



# Intermedial participatory culture: ludification and gamification for sustainable development<sup>1</sup>

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**ENG Abstract:** The research approaches civic engagement from the perspective of Intermedial Studies, shedding light on different strategies of ‘mediation’, the way people engage in civic practices and shape the public sphere in postdigital culture. The paper explores the evolution of civic webs, *living labs*, forms of meaningful play in ludified transmedia practices, and *serious videogames* as diverse media that can address the intersection of civic engagement and sustainable development. A focal point of the research is the role of intermedial participatory strategies to promote a sociocultural scenario sensitive towards United Nations’ Sustainable Development Goals (SDGs) related to urban planning, smart cities, and environmental issues. Building upon this starting point, the study extends to the transformative realms of transmedia storytelling and the difference between ludification and gamification, elucidating the main role of game-based public participation to fostering community engagement and eco-digital literacy. The paper supports the empowering potential of multiplatform, co-creative and experimental environments in advancing communal pursuits of sustainable goals in interconnected and *offline* contexts for sociocultural innovation.

**Keywords:** Climate crisis; game-based participation; intermediality; public engagement; serious games.

## ES Cultura participativa intermedial: ludificación y gamificación para el desarrollo sostenible

**Resumen:** La investigación aborda el compromiso cívico desde la perspectiva de los Estudios de Intermedialidad, arrojando luz sobre diferentes estrategias de “mediación”, la forma en que las personas participan en prácticas cívicas y contribuyen a la configuración de la esfera pública en la cultura posdigital. El artículo explora la evolución de las webs cívicas, los *living labs*, las formas de juego significativo en prácticas transmedia ludificadas y los *serious games* como medios para abordar la intersección del compromiso cívico y el desarrollo sostenible. Un punto fundamental de la investigación es el papel de las estrategias participativas intermediales para promover un escenario sociocultural sensible a los Objetivos de Desarrollo Sostenible (ODS) de las Naciones Unidas relacionados con la planificación urbana, las ciudades inteligentes y las cuestiones ambientales. Desde este punto de partida, el estudio se extiende a los ámbitos transformadores de la narración transmedia y la diferenciación entre ludificación y gamificación, dilucidando así el papel principal de la participación pública basada en juegos para fomentar el compromiso comunitario y la alfabetización eco-digital. El documento respalda el potencial empoderador de los entornos multiplataforma, co-creativos y experimentales para promover la búsqueda comunitaria de objetivos sostenibles en contextos interconectados y offline para la innovación sociocultural.

**Palabras clave:** crisis climática; participación *game-based*; intermedialidad; compromiso público; *serious games*.

**Summary:** 1. Introduction. 2. Intermedial forms of participatory culture. 3. Transmediality for social change: ludification and gamification. 4. Serious games and civic engagement in sustainable development. 5. Game-based public participation: from civic web to living labs. 6. Conclusions and challenges. References.

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## 1. Introduction

Intermediality implies the integration of different forms of representation and understanding about how the various material and technological media in which they are inscribed influence and complement each other to create new forms of expression and meaning. The phenomenon has applications in many fields where the combination and integration of various media can be effective in communicating and creating sociocultural experiences that are more meaningful. Each medium has its own characteristics and conventions, but they share common elements, and when used together, they help create multimodal messages with greater multisensory impact (Elleström 2020, pp. 3-91).

In spite of their differences, foundational studies in the field of Intermedial Studies, such as those formulated by Marshall McLuhan and Friedrich Kittler, are primarily concerned with intermediality as a process of mediation. Galloway (2012) has highlighted this focus on specific medial actions related to media transformation, such as storing, transmitting or distributing, that underscore processes of mediation over the media themselves.<sup>2</sup> Consequently, a medium facilitates mediation processes that expand the communication paradigm to a wide range of interdisciplinary fields.

Therefore, in this paper we consider intermediality a dimension of mediation where actions, performed via materials and technologies involve particular semiotic encoding and contribute to sharing experiences across knowledge areas, leading to encounters with others. In turn, this broadens the scope of intermedial inquiry. The interplay between media and its mediating dimensions includes crucial elements besides the nature of the material media, whether analogic or digital, and the languages associated to them (semiotic encoding). Aspects like distribution networks and their sociocultural significance, as well as economic and political factors are also important (Müller 2010). In this sense, both analogue and digital media need to be contemplated as agents that shape reality and, thus, active agents of power (López-Varela 2023). Indeed, in the realm of civic engagement, sociological studies link power structures with the mechanisms and processes that control the formation of semiotic knowledge systems. The dynamics of media mediation is also a force that shapes audiences.

With the advent of Web 2.0 and the User Generated Content (UGC), the terms and methods of being informed and involved in civic actions have suffered great transformations (Fernández-Castrillo 2014). The shift towards the “convergence culture” (Jenkins 2006) traverses various media platforms, greater interconnections between communication systems, diverse means of accessing media content, and increasingly intricate interactions between top-down corporate media and the participatory culture driven from the grassroots. However, in the discussions on media convergence as an agent of globalization, the role of power is often indirectly alluded: “Welcome to convergence culture, where old and new media collide, where grassroots and corporate media intersect, where the power of the media producer and the power of the media consumer interact in unpredictable ways.” (Jenkins 2006, p. 270). More explicit is the scholarship dedicated to explore the “digital divide” since the 1990s, including aspects such as low income levels, geographical restrictions, lack of motivation or access to use technology, digital illiteracy and so on (van Dijk 2020; Vassilakopoulou and Hustad 2023).

Just as written language is both shaped and has an impact on human cognition (Pegado 2022), the transformation from analogue to digital formats, defined by different patterns of multimodal interaction, has had a significant influence on communication, cognition and sociocultural exchange; aspects that also affect civic engagement. The Austrian sociologist Thomas Luckmann is perhaps best known for his collaboration with Peter L. Berger on the influential book *The Social Construction of Reality* (1966). In this work, the authors explored how individuals and societies construct their understanding of reality through social interactions. They examined how certain ideas, beliefs, and knowledge systems are legitimized and become part of the social fabric, emphasizing the role of routine interactions, language and communication in shaping social reality. In the context of digitalization, Luckmann’s 1989 work opens up a realm of inquiry on the impact of multimodal combinations on Intermedial Studies since there are specific patterns that –over the last two decades– shaped civic engagement with the emergence and the growth of participatory social media products.

One of the initial concerns when online technologies emerged for the public in the 1990s was the fear of losing relational space. Although online communities, blogs, Facebook, Twitter and other social platforms in the Web 2.0 connected a great number of people across large distances, the fact that physical contact was reduced also had consequences (Mitchell 1999). There were also concerns that the multiple globalized ties (Livholts and Bryant 2017) offered by these virtual communities masked a kind of networked individualism that instead of bringing people together, it separated them (Ong 1999). Other authors were worried that these technologies were contributing to colonize the confined spaces of the home, with individuals gaining access to the public sphere, thus blurring the public/private distinction (Cardoso and Castells 2006; for the concept of ‘public sphere’, Habermas 1962). Finally, there was also the question of globalization, with the assimilation

<sup>2</sup> For a recent comprehensive approach to intermediality, see Bruhn, López-Varela, and Paiva Vieira (2023).

of values between center and periphery, and migrants and individuals in diaspora becoming dependent on online communities to acquire a sense of belonging and attachment to others (Hardt and Negri 2000).

Civic engagement is premised on three fundamental individual and collective actions. Firstly, on the ability to acquire and process information relevant to formulating opinions about civic matters. Secondly, on the possibility of debating and voicing opinions and beliefs related to civic life within communities. Finally, civic engagement might also involve taking action in concert and/or tension with social institutions such as political parties, government, corporations, or community groups (Gordon, Baldwin-Philippi, and Balestra 2013). In the postdigital age, the impact of civic participation has increased from small actions that become part of larger social systems, shaping what has been termed “the civic web”. Gordon (2013) describes the civic web as an aggregate of tools and processes through which civic content is created and shared online. He added that the sharing of everyday civic actions becomes amplified, finding a greater echo.

Nowadays, civic engagement plays a pivotal role in advancing sustainable development, fostering a dynamic interplay between communities and the pursuit of environmental, social, and economic goals. At the heart of this relationship lies the United Nations’ Sustainable Development Goals (SDGs), a global agenda that outlines a comprehensive vision for a more sustainable future by 2030. Particularly relevant to the intersection of civic engagement and sustainable development are SDGs related to urban planning, cities, and environmental issues. Goals such as Goal 11: Sustainable Cities and Communities emphasize the importance of inclusive, safe, and resilient urban spaces, driving home the significance of civic participation in shaping the landscapes we inhabit. Moreover, environmental sustainability is intricately woven into various SDGs, including Goal 13: Climate Action, underlining the need for collaborative efforts in addressing climate change challenges (UNESCO 2017, BSP-2017/WS/1). As communities actively engage in decision-making processes, advocate for responsible urban development, and contribute to environmental conservation, they become catalysts for progress, steering societies towards a more sustainable and equitable future.

This paper delves into the multifaceted relationship between civic engagement and sustainable development, navigating through various interconnected sections in the postdigital age. First, it explores the realm of intermedial forms of participatory culture, unraveling the ways in which diverse media platforms shape and influence civic involvement through sociocultural practices. The discussion then extends to the innovative concepts of transmedia storytelling and the relation between ludification and gamification, examining their roles in fostering engagement and understanding within communities through meaningful play. The research explores the realm of game-based participation, serious games, and their impact on civic engagement in sustainable development, shedding light on the potential of gamification as a tool for meaningful involvement. Additionally, it scrutinizes civic webs and living labs, offering insights into digital spaces and experimental environments that empower communities in the pursuit of sustainable goals. Each section contributes to a comprehensive exploration of the intricate connections between civic engagement and sustainable development, offering a nuanced understanding of the evolving dynamics in this crucial intersection.

## 2. Intermedial forms of participatory culture

In the last two decades, civic engagement has shifted from isolated actions to a collaborative and networked participation. Social Networking Services (SNS) have changed the individual’s experience of the public sphere by sharing, liking, replying to other’s proposals or playing with them. Civic engagement can be seen to play a pivotal role in challenging centralized powers and conventions, offering diverse perspectives on sociocultural and political issues. The main forms of participatory culture involve innovative and creative sources (*crowdsourcing*) or economic support (*crowdfunding*) to specific civic actions through intermedial strategies that involve civic webs, living labs, and meaningful play.

Conventional narratives and established norms are disrupted within this partly decentralized landscape. New spaces for diverse voices, alternative viewpoints, and grassroots movements foster a more pluralistic civic discourse. This has been evidenced, for instance, on how online social networks have contributed to undermine repressive and authoritative regimes, as seen in the impact of social media in the Arab Spring (2010-2012). Another early example was the crowdsourcing Ushahidi platform –meaning “testimony” in Swahili–, developed and launched in 2008 in response to the post-election violence in Kenya. It aimed to provide a real-time, interactive map of the unfolding events to help, both local and international communities, understand the extent and locations of the violence. Since its initial deployment, this not-for-profit open-source application has evolved and been used in various contexts worldwide for crisis mapping, disaster response, election monitoring, and other applications, as the 2020 Southeastern Mexico floods.

The coordinating efforts of volunteer organizations have also delivered aid in different contexts through online collaborative initiatives. Cooperatives and eco-villages have also sought a balance between production and consumption, and a fairer share of resources within the United Nations framework for Sustainable Development (UNESCO 2017, BSP- 2017/WS/1). Online communities of transnational social movements, such as the pioneer Avaaz –meaning ‘voice’ in several European, Middle Eastern and Asian languages–, was launched in 2007 with the mission of organizing citizens of all nations to close the gap between “the world we have and the world most people everywhere want”, claims their website. Among their numerous actions, in 2023, Avaaz published an influential position paper addressed to governments, international financial institutions, and civil society to denounce the violence against biodiversity and the rights of indigenous peoples and local communities (Avaaz 2023).

Similar organizations support regional, national and transnational issues that range from corruption and poverty to conflict and climate change. For the last two decades, campaigns are being disseminated in

multiple languages over six continents, involving funding actions, the signing of petitions, emailing, calling and lobbying governments, and organizing protests and information events. Among the increasing number of social platforms for social change, Change.org is still the most popular website. Since 2007, it has gathered a community of nearly 500 million users (Smith 2023) to create and sign petitions, and also provides financial support to help members and organizations to advance their causes.

However, the effectiveness of online petitions is still questioned by “the slacktivist hypothesis”, since

Online hash tagging, liking a webpage, or changing a social media account logo, while symbolically meaningful to the movement’s base, is far less effective than offline community outreach (e.g., membership drives that rally new activists to join the movement) and real-world political action (e.g., rallies, boycotts, and strikes) (Ralston 2022, p. 1).

Therefore, in the postdigital age, the relevance of intermedial practices to combine online and offline actions through creative initiatives remains essential. The convergences between the analogical and digital contexts open new epistemic frameworks to enhance and update the dynamics to promote a participatory culture through transmedia strategies.

### 3. Transmediality for social change: Ludification and gamification

Fan-driven engagement offers some relevant examples of civic activism based on transmedia storytelling that may reinforce a sense of community with origin in real-world mobilizations (Srivastava 2009; Jenkins 2013). Transmedia practices have proliferated throughout the entertainment industry as “a process where integral elements of a fiction get dispersed systematically across multiple delivery channels to create a unified and coordinated entertainment experience” (Jenkins 2007, n.p.). At the same time, it has also been adopted by activists to strategically borrow, remix, and gain visibility across media platforms as a catalyst for collective identity formation and mobilization (Brough and Shresthova 2012). As Baym and Boyd suggest, “offline contexts permeate online activities, and online activities bleed endlessly back to reshape what happens offline” (2012, p. 327). The term “transmediality” is often attributed to media scholar Henry Jenkins in his 2003 *Technology Review* column and published some years later in the chapter “Searching for the Oragami Unicorn: The Matrix and Transmedia Storytelling” in *Convergence Culture* (Jenkins 2006). It refers to a narrative process “[...] where integral elements of a fiction get dispersed systematically across multiple delivery channels for the purpose of creating a unified and coordinated entertainment experience. Ideally, each medium makes its own unique contribution to the unfolding of the story” (Jenkins 2003). This approach allows for a more immersive and expansive storytelling experience, engaging audiences through various media channels such as films, television, books, comics, video games, and more. In fact, in the third decade of the 21<sup>st</sup> century, the role of UGC is an essential characteristic of transmedia projects, an imperative condition<sup>3</sup>.

Back in 2009, Jenkins highlighted that transmedia storytelling facilitates explanations about events that require engagement and inspires forms of co-creation and action to promote civic engagement (Jenkins 2016). In a similar context, Gordon (2013) had alluded to the possibility of including role-play and other elements and principles of gamification to non-game contexts. A ludic dimension possible thanks to the convergence of intermediality, virtuality, interactivity, and connectivity creating a game-experience (Frissen et al. 2015). In consequence, the importance of game dynamics through transmedia strategies for social change, together with the role of game-based learning (GBL) in formal and informal education represent a big opportunity to promote civic engagement. Therefore, the present research is focused in the process of implementing enjoyment mechanisms through gamified strategies in non-game systems.

As Kirkpatrick (2015) sustains, the terms “ludification” and “gamification” are often interchangeably understood. The ludification is connected to intermediality through transmediality and to gamification and it has its own defining elements as stated by Deliyannis et al.: “[...] gamified applications are nongame structures and objects using specific game components, while ludified applications are nongame story structures and story objects focusing not just on motivation, feedback, and reward but on ways of designing, developing, and storytelling in new modes and digital media” (2023). Walther and Larsen identify the essence of ludification through its transmedia essence and its ludic dimension:

[...] we understand ludification as a concept that uncovers how storytelling across media, tv series and movies, integrate computer game structures in their narrative composition. We propose the term ludification, rather than transmedia, because the question is not just how stories migrate between different media, but rather, and more specifically, how games influence a host of different media [...]. To clearly separate gamification from ludification we propose the following definition of ludification as the use of game design elements in non-game contexts with a special emphasis on ‘ludifying’ story structures and story objects residing in (linear) stories. (2020, p. 125-126)

On the other side, the term “gamification” is often used to define the process in which the use of video game elements helps to engage and motivate users to accelerate learning (Bogost 2014). Expressions such as “gameful design” or “applied game” (Schmidt, Emmerich, and Schmidt 2015) are applicable to many

<sup>3</sup> As director of the “International Conference on Transmedia Activism: Creativity & Expanded Information”, Fernández-Castrillo introduced the leading role of UGC in transmediality together with Scolari. The event was co-organized by University Carlos III of Madrid (UC3M), the Venice Centre for Digital and Public Humanities and Istituto Italiano di Cultura-Madrid (22<sup>nd</sup> February 2022 –UC3M & IIC Madrid, Madrid–). (Fernández-Castrillo and Cirio 2022; Scolari 2022).



different contexts, as well as the adjectives “gamified” or “gameful” (McGonigal 2015). However, we must notice that the reward system is usually an essential element to distinguish gamified structures from ludified ones. In fact, the authors of the present paper believe that ludification is closer to their definition of intermedial forms of participatory culture, as it concerns the design of new storytellings with the presence of game elements, without focusing necessarily on rewarding, feedback or progress.

It is important to underline that in “meaningful play” the sense of the game “emerges from the relationship between player action and system outcome” (Salen and Zimmerman 2004, p. 34), a form of engagement that combines participation with the act of reflection. Gordon and Baldwin-Philippi sustain that “civic learning” is “[...] a form of engagement that combines participation with the act of reflection [...] Civic learning happens when participants trust that there is power in their opinion and that someone is paying attention” (2014, p. 760). And to research this further, in 2010 Gordon established the Engagement Game Lab at Emerson College –currently called The Engagement Lab–, one of the first labs that focused on developing and researching games and other forms of digital media for social impact. Since then, the lab has reached a leading position in the space of civic media by developing co-creative interventions with local institutional and community stakeholders directed towards advancing peace, equity, and justice through collaborative storytelling, research, and game design.

In the case of promoting sustainable development, it may be useful using game design to make tasks or activities more engaging and enjoyable, with the goal of motivating and influencing people to participate in civic processes.

#### 4. Serious games and civic engagement in sustainable development

In the context of civic engagement, it is crucial to recognize that while the world grapples with challenges like pandemics, geopolitical conflicts, and economic disparities, the most pressing threat to humanity remains global warming and climate change (UNDP 2021; CIS 2022). Even in the midst of these other crises, the importance of addressing climate change cannot be overstated. To address this challenge political and economic actions of an unprecedented magnitude are required. The primary obstacle is not a lack of scientific consensus; everyone is aware of what needs to be done, but there is an absence of a unifying, strategic narrative that inspires collective action (Moreno 2022; Fernández-Castrillo and Magallón 2023). It has been recognized that narratives play a pivotal role in making sense and shaping social organization. The emergence of climate change science fiction –known as Cli-Fi– has provided textual narratives and films that depict the intricacies of the Anthropocene (Goodbody and Johns-Putra 2018). However, these narratives often limit the agency of characters, as their actions are predefined by the author. Interactive ludic narratives may offer advantages for they allow more immersive experiences where participants actively influence the outcome, thereby enabling learning and shifts in consciousness, potentially leading to transformative changes in attitudes and pro-social actions in the real world. Persuasion is another aspect that needs to be taken into consideration when confronting ideologies predisposed to reject climate change. Interactive scenarios can expose faulty premises by means of feedback mechanisms.

Several types of serious and educational games, spanning various genres, aim to raise awareness about environmental issues by leveraging interactive experiences to educate players about real-world environmental challenges (Ouarachi et al. 2018; Douglas and Brauer 2021). “God simulations” or “sandbox games,” like *SimCity* series (1989-2015) and *Cities: Skylines* (2015), allow players to act as urban planners, influencing the development of a virtual city. Players assume the role of a deity or a powerful entity with God-like powers by creating and building elements within the game world –cities and ecosystems–, managing resources or controlling the pollution to achieve their goals. Conversely, players can also unleash destruction or disasters upon the world through simulation-based practices.

One of the first examples of the conjunction between serious games and civic engagement in sustainable development was *SimEarth*. Developed by Maxis in 1990, it was one of the most ambitious projects in climate game design. It was a sandbox game that offered a dynamic simulation of an entire planet, modelling processes such as the formation of continents –i.e. continental drift, axial tilt, etc.–, climatic conditions –i.e. heat, rainfall, wind and air currents, or sea temperatures–, the emergence of life, of sentient creatures, each having a significant impact on the planet’s fate. *SimEarth* also emphasized the interconnectedness of all life forms and systems, showing that even minor alterations to the atmosphere and geosphere could have catastrophic consequences. The inspiration came from James Lovelock’s concept of “Gaia”, from his 1979 book *Gaia: A New Look at Life on Earth*, where Lovelock proposed that the Earth was a living homeostatic entity. *SimEarth* was able to engage players emotionally, thus becoming a powerful immersive tool that encouraged actions to solve environmental challenges.

On the same line, *The Civilization series* (Civ) are strategy pioneering video games, first released in 1991 and designed by Sid Meier. There are six main games in the series, a number of expansion packs and spin-off games, as well as board games. Up until *CivVI* (2016), the game primarily focused on the development of civilizations from ancient times to the modern era while touching on various aspects of human history, including technology, culture, diplomacy, and war. *Civ VI* titled “Gathering Storm” introduced specific aspects of the impact of climate change and the accumulation of greenhouse gas emissions with a direct impact on global warming, which in turn triggered floods, fires, desertification, deforestation, and other environmental disasters. Designers implemented mechanics where players could reduce this impact –i.e. nuclear and hydro power plants and recycling centre–. The progress of global warming is indicated by a sun icon, changing from

dark red to light red, yellow, and white in order of severity. The game shows that human civilization inexorably affects the earth's course and that many of the effects cannot be anticipated.<sup>4</sup>

In this genealogy of the application of gamification to promote pro-environmental behaviours, we also find *Climate Challenge*, an online game created by the British Broadcasting Corporation (BBC) in 2006. The game seeks to educate players about the complexities of addressing climate issues on a political level by making policy decisions related to energy, economy, and the environment. *Fate of the World* (2011) is a strategy game that simulates global environmental and political challenges. The climate forecasting models in the game were developed by Myles Allen, head of the Climate Dynamics group at the University of Oxford.

Games that emphasize exploration and adventure can also incorporate environmental themes. *Eco* (2018) is a multiplayer survival game created by American studio Strange Loop Games in cooperation with the University of Illinois. It was partially crowdfunded with early access for secondary schools. *World Rescue* (2019) is a narrative, research-based video-game inspired by the Sustainable Development Goals of the United Nations. It is set in Kenya, Norway, Brazil, India, and China, and the purpose is to engage players into taking on the role of a UN agent and work to address global challenges.

*Ori and the Blind Forest* (2015) or *Horizon Zero Dawn* (2017), also explore the relationship between nature and technology. Survival games like *The Long Dark* (2014) or *Green Hell* (2019) can incorporate environmental challenges as part of the gameplay. *Tree Story* (2015) or *Viridi* (2015) encourage players to engage with virtual ecosystems, fostering a sense of responsibility for the well-being of virtual plants and environments. *ABZÛ* (2018) was developed by Giant Squid for several devices and consoles. Drawing from Sumerian mythology and the myth of the cosmic ocean, it allows the player to navigate underwater environments exploring fish behavior, vegetation etc. *Journey to the Savage Planet* (2020), by Typhoon Studios, also includes ecological storytelling, fostering awareness of the beauty and fragility of nature.

A significant aspect of serious games is the combination and simplification of scientific knowledge with an entertaining and experiential learning opportunity. The future scenarios presented in these games serve to assess the effects of decision-making, demonstrating environmental damage in a risk-free environment. They also incorporate social circumstances for they serve to engage the mediation of the social sphere, not only representing truth claims in static, authoritative ways, but also comprising dynamic, open-ended processes that reflect the complexity of adaptive systems. Playful simulations have the potential to transcend political barriers and convince individuals of varying sociopolitical persuasions. Storytelling, especially in the form of gaming, has been thought-provoking and effective in breaking through scepticism and motivating action.

In the context of civic engagement, these discussions emphasize the potential of games to, not only educate and inform, but also to inspire active participation and discussion around pressing environmental issues by stimulating eco-digital literacy. Games provide interactive experiences that promote a deeper understanding of the issue and encouraging informed and thoughtful engagement and action with real-world challenges, making issues more accessible to broader audiences.

## 5. Game-based public participation: from civic web to living labs

The proliferation of online content has had great impact on the dynamics of sustained attention (Franck 2018) and engaging individuals in a task or activity can lead to heightened interest and increased motivation to participate (Csikszentmihalyi 1990; Fredricks et al. 2004; Deterding et al. 2011). Engagement, therefore, is not only a buzzword, but a well-established concept supported by research across various disciplines, and its dynamics is intertwined with processes of ludification.

At the beginning of Web 2.0, the role of civic webs was essential in promoting a participatory culture by encouraging offline communities to take complex decisions on hundreds of economic, social and environmental aspects in order to guarantee a prosperous future. A good example is the decision-support software *CommunityViz*, a platform that since the late 1990s helps people make decisions about development, land use, transportation and allows them to visualize environmental impacts and simulate costs. For instance, in 2008 it was used in Utrecht for planning a "green" neighborhood in Rijnenburg, an agricultural polder on the southwest side of the city. This successful project was followed by other initiatives, such as the sustainable energy strategy of the city of Arnhem, also in The Netherlands, which included a game to reduce CO2 emissions for the area by 20%.

One of the first examples of ludification for civic engagement was *CrowdCity*<sup>5</sup>, a user-generated civic web that featured transmedia content to encourage ideas, different views and critical analysis on local issues. The final result was a picture of the future city generated by the interaction of opinion leaders, urban advocates, journalists, bloggers and everyday people. *Community PlanIt* (CPI) is a reference case of gamification for civic learning, an interactive online game for local engagement designed by the Engagement Lab at Emerson College in 2011. This multiplayer, mission-based game was conceived to take place over three to five weeks, wherein players are asked to participate in practices of deliberation to solve problems according to their own views and as characters. In the frame of a public discussion, they compete for points and influence. The more points one accumulated, the louder his or her voice was in defining the community's values and at the end of the game, the three top causes received real funding to make their project a reality. Finally, players were invited to an offline meeting to plan next steps together with other members of their community.

<sup>4</sup> For more detailed information on *SimEarth* and *The Civilization series (Civ)*, see Makai, P.K. (2023).

<sup>5</sup> Not to be confused with the Nintendo Switch and Android videogame *CrowdCity.io* (2023).

These blended models can be also connected to the concept of “living lab” introduced by William J. Mitchell to define a research methodology for the exploration and co-creation of innovative ideas to solve real life cases in which intermediality, ludification and gamification were involved. As director of the Media Lab’s Smart Cities research group at MIT, in 2010 he formed the first US-based living labs research consortium along with Kent Larson and Sandy Pentland. Since then, scholarly studies provide a large number of definitions (Ballon and Schuurman 2015). For instance, the European Network of Living Labs (ENoLL) defines them as “user-centred open innovation ecosystems based on a systematic user co-creation approach, integrating research and innovation processes in real- life communities and settings” (cit. in Ruijsin and Smith 2016, n.p.). Hossain, Leminen, and Westerlund identify “[...] eight key characteristics of living labs: (i) real-life environments;

(ii) stakeholders; (iii) activities; (iv) business models and networks; (v) methods, tools and approaches; (vi) innovation outcomes; (vii) challenges; and (viii) sustainability” (2019, p. 985). And for future studies they also suggest that “[...] a comprehensive exploration of the relationship between structures and users in living labs as a context for user participation from the co-creation perspective is necessary” (p. 986).

Living labs are effective tools to promote intermedial strategies to address the challenge of climate change and global sustainability through ludification and gamification (Picó, Galán-Cubillo, and Sáez-Soro 2021; Brohmer et al. 2023) to promote co-creative strategies for civic engagement. Scholars recognize that ludification involves both physical interaction with game elements and the cognitive process of interpretation and meaning- making. Calleja (2011) distinguishes between micro-involvement and macro-involvement. Micro-involvement pertains to the moment-to-moment engagement during gameplay. On the other hand, macro-involvement encompasses activities that occur between sessions, such as contributing to communities, devising strategies, and so on. This extended participation often involves various forms of engagement with other media, repurposing content in other media such as comic books, short stories, or video recordings. These forms of transmedia storytelling deepen engagement with the storyworld and its associated communities (fan fiction, etc.).

Multi-platform accessibility is also needed in driving civic engagement ludification. Responsive design ensures that users can seamlessly engage with gamified civic activities contributing to drive particular socio-cultural (Goldschmitt and Seaver 2019) and political (Bucher 2018) aspects. In that sense, the interface is crucial, particularly in the context of ludification in civic engagement. A well-designed interface enhances the overall user experience (UX), making it more intuitive, engaging, and enjoyable. Accessibility is also fundamental in civic participatory initiatives, promoting inclusivity and diversity. A clear and transparent interface helps users understand how their actions contribute to civic goals, what rewards they can earn, and how their participation affects the community.

Human interactions offer media producers valuable information on how to personalize future experiences (Cheney-Lippold 2017). In the case of gamification, elements like progress bars, badges, and interactive features are part of the interface design that can motivate users. These design elements visually represent achievements, milestones, and progression, contributing to a sense of accomplishment and encouraging continued participation. Feedback mechanisms keep users informed and engaged, reinforcing the connection between their actions and the overall civic engagement initiative (Citton 2017).

However, as with other forms of e-participation (Hassan and Hamari 2020), civic engagement becomes a highly individualized experience, tailored to specific preferences as users continue generate inputs –likes, commentaries, shares etc.–. Without being fully aware of the consequences of individual forms of participation, our clicks, likes and posts become part of the community narrative once they are shared online. Ludification can be also used to collect valuable data on civic engagement patterns. By tracking and analysing metrics, organizers can gain insights into participants’ preferences, behaviours, and areas for improvement in civic engagement initiatives. Many ludified platforms include prompts or messages encouraging users to take specific actions. These can take the form of a “Sign the Petition” or a “Donate” button, a link to share a post, an image with a link related to a particular civic activity, or a documentary with audio-visual testimonials that transform audiences into witnesses, seeking to encourage further engagement and volunteer opportunities, through the sharing of emotional content.

In the context of civic engagement, the participatory nature of gaming can serve as a model for active involvement in social and civic activities, fostering a sense of belonging, collaboration, and shared purpose among participants. Ludification and gamification can foster a sense of community and social connection. By turning civic engagement into a shared experience, people can collaborate, compete, and interact in ways that strengthen community bonds. This can contribute to a more vibrant and connected society.

## 6. Conclusions and challenges

In summary, this paper has traversed a diverse landscape of interconnected sections, clarifying the symbiotic relationship between civic engagement and sustainable development. Commencing with an exploration of intermedial forms of participatory culture, the paper has illuminated the influential role of various media platforms in shaping and enhancing civic involvement. Building upon this foundation, the examination has extended to the transformative realms of transmedia storytelling and the difference between ludification and gamification, elucidating their contributions to fostering community engagement and comprehension. Delving into the gamified sphere, the discussion has unraveled the significance of game-based participation and serious games as potent tools for meaningful civic engagement in sustainable development. Furthermore, the paper has scrutinized civic webs and living labs, spotlighting the empowering potential of digital spaces



and experimental environments in advancing communal pursuits of sustainable goals. Collectively, these sections offer a nuanced and comprehensive understanding of the intricate dynamics that define the evolving intersection of civic engagement and sustainable development, underscoring the diverse pathways through which communities can actively contribute to a more equitable and sustainable future.

In concluding this exploration of the intricate relationship between civic engagement and sustainable development, it is imperative to acknowledge the contemporary challenges posed by the rapidly evolving technological panorama. The advent of technologies like deepfakes introduces new hurdles, amplifying the potential for misinformation and manipulation of media, thereby shaping public perceptions and influencing decision-making processes. The spread of misinformation not only erodes trust in institutions but also distorts public discourse, impacting the democratic fabric of society. With the intensified challenges brought by Virtual Reality (VR) and Artificial Intelligence (AI), discerning between authentic and manipulated content becomes increasingly difficult, blurring the line connecting reality and fabrication (Fernández-Castrillo, 2023; López-Varela 2024). As we navigate this intermedial dissolution, it is crucial to address the impact of fake news within the context of emerging technologies, necessitating a multifaceted approach involving digital literacy, technological counter-measures, and a vigilant public to safeguard democratic principles underpinning civic engagement. Furthermore, consideration of potential challenges and ethical considerations associated with ludification, such as the risk of superficial engagement and issues related to fairness and inclusivity, is paramount. Navigating this evolving media landscape requires a subtle understanding and a steadfast commitment to media literacy, ensuring that civic engagement remains informed, inclusive, and resilient amidst changing communication dynamics in a co-creative sociocultural landscape.

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