

# Creativity and Innovation 4.0. Fostering Renewal Through Possibility Thinking

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**Abstract:** *This paper explores the connections between creativity, innovation, and modern citizenship, focusing on “Creativity and Innovation 4.0” to understand how these dimensions contribute to technological advancements and reshape societal norms. The paper also addresses the challenges and limitations of possibility thinking, including technological inequalities. Ultimately, it outlines a pathway toward a society where creativity and innovation serve not only economic development but also the enrichment of democratic life.*

**Keywords:** *creativity, innovation, possibility thinking.*

## Introduction

In the context of the Fourth Industrial Revolution, the relationship between creativity and innovation is gaining increased importance in shaping socio-economic and technological landscapes. Traditional industrial models centred on productivity and efficiency are giving way to a knowledge-based economy (Bruce; Crook, 2015; Wiedemer *et al.*, 2015). This shift is characterized by rapid advancements in information technology, generative artificial intelligence (GAI), and automation, which have disrupted established industries and redefined employment structures. As a result, attributes such as creativity, adaptability, and innovative thinking are not only advantageous but essential for navigating this evolving environment (Susskind; Susskind, 2015; Tapscott; Williams, 2006).

One critical concept gaining traction in this context is possibility thinking (PT), conceptualized as “a core aspect of purposeful human action as it unfolds across past, present, and future” (Glăveanu *et al.*, 2024, p. 125). PT encourages individuals and organizations to consider “what could be” rather than being confined to existing norms and structures. Initiated by Craft (2015) and further developed by Glăveanu (2020, 2024), PT is pivotal in fostering environments where creative and innovative mindsets thrive, particularly in addressing the complex ethical, social, and technological challenges of the 21st century.

This paper explores how PT serves as a catalyst for fostering creative mindsets and innovative solutions that transcend traditional boundaries. By integrating theoretical frameworks with practical examples, it examines how creativity and innovation can contribute to societal progress in the context of the Fourth Industrial Revolution. The paper also addresses the challenges and limitations of PT, including technological inequalities and the practical implementation of innovative pedagogies. Ultimately, it aims to provide actionable insights into how societies can harness creativity and PT to foster renewal, enhance civic engagement, and address global challenges.

## Background

The transition from industrial to knowledge-based economies represents a profound shift in the way societies generate and distribute wealth. This evolution is not without significant disruption, as entire industries are being restructured, and the nature of work is increasingly defined by technological capabilities rather than human labour (Christensen; Raynor, 2003). In this rapidly changing environment, creativity and innovation are not merely drivers of economic progress but are increasingly being recognised as essential to societal survival and progress (OECD, 2022). The capacity to innovate, coupled with an openness to new possibilities, has become a cornerstone of global competitiveness. Given the increasing importance of these attributes, it is essential to clarify what is meant by creativity and innovation. Understanding these concepts provides a

foundation for exploring how they contribute to societal progress in the context of the Fourth Industrial Revolution.

Creativity and innovation have long been a topic of discussion. Hughes et al. (2018) refer to creativity as a cognitive process involving behavioural activities that lead to the development of original ideas. They refer to innovation as a process that employs methods to put creative ideas into practice. Creativity and innovation are distinct from each other, yet they are related and linked at the juncture where ideas are implemented. From an organisational perspective, innovation is often linked to individual creativity as a starting point leading to innovative activities (Amabile, 1988). Transitioning to a perspective where innovation is viewed through a social lens, Statalinka and Steiner (2022) reference the work of Phillips and colleagues, asserting that social innovation—characterised by innovative activities and services aimed at addressing social needs and predominantly spread through organisations with a primary social orientation (Mulgan, 2006)—takes place within specific historical contexts and periods. In relation to the current VUCA (Volatile, Uncertain, Complex, and Ambiguous) environment, this need for social innovation becomes even more pressing, as we are increasingly required to engage with the consideration of new possibilities and explore innovative approaches to address complex societal challenges in rapidly changing and unpredictable contexts.

However, the emphasis on creativity and innovation, particularly in the context of the Fourth Industrial Revolution, also raises critical ethical concerns. The widespread deployment of generative artificial intelligence (GAI), and data-driven technologies presents both opportunities and risks, particularly regarding employment, inequality, and civic engagement. Susskind & Susskind (2015) argue that these technological shifts could exacerbate societal divisions, particularly if access to the benefits of these innovations is not equitably distributed. In response, PT may offer a framework for critically engaging with these issues, encouraging a reconsideration of how technological advancements are integrated into society and how their benefits can be more broadly shared.

### **Possibility thinking as a catalyst for social change**

PT, as articulated by Craft (2015), plays a crucial role in this shift. It involves moving from the current state of affairs towards envisioning new potentials, asking 'what if' questions that unlock new ways of thinking and problem-solving. PT encourages its practitioners in Craft's case learners, to explore various possibilities of problems from different angles and perspectives. Galveanu (2018) when outlining the possible as a field of enquiry, discussed the notion that by engaging in PT, we can explore different worlds. In Glăveanu's work PT is positioned within a sociocultural context, where creativity is deeply intertwined with social relationships, cultural resources, and the collective imagination of alternative futures.

Glăveanu's (2020) concept of “societies of the possible” extends this line of thinking by describing communities that actively embrace creativity, openness, and potentiality through exploring and engaging with new possibilities for change and development. These societies encourage speculative thinking, where citizens are actively engaged in the process of imagining and creating new social, economic, and political realities (Sabransky *et al.*, 2017). This engagement with the possible challenges dominant ideologies and practices, fostering a critical perspective that is essential for the development of more equitable and sustainable futures (Appadurai, 2013). In a civic context, PT plays a crucial role in imagining new forms of governance, community collaboration, and social justice. By shifting from a problem-oriented to a possibility-oriented mindset, individuals can reframe societal challenges as opportunities for creative action.

### **Possibility thinking in a cocultural context**

PT, as conceptualized in recent literature, provides a lens for understanding how creativity and innovation can thrive in the current complex, volatile environments. The term “possibility” is multifaceted; it involves both what is feasible and what can be imagined beyond current realities (Glăveanu, 2018). The dichotomy between the “actual” and the “possible” underscores a dynamic relationship where human creativity transforms the present into future possibilities through imagination and agency (Glăveanu, 2020). This concept transcends mere cognitive processes and is situated within broader sociocultural and technological frameworks, where human agents and environments co-construct new realities.

This sociocultural lens permits a move towards a more relational, agentic perspective where creativity is seen as a collective and distributed process (Glăveanu, 2020a). In this context, technology acts not only as a tool but as an affordance—enabling and constraining the possibilities that can emerge. The interactions between individuals, technology, and societal structures thus form a fertile ground for creative potential, allowing innovation to thrive in unpredictable and transformative ways (Barbot; Kaufman, 2020). However, while this interplay offers significant opportunities, it also presents challenges and limitations that must be acknowledged when considering the broader implications of PT in society. To further illustrate how social interactions contribute to creativity, we can draw upon the concept of polyphony as articulated by Bakhtin (1984).

### **Incorporating the concept of polyphony**

Enhancing our understanding of how creativity and innovation emerge within sociocultural contexts involves integrating the concept of polyphony, a term borrowed from music that recognises the presence of multiple voices without any single voice being superior. Bakhtin (1984) adapted the notion of polyphony to literary theory, proposing it as a normative ideal where no authoritative voice

dominates and every individual's perspective holds equal importance. Literally meaning "many-voiced," polyphony in literature describes works that liberate characters' voices from the controlling influence of the authorial or narrative voice.

For Bakhtin, this dynamic implies that participants in a dialogue must maintain an open mind towards others. It is within the tension and interplay of different voices that new knowledge and meaning are created. This perspective aligns with the principles of PT, which thrives on challenging dominant paradigms and envisioning alternative futures through the collaborative effort of diverse perspectives (Glăveanu, 2018).

Integrating the concept of polyphony into the discourse on Creativity and Innovation 4.0 enriches the sociocultural approach to creativity. It emphasises that creativity is not merely an individual cognitive process but emerges from social interactions and cultural engagements where multiple voices contribute to the creative process (Glăveanu, 2014). Embracing polyphony encourages environments where open dialogue and the coexistence of diverse ideas are valued, thereby fostering innovative mindsets capable of addressing complex societal challenges.

### **Navigating tensions in possibility thinking**

While embracing polyphony amplifies creative potential by incorporating diverse perspectives, it also introduces challenges that arise from conflicting ideas and interests. The interaction of multiple voices does not guarantee harmony; rather, it often leads to dialogic tension (Bakhtin, 1984), which, although generative, requires careful navigation. In the context of PT, these tensions highlight a critical limitation: the challenge of moving from collective imagination to actionable innovation. Glăveanu (2020a) acknowledges that the richness of diverse perspectives can sometimes lead to an overabundance of ideas, making consensus difficult to achieve and potentially impeding the focus on practical solutions. This is particularly pertinent in large, heterogeneous societies where cultural, social, and economic disparities can exacerbate misunderstandings or conflicts.

Moreover, the open-ended nature of PT may result in divergent pathways that dilute efforts or create fragmentation within communities. Without effective mechanisms for dialogue and conflict resolution, the multiplicity of voices may hinder progress rather than facilitate it. This underscores the necessity for strategies that not only encourage diverse contributions but also foster cohesion and collective direction.

### **Addressing the challenges**

To navigate these challenges, it is essential to develop frameworks that balance the creative tension inherent in polyphony with the need for coordinated action. Initiatives that may mitigate these challenges are listed below.

1. **Facilitating inclusive dialogue:** creating spaces where all voices are heard and valued, ensuring that minority perspectives are not overshadowed by dominant ones.

2. **Developing collaborative skills:** equipping individuals with the abilities to engage in constructive dialogue, negotiate differences, and build consensus.

3. **Establishing shared goals:** identifying common objectives that align diverse interests, providing a unifying direction for creative efforts.

4. **Implementing ethical guidelines:** ensuring that the process of PT is guided by ethical considerations that promote justice, inclusivity, and respect for all participants.

Anticipating that although PT and polyphony may facilitate the forming of societies of the possible adopting these broad strategies may alleviate tensions that may be created when multiple ideas are shared.

## Practical limitations and technological inequalities in possibility thinking

While PT opens up creative pathways for imagining alternative futures, it is not without its limitations. The open-ended, speculative nature of PT may lead to an overemphasis on hypothetical scenarios that lack practical feasibility. Glăveanu (2020a) acknowledges that possibility studies require a balance between what is imaginable and what is actionable. In many cases, societies are constrained by economic realities, regulatory policies, and resource limitations that could hinder the implementation of bold, imaginative ideas. The gap between imaginative possibility and real-world application is a critical challenge for those advocating for PT while engaging with creativity and innovation in the context of societies of the possible.

In an age where technologies are increasingly complicated and interconnected (WOLFF, 2021), it must be noted that the integration of cutting-edge technologies such as AI and other methods as tools for fostering creativity and innovation to enhance PT is not universally accessible. The digital divide, both within and between countries, means that the affordances offered by such technologies are unevenly distributed, potentially exacerbating existing inequalities (WOLFF, 2021). It is thus important to recognise that while various scenarios can be envisaged using technology to engage with PT, the need to keep humans at the centre of the process is critical—particularly in limiting inequalities created by differing degrees of access to modern technologies.

Despite these challenges, PT remains a powerful catalyst for addressing global issues through enhanced civic engagement. In today's world, civic engagement must increasingly address global challenges such as climate change, inequality, and social justice. The integration of creativity, innovation, and PT into civic life can drive solutions that are both sustainable and socially equitable.

## Fostering renewal: the role of education and lifelong learning

Understanding and addressing the tensions inherent in PT and polyphony underscores the vital role of education in preparing individuals to navigate these complexities. Education and educational institutions are critical components of social development, as they are primary settings where future citizens are formed. The importance of creativity in the modern world has been recognised by many. The Organisation for Economic Co-operation and Development (OECD) has recently started to measure creative abilities in countries which take the standardised tests. By implication, this acknowledges the need to invest in creativity to facilitate its uptake by the younger generations. Building on this recognition, there is a pressing need to translate these insights into educational practices that actively cultivate creativity and PT among learners. Alongside this acknowledgement for more work to develop creativity, Mangion & Valqueresma (2022), argued for the need to engage with pedagogies of the possible. These strategies present a framework for education that emphasizes creativity, critical thinking, and the ability to envision alternative futures (Glăveanu, 2020a).

Moreover, the intersection of human agency and technological affordances even in educational settings plays a critical role in shaping lifelong learning experiences. It has previously been suggested that digital technology plays a unique role in enhancing students' creativity by offering new tools and settings for learning both how to be creative and how to learn through creative activities (Glăveanu *et al.*, 2019; Loveless, 2003). Digital platforms, for example, enable personalized learning pathways that cater to individual interests and needs, fostering both autonomy and collaboration. However, it is essential to recognize that these affordances are not neutral; they are shaped by social, economic, and cultural contexts that can either constrain or enhance creative potential.

The concept of “pedagogies of the possible” is grounded in the need for education to move beyond the transmission of established knowledge and instead empower learners to become active agents of change. By focusing on open-ended, non-linear, and future-oriented learning experiences, educators can help students develop the skills needed to navigate an uncertain world (Beghetto; Glăveanu, 2022). These skills—often referred to as 21st-century skills—include creative problem-solving, collaboration, and adaptability, all of which are essential for thriving in the fast-paced, digitally interconnected world of Industry 4.0 (OECD, 2020).

## Innovative pedagogies: potential and pitfalls

Glăveanu's (2020a) concept of “pedagogies of the possible” provides a forward-looking framework for fostering creativity in education. However, it is essential to recognize the potential pitfalls of these pedagogies when applied in diverse

educational contexts. For example, while open-ended and non-linear learning experiences can encourage creativity, they may also be overwhelming for students who are accustomed to more structured, traditional forms of learning. Educators must therefore be trained not only in facilitating creative learning but also in providing the scaffolding and support to students as they navigate these new pedagogical approaches (Epstein, 2018).

Additionally, as Mangion and Valqueresma (2024) note, the shift toward creative and future-oriented pedagogies must be accompanied by institutional support and policy frameworks that enable educators to implement these changes on a broad scale. Without adequate training, resources, and institutional backing, the risk is that innovative pedagogies will remain confined to a few progressive schools or privileged learning environments, leaving the majority of students in traditional, less adaptive educational systems. In light of these educational challenges and opportunities that face the global citizens of tomorrow, Lubart's (2017) 7 Cs of Creativity framework offers a comprehensive approach to understanding and cultivating creativity, which is particularly relevant in the context of the current VUCA. Moving on from educational contexts which provide the foundations for future societies, I turn to explore how creativity theory can be applied in practical contexts to benefit societies.

## The 7 Cs of creativity in the knowledge era

Creativity is a driving force behind societal advancement, enabling communities to envision and realize innovative solutions to complex challenges. Building on the foundational work of Mel Rhodes (1961) and his identification of the four Ps—person, process, product, and press—Lubart (2017) expanded the framework with the seven Cs of creativity. Lubart's (2017) framework provides a comprehensive lens through which we can understand and cultivate creativity at both individual and collective levels. Here I explore how the application of the 7Cs can facilitate the development of “societies of the possible”—societies that embrace potentialities and foster active civic engagement. Before delving into their application, it is pertinent to outline each of the 7 Cs to establish a foundational understanding of the framework.

Lubart's 7Cs framework encompasses the following components:

1. **Creativity:** The phenomenon of generating ideas or products that are both novel and valuable.
2. **Creators:** Individuals who engage in the creative process.
3. **Creating:** The cognitive and affective processes involved in producing creative work.
4. **Contexts:** The environmental factors—cultural, social, and physical—that influence creativity.
5. **Creations:** The outcomes or products resulting from creative efforts.



6. **Consumption:** The reception, interpretation, and utilization of creative products by others.

7. **Curricula:** Educational practices designed to develop and nurture creativity.

## **Linking the 7Cs to societies of the possible**

After outlining the 7Cs of Creativity as prescribed by Lubart (2017), I will go on to highlight areas that can cultivate creativity as a core value. By making creativity a fundamental societal value, communities encourage individuals to think divergently and challenge the status quo. This cultural shift fosters environments where innovative ideas are not only welcomed but expected, laying the groundwork for societies that are adaptive and forward-thinking.

## **Empowering creators**

Recognizing and supporting creators is essential for harnessing the full potential of a society's creative capital. Providing resources, mentorship, and platforms for expression empowers individuals to contribute meaningfully to civic life, enhancing their engagement and investment in communal outcomes.

## **Facilitating the creating process**

Understanding the mechanisms of the creative process allows for the removal of obstacles that hinder innovation. Societies can implement policies and infrastructures that provide time, space, and freedom for creative endeavours, thereby encouraging citizens to apply their creativity to civic issues.

## **Enhancing contexts for creativity**

Optimizing the contexts in which creativity flourishes involves cultivating environments that are inclusive, diverse, and supportive. Societies that value diversity of thought and experience create fertile ground for creative collaboration, leading to more robust and innovative solutions to societal challenges.

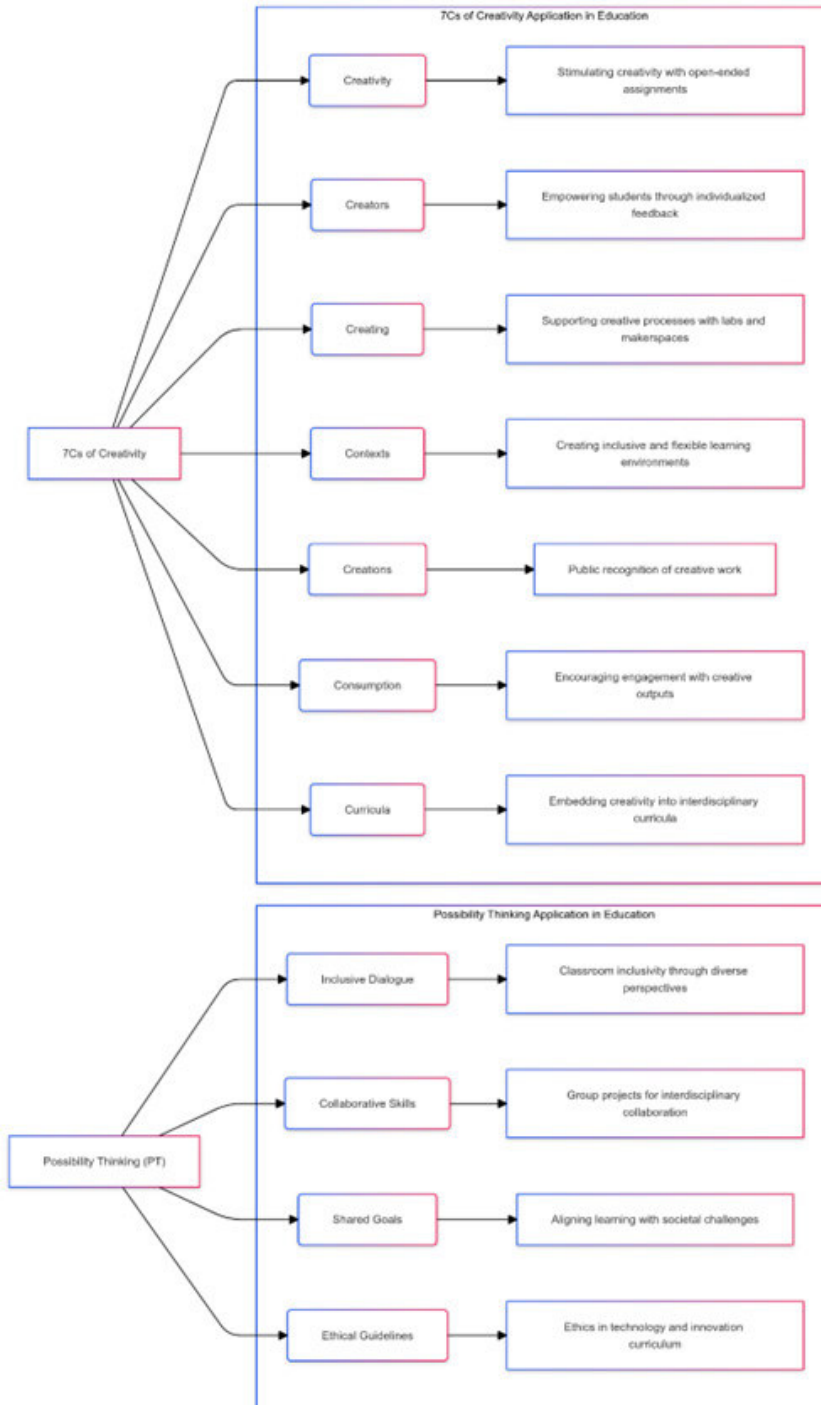
## **Valuing Creations**

Acknowledging and celebrating creative outputs reinforces their significance and encourages ongoing creative activity. Societal recognition of creative contributions enhances the perceived value of civic participation and inspires others to engage in creative problem-solving.

## **Encouraging consumption of creative works**

Promoting the consumption of creative products involves making them accessible and relevant to the broader community. By facilitating public engagement with creative works, societies can stimulate dialogue, raise awareness of critical issues, and motivate collective action.

Figure 1. An overview of how the 7Cs of creativity can facilitate possibility thinking.



## Integrating creativity into curricula

Embedding creativity within educational curricula equips individuals with the skills necessary for innovation and critical thinking. Education systems that prioritize creative development prepare citizens to navigate and shape the complexities of modern society actively. Facilitating societies of the possible involves creating communities that are open to new ideas, resilient in the face of challenges, and proactive in shaping their future.

Through a positive lens, I argue that by applying Lubart's 7Cs, creativity could become a societal norm that drives continuous improvement. Nurturing creators leads to a diverse pool of innovators, and supporting the creating processes results in a steady flow of novel solutions. Optimizing contexts removes barriers and fosters inclusivity, while valuing creations promotes a culture of appreciation and aspiration. Encouraging the consumption of creative works informs and engages the public, and integrating creativity into curricula develops future generations equipped to sustain and advance societal possibilities.

Building on this foundation, the 7Cs framework also serves as a catalyst for enhancing civic engagement. It encourages individuals to apply their creativity to communal issues, fosters collaborative efforts that unite diverse groups toward common goals, and promotes educational initiatives that emphasize civic responsibility alongside creative development. By integrating these elements, societies can inspire active participation and collective problem-solving, further strengthening community bonds and advancing shared aspirations. Lubart's 7Cs of Creativity provide a strategic approach to cultivating creativity within societies, ultimately leading to enhanced civic engagement and the realization of societies of the possible. Drawing these insights together, we can now consider how the interplay of PT, creativity, and innovation paves the way toward sustainable and inclusive futures, which we explore in the concluding section. Figure 1 shows an overview of the framework that can encourage civic engagement through education as we invest in future generations.

## Conclusion: harnessing creativity and innovation 4.0 for enhanced civic engagement and societies of the possible

In the face of today's pressing societal challenges—ranging from economic inequality and climate change to the rapid pace of technological advancement—creativity and innovation are now essential not only for economic growth but also for fostering civic engagement and addressing global issues. Our current VUCA environment, defined by volatility, uncertainty, complexity, and ambiguity, as well as the widespread proliferation of digital technologies, presents unique opportunities for transformative change. However, unlocking this potential requires more than simply adopting new technologies; it demands the active participation of creative, engaged citizens.

In conclusion, the integration of creativity, Innovation 4.0, education, the concept of “societies of the possible,” and the 7 Cs of Creativity provides a holistic framework for building societies that are both technologically sophisticated and socially inclusive. By adopting PT and fostering collaboration among individuals, communities can tap into their collective creativity to tackle complex societal issues. This approach shifts societies from passive consumers of technology to proactive architects of their futures, where creativity is the driving force behind not only economic development but also societal enrichment.

As we confront the complexities of the modern world, it is crucial to cultivate environments that nurture creativity and civic engagement. Through education, interdisciplinary cooperation, and a steadfast commitment to ethical values, we can co-create a future that is both technologically advanced and socially equitable. This requires a deliberate focus on aligning creativity and innovation with ethical considerations and the broader goal of societal well-being. By embracing these principles, we envision a future where societies actively shape technological progress to advance inclusivity, democracy, and sustainability, embodying the essence of truly transformative and possible futures.

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