence' is misleading; it would be more correct to speak of *agere artificiale* 'artificially acting' (AI understood as *Agere sine Intelligere*, instead of AI = artificial intelligence).

With sharp irony, Floridi (2022) compares the intelligence of current AI with that of a toaster, thus illustrating the gap between the operational capabilities of these systems and true cognitive understanding. This metaphor reminds us that, despite significant technological advances, our understanding of human intelligence remains limited and that today's AI systems, as advanced as they may be, are still far from mimicking the complexity of human thought.

This consideration invites us to rethink the goals of AI development. Rather than aiming to replicate human intelligence, it might be more productive to focus on improving these technologies' operational and decision-making capabilities in specific contexts. This approach could lead to more concrete and immediately useful

innovations while avoiding the conceptual pitfalls of attributing true 'intelligence' to these systems.

Intelligence emerges as a series of cognitive and behavioural processes aimed at adaptation and creative problem-solving. This view emphasises how difficult it is to replicate human intelligence in all its richness and versatility.

While AI continues to make impressive progress, it is important to maintain a balanced perspective on its capabilities and limitations. Human creativity and intelligence remain unrivalled in their depth, flexibility and ability to produce meaningful innovation. The future of AI should not aim to replace these human qualities but rather to complement them and create synergies that can enhance our cognitive and creative abilities. In this process, it will be crucial to take an ethical and reflective approach and carefully consider the social, philosophical and practical implications of the ever-increasing integration of AI into our daily lives and creative processes.

4. A socio-anthropological look at art and creativity in the age of Artificial Intelligence

Algorithms are now widely recognised by the scientific community as powerful tools that significantly impact the lives of individuals and societies. These computer systems often operate with a certain opacity, making them difficult to understand and analyse. Some algorithms, particularly those based on machine learning techniques, are capable of acquiring knowledge from human input, potentially adopting biases and prejudices from the training data. An important phenomenon in this context is the so-called 'feedback loop'. In this process, algorithms can replicate and reinforce judgements that have been processed across similar platforms and further revise responses based on this data in a continuous loop. This mechanism can lead to a progressive amplification of certain patterns or biases present in the original data.

Awareness of these algorithmic dynamics is spreading rapidly in also in everyday society, partly due to many people's direct experiences interacting with algorithm-based systems in various contexts of daily and professional life.

The perception that machines are becoming increasingly similar to humans has so far mainly fuelled comparative studies that focus on machines' knowledge, skills and biases, neglecting what Massimo Airoldi (2024) considers to be the sociological root of this similarity: culture.

Airoldi takes up the concept of habitus elaborated by Bourdieu (2003) and defines it as:

> 'luogo dove interagiscono struttura sociale e pratica individuale, cultura e cognizione. Con i loro gesti istintivi, schemi di classificazione sedimentati e bias inconsci, gli individui non sono né naturali né unici. Piuttosto sono il "prodotto della storia [*trad. The place where social structure and individual practice, culture and cognition interact. With their intuitive gestures, ingrained classification schemes*

> *and unconscious prejudices, individuals are neither natural nor unique. Rather, they are the 'product of history'*]'.

The choice of habitus in a 'data-driven' society, in which an automated system is trained, plays a crucial role in determining the functioning and performance of the system itself (Airoldi, 2024):

> 'A seconda dell'insieme di correlazioni esperienziali e disposizioni stilistiche che strutturano il modello, l'algoritmo di machine learning genererà risultati probabilistici diversi. Ergo la frase di Bourdieu 'il corpo è nel mondo sociale, ma il mondo sociale è nel corpo" potrebbe essere facilmente riscritta in questo modo: il codice è nel mondo sociale, ma il mondo sociale è nel codice [*trad. Depending on the set of experiential correlations and stylistic dispositions that structure the model, the machine learning algorithm will produce different probabilistic results. Ergo, Bourdieu's phrase 'the body is in the social world, but the social world is in the body' could easily be rewritten as 'the code is in the social world, but the social world is in the code*]'.

In this context, it is crucial to understand that the culture contained in the codes does not simply come from the machines' creators. In the latest models of artificial intelligence, the cultural dispositions that machine learning systems acquire come not only from their creators but from a multitude of humans, the users of digital devices, who are fully involved - often without their knowledge - in the role of 'trainers'. They help shape the algorithms' behaviour, demonstrating that the 'culture in the code' is the result of a complex interaction between various human and non-human social actors. This process is in line with Bourdieu's idea that existing social structures are not only reflected in the practices of individuals but are actively reproduced by them. Similarly, Airoldi argues that machines and algorithms reflect social structures and are actively involved in their reproduction, reinforcing existing inequalities in both the material and symbolic order. This dynamic fits into Bourdieu's concept of the social field, in which algorithms interact with users and participate in the dynamics of power and stratification by influencing social practices, guiding behaviour and contributing to forming social norms.

In the age of artificial intelligence, the habitus is confronted with new forms of cultural capital, where familiarity with digital technologies also becomes a key element in creating and producing art.

Analysing the impact of new technologies on art and creativity can be enriched by the interpretative approach to culture proposed by Clifford Geertz. In his influential work 'The Interpretation of Cultures' (1973), Geertz introduced, as already mentioned, the metaphor of 'culture as text'. According to this view, culture is not simply a determinant of human behaviour but rather a network of symbols that helps us better understand a particular behaviour's meaning. Clifford Geertz proposed a 'semiotic' approach to culture, arguing that the scientist should engage in 'thick description' to interpret cultural practises' multi-layered meanings. This method involves not only the observation of behaviour but also the interpretation of the symbols, rituals and practises that make up the cultural environment of a society.

Suppose we apply this perspective to analysing the impact of AI on creativity. In that case, we can consider the new forms of artistic expression that emerge with the help of AI as 'cultural texts' that require careful reading and in-depth interpretation. This approach allows us to explore the deeper cultural meanings that emerge from the interaction between technology and human creativity and thus goes beyond simply looking at the technical possibilities of AI.

In our discussion of AI-mediated creativity, Geertz's approach invites us to consider the technical aspects of AI-generated artistic production and the broader cultural meanings that emerge from this new form of expression. His approach encourages us to ask questions like these: How do we interpret the generation of a work by artificial intelligence? What are the cultural implications of this 'non-human' creation?

Geertz's notion of culture as a 'network of meanings' allows us to consider AI not just as a tool for artistic production but as an integral part of an evolving cultural ecosystem. In this context, AI itself becomes a 'cultural text' that requires interpretation and critical analysis, fully inserting itself into the cultural discourse and contributing to its complexity.

It is important to note that while Geertz's interpretive approach offers valuable insights, it should be used with caution and in combination with other methods of cultural analysis. For a more comprehensive understanding, different interpretive keys should be used, considering each methodological approach's limitations and strengths.

This interpretive approach allows us to broaden our understanding of the impact of AI on creativity and to go beyond technical issues to explore the broader cultural, ethical and philosophical implications of this new form of expression. It invites us to consider how AI potentially redefines our concepts of creativity, authenticity and artistic value and how these changes fit into the broader context of contemporary cultural dynamics.

In his analysis of art history and the psychology of perception, Ernst Gombrich (1950) emphasised the extent to which cultural expectations influence the perception of art. This concept is particularly relevant in the era of generative AI, as artworks are often mediated by technologies that change the context and the way they are enjoyed. Gombrich invites us to consider how our perception of art is shaped by a combination of historical, cultural and technological expectations (Corapi, 2002). When the artist introduces a new language, he does not teach us how to see; rather, he stimulates the viewer's eye through innovations in the artwork. Gombrich's central point is to examine how the viewer's eye contributes to creating the image. Looking at a work of art is not passive but implies a reaction. Viewing is a process of exchange; it means making assumptions about what is in front of us, about something that raises expectations, with which we make comparisons, and about something familiar to which we attribute meaning.

In the context of AI, these expectations can be tested as machine creation challenges traditional notions of originality, authenticity and artistic intentionality. AI as a

creative agent not only copies existing styles, but also changes recipients' expectations. At a time when art is closely linked to the sales value of a work or its distribution, the commercial discourse enters into a dialogue with the perception of artistic creation, whose meaning, instead of responding to a need for communication, corresponds to the artificial creation of a market perspective, bringing us back to the concept of 'aberrant expressivity' proposed by Pier Paolo Pasolini about the language of advertising evolving it to the idea of 'aberrant creativity'.

Empirical research by Elgammal et al. (2017) has shown that AI-generated works are often perceived as ambiguous and susceptible to multiple interpretations. The authors proposed a new system aiming at generating art based on artificial intelligence in their work. This system learns artistic styles by observing existing artworks and develops creativity by generating works that deviate from the learnt styles, thereby increasing the visual stimulation potential of the works themselves. The experiments conducted by the authors showed that human subjects could not distinguish system-generated creations from art created by contemporary artists and exhibited at major art fairs. Surprisingly, the participants even rated the system-generated images more favourably on various rating scales.

Hertzmann (2018) discusses the complexity of interpreting AI-generated works in his article 'Can Computers Create Art?' Although he does not provide direct empirical evidence, he raises important questions about the relationship between the output of AI systems, the programmers' intentions and the viewers' interpretation. This work suggests the need for further empirical research to investigate how viewers interpret AI creations in relation to their creators' original intentions.

The tripartite division proposed by Eco (1990) between *'intentio auctoris*', *'intentio operis*' and *'intentio lectoris*' could take on a new meaning. In this context, the *intentio auctoris* could be understood as the programmer's or prompter's goal. However, one has to reflect on whether this correspondence might actually be of value when simple requests are formulated, which would proportionally change the interpretative strategy when complex creations are requested, be they narrative texts or, scientific treatises or 'open' visual or musical works that carry multiple and more subtle meanings, the *intentio operis* as the actual output of the AI algorithm, while the *intentio lectoris* retains its meaning as the viewer's interpretation, but not only, for the dynamic is prone to feedback loops, as the reader is simultaneously the AI itself, taking up and revising its creations, in a spiral that tends towards the infinity of re-reading and revision.

Eco's idea of the encyclopaedia (1984) as a 'regulative hypothesis' suggests that any interpretation of a text (or, by extension, a work of art) relies on a set of cultural knowledge and skills that the recipient activates and deploys in order to make sense of what they are interpreting. When we speak of 'cross-cultural variations in interpretation', we essentially recognise that different cultures have different 'encyclopaedias', i.e., knowledge bases, references and semantic abilities. The creations of artificial intelligence, like any other text or work of art, are subject to

interpretation. However, as they are generated by a system that has 'learnt' from a huge amount of global data, they may contain references or elements that are received differently in different cultures. Eco's concept of 'encyclopaedia' could also provide a valuable framework for analysing how people from different cultures interpret AI-generated works. It could help explain why certain interpretations emerge in particular cultural contexts and how these interpretations may vary from one culture to another.

Similarly, when confronted with AI-generated work, individuals will draw on their own 'cultural encyclopaedia' to make sense of it. Eco's concept of the encyclopaedia reminds us that interpretation is always an active, culturally situated process that depends on the interpreter's semantic abilities and cultural background. This approach could be particularly useful in the context of AI, as the generated works can draw on a wide range of cultural references, which can lead to very different interpretations in different cultural contexts.

Studies such as that by Zhu et al. (2020) have made significant advances in AI image generation and manipulation technology. However, exploring cross-cultural differences in interpreting such images remains an open field for future investigation.

The tendency of recipients, be they readers, listeners or observers, to ascribe intention and meaning to the results generated by AI is a phenomenon that deserves in-depth analysis. Marcus (2018) offers a general critique of deep learning, highlighting its limitations and potential misunderstandings.

The relevance of these theories is also emphasised by recent studies such as that of Ramesh et al. (2022), who have demonstrated the ability of AI systems to generate complex visual representations by capturing both semantics and style.

Despite the promising applicability of the theories discussed, it is important to emphasise that further empirical research is needed to fully validate these concepts in the specific context of AI-generated social imagery. This emerging field represents a fertile ground for future interdisciplinary investigations and invites to new perspectives on artificial creativity and its interpretation.

5. The Role of A.I. in Fostering Creativity in Education

In today's educational landscape, integrating artificial intelligence (A.I.) presents challenges and significant opportunities for nurturing creativity among students. While A.I. and digital tools can streamline tasks like note-taking and communication, they also raise critical questions about their potential to enhance traditional forms of creativity. The human species is inherently creative, and this ability to create is a fundamental aspect of our existence. Therefore, any attenuation of this need in an individual leads to degradation. However, using A.I. can potentially enhance and not just replace this creativity.

There are two approaches to creativity in education. The first, rooted in design theories, responds to issues of professionalisation linked to design skills, which have become critical for the conception and production of new products and the

resolution of related problems in contemporary organisations. The second focuses on the development of the individual and learning. In terms of design, the challenge of integrating creativity into learning in education systems can be envisaged in terms of three types of educational action that support the development of creative skills (Lubart, 2009).

Vygotsky L. S., in his research, paid much attention to the problem of imagination and creativity in children. Vygotsky L.S. claimed that every person can create from birth. In his works, he describes the role of creative work in the general development and formation of the child, noting that this activity does not manifest itself immediately but develops gradually, from elementary to more complex forms. He also noted that the basis of imagination is always perception and the material to build something new. Then there is an elaboration process as a result of which the idea is embodied in external images, influencing the real world and society. In the book 'Imagination and Creativity in Childhood', he defined creative activity as human activity that creates something new, whether it is created by creative activity something from the outside world, or a known construction of the mind or feeling, living and discoverable only in man himself In his works Vygotsky states that "Life will become creative only when it is finally freed from the forms that distort and disfigure it. Educational issues will be resolved when the issues of Life are resolved. A person's Life will become a continuous creative activity, one aesthetic rite that will arise not from the desire to satisfy individual small needs (as an incentive for creativity), but from a conscious and bright creative impulse".

In education, using the concept of creativity leads to designating a device, approach or project that changes the teaching/learning modalities and goes beyond the ordinary associated with the execution of tasks and exercises. According to Capron Puozzo (2016) use of creativity in education "means working on learning objects through devices whose various tasks constitute a mediating form mediating… the creative thinking of students". The dispositive is to link knowledge and the student. Ideally, mediation is provided by tasks and the support provided by the teacher's actions. The nature of the task is crucial in this context, since it must lead the student to identify and use the skills at his disposal to represent, assimilate and give meaning to the object of learning. Students are put in a more active position, with the teacher taking a back seat. In cultivating a creative classroom environment, educators should prioritize strategies that actively engage students in the learning process. One effective approach involves incorporating student input into the assessment process, allowing them to reflect on their learning journey and foster a sense of autonomy. This strategy encourages self-evaluation and personal growth, moving beyond traditional teacher-centred evaluations. In mathematics, creativity is often associated with problem situations (Orange, 2005) in which pupils are confronted with divergent thinking. In language and art, creativity is often linked to tasks in which the teacher assumes the role of author (Leuba et al., 2005).

Focussing on the role of Creativity and A.I. is relevant for several reasons, among which it should be particularly noted:

- a qualitative change in the scientific picture of the world, resulting from fundamentally new possibilities for obtaining, storing, processing and transmitting information;
- the pedagogical significance of the qualitative expansion of the information capabilities of modern society with the inability of a significant part of teaching staff to use these opportunities for their professional purposes;

the contradiction of way of developing of critical thinking that is more needed by actual flux of information and in the meantime the use of A.I. that can easily and wrongly the use of A.I. can replace the use of students' creative thinking and consequently limitation of critical thinking. While creativity and critical thinking are vital for innovation and the needs of the labour market, other complementary skills play an equally essential role. OECD framework distinguishes three broad categories of 'innovation skills', which overlap in certain respects. Remodulating this categories in use of A.I is possible to stress the contradictions: 1) technical skills (knowledge and know-how) the bias on using A.I can be reassumed in what in a sentence that have been cited by Lee et al 2021 "when we typically think of Google, we think it's objective, it's always right, but it's not always represented in the right way", using A.I can create a tendency to the student's dishonesty, and for avoiding this gap the moral over-structure should be created; 2) creativity and critical thinking skills (critical thinking, imagination, creativity) - The research on the impact of AI and chatbots on critical thinking reveals mixed results, showing that the effects depend heavily on how the technology is applied and the context in which it is used. Deng and Yu (2023) conducted a review of 32 empirical studies and found that while chatbot-assisted learning had a medium-to-high positive effect on overall learning outcomes, its impact on critical thinking was less clear. They noted some negative findings, implying that chatbots might not always effectively promote higher-order thinking skills like critical thinking, or that the effect could be context-dependent. Similarly, Bailey and Almusharraf (2021) explored the influence of different types of chatbot-delivered questions on students' participation and critical thinking. They discovered that although some types of questions helped with recall and content assessment, they were less effective in prompting critical thinking. This suggests that, while chatbots can assist in learning, they may fall short in encouraging the deeper analytical skills required for critical thinking unless they are carefully designed to challenge users in this area. 3) behavioural and social skills (perseverance, conscientiousness, self-esteem, communication, collaboration). These three categories' skills need to be developed together.

This underscores the delicate balance educators must strike in encouraging the coexistence of AI-assisted learning with traditional creative practices. This balance can enhance critical thinking and foster a nuanced appreciation for individual expression. The debate surrounding intellectual property and human rights further emphasizes the need for a comprehensive understanding of how creative outputs produced with A.I. intersect with ethical considerations. This understanding is

crucial to ensure that educational environments remain spaces that promote innovation without compromising the rights and voices of creators.

As educational institutions increasingly adopt Artificial Intelligence (A.I.) tools like ChatGPT, they encounter significant challenges that complicate their integration into creative education.

As it possible to see from OECD research the question is not human -A.I. but the performance of different AI

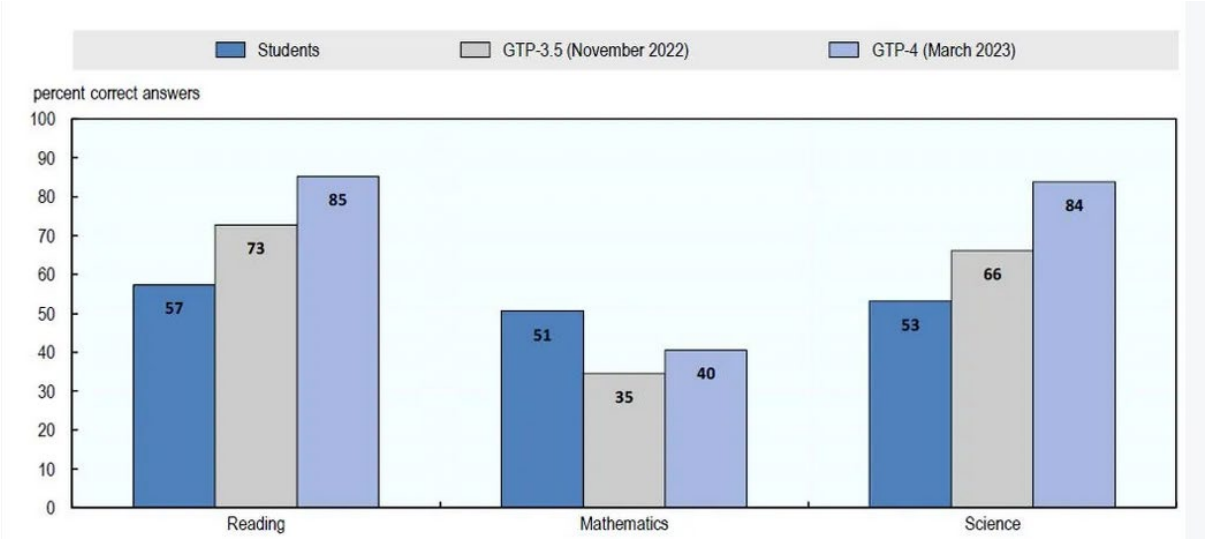

Figure 1 GPT and student's performance on PISA core domain. Source (OECD data see https://www.oecdilibrary.org/docserver/2c297e0ben.pdf?expires=1728892590&id=id&accname=guest&checksum=2138A2173CF3726E06E491512A393607)

The performance of GPT, the AI system behind ChatGPT, shows notable strengths in reading and science, surpassing that of many students. For example, GPT-3.5, released in November 2022, successfully answered 73% of reading test questions and 66% of science questions. The more advanced GPT-4, released in March 2023, demonstrated even greater proficiency, achieving 85% accuracy in reading and 84% in science. Despite this impressive performance in language and science-based tasks, GPT-3.5 and GPT-4 still lag behind students in mathematics. While GPT-4 made significant improvements over GPT-3.5 in various domains, its mathematical reasoning and problem-solving capabilities remain weaker in comparison to its success in reading and science tasks. This suggests that while GPT's ability to process language and scientific information has advanced rapidly, mathematical capabilities continue to be a challenge for the system. Herre the question should the research concentrate on student's skills and competencies or on performance of different A.I models?

One primary concern is the potential compromise of originality, which has long been the cornerstone of creative writing and artistic expression. The traditional notion of creativity is evolving, as students are now encouraged to collaborate with

A.I. technologies, under the guidance of their educators, which can blur the lines between human input and machine-generated ideas. This raises ethical questions about authorship and the value of creative work, as students might unintentionally over-rely on A.I. assistance rather than fostering their innovative capacities. Furthermore, establishing clear usage policies becomes essential in ensuring a responsible approach to A.I. utilization in the classroom, as evidenced by the strategies outlined in recent studies. By navigating these complex dynamics, educators can create environments that allow creativity and technological advancement to thrive harmoniously.

6. Conclusions

Contemporary technological culture promotes the idea that artificial intelligence (AI) is essential for new forms of creativity. The digitalisation of society and the development of the concept of creativity have contributed to this trend. At the same time, technological innovation, which is economically and socially valued, has further driven the use of AI in creative processes.

However, this shift is leading to a 'loss of aura' in art, i.e. a decline in the sense of uniqueness and authenticity of works, as creation is no longer exclusively human but mediated by technology. This phenomenon reflects a broader shift in the dynamic between humans and creation that is part of the educational challenges of modern society.

In this scenario, education in the 'culture' of media and new technologies becomes crucial. It is necessary to develop a critical approach that allows people to subordinate technology to their purposes rather than being dominated by it. This requires rethinking education itself, as proposed in the UNESCO report (2021) 'Reimagining our futures together: A new social contract for education'.

Sociology and anthropology offer a valuable angle from which to examine the impact of new technologies on the boundaries of art and creativity. Sociology, with its focus on social structures, power and inequalities, and anthropology, with its emphasis on culture, personhood and human experience, together provide a comprehensive framework for understanding the role of AI in contemporary life. This meta-disciplinary approach allows us to analyse how AI, especially generative AI, influences and changes artistic and cultural production in contemporary society. From this perspective, the model of the 'mythological machine' theorised by Furio Jesi (1973) can be interesting to apply to the analysis of modern narratives about the 'myth' of artificial intelligence. Narratives about generative AI mutually influence public attitudes and perceptions towards this technology. At the same time, the media and cultural representations of generative AI shape the development of the technology itself. Those who report on and interpret the phenomenon of generative AI, be they experts, journalists or artists, rewrite the narrative, inevitably introducing their vision and component, which can be positive or negative, dystopian or utopian, etc. There is also a risk that generative AI will be mythologised, i.e. charged with symbolic and mythical meanings beyond its actual technological nature. This process

can lead to clichéd or misleading representations. Narratives and practises around generative AI can also take on a "ritual" dimension, turning them into real everyday rituals of interaction with the technology.

Jesi's 'mythological machine' model can help us understand how narratives about generative AI are constructed dialectically between collective representations and subjective interpretations, which in turn influences the success of this technology. At the same time, texts and other works created using generative AI materialise an evolution in a kind of spiral or feedback loop towards this kind of dependency as AI continues to evolve, even if, as Chomsky et al. argue (2023), potentially in the wrong direction, it is essential to maintain a critical and reflective approach to influencing artistic and cultural production. A critical understanding of this phenomenon's underlying dynamics and implications is, therefore, not just a matter of intellectual analysis but an urgent necessity to navigate a world increasingly dominated by technology and its narratives.

The impact of AI on creativity and art represents a complex challenge that requires a multidisciplinary, critical, and reflective approach. Only through a deep understanding of these dynamics can we hope to guide technological development in a direction that enhances, rather than diminishes, human experience and creative expression.

Fostering a balanced environment that intertwines AIs efficiencies with human creativity is crucial for achieving meaningful educational outcomes. Therefore, the future must prioritize developing innovative curricular frameworks that embrace these advancements responsibly while equipping students with essential skills for the AI-infused world.

References

Agamben, G. (2019). *Creation and anarchy. The Work of Art and the Religion of Capitalism*. Stanford University Press, California.

Airoldi, M. (2024). *Machine Habitus. Sociologia degli algoritmi.* Luiss University Press, Roma.

Amabile, T. M. (1996). *Creativity in Context*. Boulder, Colorado: Westview Press.

Bailey D, Almusharraf N, ed (2021). Investigating the Effect of Chatbot-to-User Questions and Directives on Student Participation. 2021 1st International Conference on Artificial Intelligence and Data Analytics (CAIDA).[PMCID: PMC8712626]. https://doi.org/10.1109/CAIDA51941.2021.9425208

Bauman, Z. (2000). *Liquid Modernity*. Cambridge, UK: Polity Press.

Benjamin, W. (2022; first version 1939). The Work of Art in the Age of Its Technological Reproducibility. Translated by Kolio Koev. Sofia: Critique and Humanism.

Boden, M. A. (2004). *The Creative Mind: Myths and Mechanisms*. Routledge.

Boellstorff, T. (2008). *Coming of Age in Second Life: An Anthropologist Explores the Virtually Human*. Princeton University Press.

Born, G., & Haworth, C. (2018). From Microsound to Vaporwave: Internet-Mediated Musics, Online Methods, and Genre. *Music and Letters*, 98(4), 601-647.

Bourdieu, P. (2003, ed or. 1972). Per una teoria della pratica. In P. Bourdieu, *Per una teoria della pratica, con tre studi di etnologia cabila* (pp. 175-316). Milano: Raffaello Cortina Editore.

Bruner, J. S. (1962). *On Knowing*. Cambridge: Belknap Press.

Capron Puozzo, I. (2016). Créativité et apprentissage: un mariage prometteur. Pedagogia PIU' didattica. *Teorie e pratiche educative*, 2(1), 1–12.
Chomsky, N., Roberts, I., & Watumull, J. (2023). The false promise of ChatGPT. The New York Times. https://www.nytimes.com/2023/03/08/opinion/noam-chomsky-chatgpt-ai.html
Corapi, P. (2002). Il linguaggio dell'arte in E.H. Gombrich. ITINERA – *Rivista di Filosofia e di Teoria delle Arti e della Letteratura*, Dipartimento di Filosofia dell'Università degli Studi di Milano. Online: http://filosofia.dipafilo.unimi.it/itinera/mat/saggi/corapip_gombrich.pdf
Corazza, G. E. (2016). Potential originality and effectiveness: The dynamic definition of creativity. *Creativity Research Journal*, 28(3), 258-267.
Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. Harper Collins Publishers.
Dai, Y., Chai. C-S., Lin, P-Y., Jong MS-Y, Guo Y, Qin J.(2020). Promoting Students' Well-Being by Developing Their Readiness for the Artificial Intelligence Age. *Sustainability*. Vol. 12(16):6597. https://doi.org/10.3390/su12166597
Deng X, Yu Z. A (2023). Meta-Analysis and Systematic Review of the Effect of Chatbot Technology Use in Sustainable Education. *Sustainability*. Vol. 15(4):2940. https://doi.org/10.3390/su15042940
Eco, U. (1984). *Semiotica e filosofia del linguaggio*. Torino: Einaudi.
Eco, U. (1990). *I limiti dell'interpretazione*. Milano: Bompiani.
Elgammal, A. & Liu, B. & Elhoseiny, M. & Mazzone, M. (2017). CAN: Creative Adversarial Networks, Generating "Art" by Learning About Styles and Deviating from Style Norms.
Floridi, L. (2022). *Etica dell'intelligenza artificiale: Sviluppi, opportunità, sfide*. Raffaello Cortina Editore, Milano.
Geertz, C. (1973). *The Interpretation of Cultures*. Basic Books.
Glăveanu, V. P. (2013). Rewriting the language of creativity: The Five A's framework. *Review of General Psychology*, 17(1), 69-81.
Glăveanu, V. P., & Lebuda, I. (2019). *Re/searching the social in creativity: Methods, studies, and reflections*. Palgrave Macmillan.
Gombrich, E. H. (1950). *The story of art*. London: Phaidon Press.
Guilford, J. P. (1950). Creativity. *American Psychologist*, 5(9), 444-454.
Haraway, D. (1991). A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century. In Simians, *Cyborgs and Women: The Reinvention of Nature*. Routledge. Hertzmann, A. (2018). Can computers create art? *Arts*, 7(2), 18. Basel: MDPI.
Jesi, F. (1973). *Mito*. Milano: ISEDI.
Kraus, K. (1912). *Pro domo et mundo*. Albert Langen, Munich, Germany.
Kaufman, J. C., & Beghetto, R. A. (2009). Beyond big and little: The four c model of creativity. *Review of General Psychology*, 13(1), 1-12.
Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford University Press.
Lee, I., Ali, S., Zhang, H., DiPaola, D., & Breazeal, C. (2021). Developing middle school students' AI literacy. In Proceedings of the 52nd ACM technical symposium on computer science education (pp. 191-197).
Marcus, G. (2018). Deep learning: A critical appraisal. arXiv preprint arXiv:1801.00631.
Mednick S. A. (1962). The associative basis of creativity. *Psychological Review*, 69:20-232.
Natale, S. & Ballatore, A. (2020). Imagining the thinking machine: Technological myths and the rise of artificial intelligence. *Convergence*, 26(1), 3-18.
OECD (2023), "Putting AI to the test: How does the performance of GPT and 15-year-old students in PISA compare?", *OECD Education Spotlights*, No. 6, OECD Publishing, Paris, https://doi.org/10.1787/2c297e0b-en.
Pasolini, P. P. (1975). *Scritti corsari*. Garzanti.
Ramesh, A., Dhariwal, P., Nichol, A., Chu, C., & Chen, M. (2022). Hierarchical text-conditional image generation with CLIP latents. arXiv preprint arXiv:2204.06125.
Rhodes, M. (1961). An analysis of creativity. *The Phi Delta Kappan*, 42, 305-310.

Rogers, C. R. (1954). Towards a theory of creativity. *ETC: A Review of General Semantics*, 11, 249–260.

Runco, M. A., & Jaeger, G. J. (2012). The standard definition of creativity. *Creativity Research Journal*, 24(1), 92-96.

Seaver, N. (2017). Algorithms as culture: Some tactics for the ethnography of algorithmic systems. *Big Data & Society*, 4(2).

Sternberg, R. J., & Lubart, T.I. (1999). The concept of creativity: Prospects and paradigms. *Handbook of creativity*, 1, 3-15.

Sternberg, R. J., & Williams, W. M. (1995). How to develop student creativity. Alexandria, VA: Association for Supervision and Curriculum Development.

Torrance, E. P. (1966). *The Torrance Tests of Creative Thinking-Norms-Technical Manual Research Edition-Verbal Tests, Forms A and B-Figural Tests, Forms A and B.* Princeton, NJ: Personnel Press. Turkle, S. (2011). Alone Together: Why We Expect More from Technology and Less from Each Other. Basic Books.

UNESCO (2021). *Reimagining our futures together: a new social contract for education*. Paris: UNESCO.

Vygotskii L.S. (1986) *Psychology of Creativity*, Moscow (in russian)

Weber, M. (1919, ed it. 1997). *Wissenschaft als Beruf*, München 1919, ed. it. La scienza come professione, Milano, Rusconi.

Zhu, J., Shen, Y., Zhao, D., & Zhou, B. (2020). In-domain GAN inversion for real image editing. In *European Conference on Computer Vision* (pp. 592-608). Cham: Springer.