Through the Mirror: A Serious Game for Interspecies Amiable Cohabitation and Urban Reimagining

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ABSTRACT: This study presents „Through the Mirror", a narrative-based serious game developed on the Graveler platform, designed to engage players in ethical reflection, symbolic transformation, and real world ecological action. Set in a winter version of Kassel, the game unfolds across three distinct narrative worlds. Players begin in a hostile urban environment, navigating hunger and suspicion while encountering NPCs who question their presence and worth.

A pivotal revelation occurs when the player looks into a glowing mirror and discovers they are not human, but a raccoon -one historically commodified and now legally exterminated in many European cities. This identity twist invites the player to wake up into a second world, where they are summoned by a mysterious deity to the temple within a Gothic castle. There, they are entrusted with the mission of reimagining the city through humane coexistence strategies: raccoon cafés, safe waste systems, and educational diplomacy. The final world shifts to meta-reflection, naming the player "steward of creation" and asking for real-world action – evidence of workshops, posters, or donations in support of urban wildlife.

Drawing on theories from environmental ethics, symbolic learning, and game-based pedagogy, the game merges poetic storytelling with civic engagement. Early playtests indicate that the combination of narrative twist, spiritual framing, and ecological realism fosters deep emotional impact and ethical awareness.

The study argues that such games can serve as valuable educational tools and invitations to empathy and interspecies responsibility.

KEYWORDS: serious games, ecological action, immersive narrative, human as steward of creation, interspecies.

TITLU: „Through the Mirror: un joc serios pentru coabitare amiabilă cu alte vieţuitoare şi reimaginarea spaţiului urban"
REZUMAT: Acest studiu prezintă „Through the Mirror" („Prin Oglindă"), un joc serios cu bază narativă, dezvoltat pe platforma Graveler, conceput pentru a implica jucătorii într-un proces de reflecţie etică, transformare simbolică şi acţiune ecologică în lumea reală. Amplasat într-o versiune de iarnă a oraşului Kassel, jocul se desfăşoară în trei lumi narative distincte. Jucătorii încep într-un mediu urban ostil, confruntându-se cu foamea şi suspiciunea, întâlnind mai multe NPCs care le pun sub semnul întrebării prezenţa şi valoarea. Un moment de revelaţie are loc atunci când jucătorul priveşte într-o oglindă strălucitoare şi descoperă că nu este om, ci raton — o fiinţă istoric instrumentalizată şi, în prezent, supusă exterminării legale în multe oraşe europene. Această răsturnare identitară îl conduce pe jucător către o a doua lume, unde este chemat de o divinitate misterioasă la templul aflat într-un castel gotic. Acolo, primeşte misiunea de a reimagina oraşul prin strategii de coexistenţă om-raton: sisteme sigure de securizare a locuinţelor, gestionare a deşeurilor, iniţiative educaţionale de diplomaţie urbană şi cafenele cu ratoni. Ultima lume introduce o dimensiune de meta-reflecţie, conferindu-i jucătorului titlul de „administrator al creaţiei" şi solicitând acţiuni concrete în lumea reală — dovezi ale organizării de ateliere, realizării de postere sau efectuării de donaţii în sprijinul faunei sălbatice. Fundamentat pe teorii din etica mediului, învăţarea simbolică şi pedagogia bazată pe joc, Through the Mirror îmbină povestirea poetică cu angajamentul civic. Testele iniţiale indică faptul că această combinaţie de răsturnare narativă, încadrare spirituală şi realism ecologic generează un impact emoţional profund şi o conştientizare etică sporită. Studiul susţine că astfel de jocuri pot funcţiona ca instrumente educaţionale valoroase şi ca invitaţii la empatie şi responsabilitate faţă de celelalte vieţuitoare.

CUVINTE-CHEIE: jocuri serioase; acţiune ecologică; naraţiune imersivă; omul ca administrator al creaţiei; interspecii.

Introduction

This paper presents the design and pedagogical goals of a narrative-based serious game developed on the Graveler platform (Körner et al. 2024). Titled Through the Mirror, the game explores the alienation and transformation of urban identity, drawing on narrative symbolism, environmental ethics, and real-world wildlife conflicts.

The player begins in a wintry European city, hungry and anonymous, navigating alleyways and speaking to strangers who react with suspicion, coldness, and at times discomforting familiarity. As the player searches for food and shelter, they hear unsettling comments that suggest both commodification and exclusion. City officials mention population control and dangerous animals. The mood is uneasy, yet familiar. Some NPCs say: "Your hair is beautiful. It would fetch a high price."; "Go away! This chicken is not for you!"; "You should go back to where you came from. You were born here, but that doesn't mean you belong." As rumors circulate about extermination campaigns and unwanted creatures, the player eventually encounters a glowing mirror. Entering it, they see their reflection for the first time—and suddenly everything is starting to make sense.

1. Theoretical Framework

The narrative and mechanics of Through the Mirror rest on an interdisciplinary convergence of environmental philosophy, learning theory, and game design studies. Three key frameworks structure the game's approach.

1.1. Environmental Ethics and Multispecies Coexistence

Drawing on Donna Haraway's notion of "making kin" and staying with the trouble (Haraway 2016) as well as Anna Tsing's emphasis on collaborative survival (Tsing 2021), the game destabilizes anthropocentric paradigms by inviting players to experience urban space through the perspective of a marginalized non-human species. The player's transformation into a raccoon dramatizes questions of belonging, otherness, and ecological citizenship.

1.2 Symbolic and Transformative Learning

Inspired by philosophical pedagogy (Freire 2017) the game withholds the player's identity in order to cultivate a reflective break in experience. The mirror functions not only as a plot device but as a pedagogical symbol: it marks a liminal threshold between perception and self-knowledge, generating affective and ethical insight through gameplay. Inspired by Freire's notion of education as a process of conscientização—awakening critical awareness through experience—the game invites players to see the world (and themselves) anew, not through direct instruction, but through discomfort, revelation, and ethical challenge.

1.3 Game-Based Learning and Activism

Following the work of scholars such as James Paul Gee (2003) and Ian Bogost (2007), the game mobilizes narrative disruption and moral agency to foster empathy, critical thinking, and civic commitment. By concluding with a real-world task—proof of activism submitted into the game itself—the player's ethical learning arc is extended into material engagement with environmental justice. To play is a form of being human (Sicart 2017).

2. Game Description

2.1 Structure and Plot Progression

World 1 – City of Snow (Anonymity and Alienation) The player begins in wintertime Kassel, with no context except a vague hunger and cold. From a top-down orthographic view, they walk through snow-covered streets, attempt to steal food, and interact with NPCs who grow increasingly perturbed or cruel. The environment becomes symbolically heavier as the narrative leads to a glowing mirror. Upon entering it, the twist unfolds: the player sees their true reflection—a raccoon.

World 2 – The Call to Harmony (Revelation and Reconstruction) After the player "reached a teleportation spot" and came back to the real world, a new message appears: "The deity watched as you endured the city's gaze. She saw your confusion. She felt your pain. Now, because your soul was moved, she calls you to the temple within the castle. There, your mission begins."

The player awakens in a summer version of Kassel. Hints of magic and potential restoration are in the air. The castle looms, not with threat but with quiet invitation. Inside the temple, a divine, mysterious figure awaits. This deity, cloaked in grace, speaks in symbols and entrusts the player with a mission: redesign the city for coexistence between humans and raccoons.

Gameplay now shifts toward building and diplomacy: constructing raccoon cafés where food is shared, not fought over and where people can get to know the friendly nature of raccoons who are currently being rehabbed; designing raccoon- friendly architecture and trash systems; launching non-lethal sterilization and rabies-prevention programs; mediating community tensions and challenging fear with facts, and so on. The deity does not give direct orders but rather riddles, reflective tasks, and glimpses into the city's possible futures.

World 3 – The Steward's World (Meta Reflection) In the final phase, the divine voice no longer speaks to the character, but to the player themselves. She now names them "the steward of creation." The mission becomes real: players must complete an act of ecological solidarity outside the game—a poster, donation, workshop, or other creative intervention. They must then submit evidence into the in-game AI altar—a symbolic interface bridging virtual narrative and tangible action.

This phase reveals the ultimate mirror: society itself, in which any of us may be deemed invasive or unnecessary. But the player—now named steward—is asked to be different and fulfil their role.

2.2. Visual and Artistic Design

The design of *Through the Mirror* supports its pedagogical and narrative ambitions through carefully selected visual cues, symbolic environments, and emotionally expressive palettes. The game employs a top-down orthographic perspective—not only a classic RPG convention, but also a symbolic device. This viewpoint echoes the disoriented field of vision of a raccoon navigating a human-designed world, unaware of its perceived otherness.

Rather than adopting a nostalgic or arcade-like visual tone, the game is crafted in a refined pixel-art aesthetic—a minimalist but emotionally charged style. The textures are soft-edged, the colors deliberately chosen, and the com- positions symbolically meaningful. Visual elements are not decorative, but didactic—every detail invites reflection.

World 1 is composed in cold whites and greys, conveying themes of exclusion and confusion. The city is covered in snow, with empty benches and eerily quiet public spaces. Even playful winter elements—igloos, snowmen—feel distant and abandoned. The Gothic castle looms, its presence imposing. When the player discovers the glowing mirror, its crystal-like blue light offers a moment of stillness before revelation: the player's true form is a raccoon. This shift is presented through a quiet reflection scene, enhancing the emotional resonance.

World 2 contrasts sharply, using greens, gentle blues, and warm earth tones. The environment becomes more open and alive, with gardens, water, and animal presence. The castle reappears in softened Gothic form—no longer cold and unreachable, but tranquil and symbolic. This transformation reflects the shift in player identity and agency: from hunted outsider to potential mediator of coexistence.

World 3 is still a work in progress and therefore not yet disclosed. Inter- face elements are elegantly designed: text boxes are centered, dark-indigo frames convey seriousness and mystery, and dialogue is delivered in moments of narrative weight. The deity's messages and symbolic prompts appear in focused transitions, ensuring both clarity and immersion.

Throughout the game, light and space act as narrative agents: the glowing mirror, the warmth of the temple, the absence of light in the alienated city. These elements convey the player's evolving awareness—from obscurity to responsibility. By integrating modern sprite-based visuals with poetic symbolism and spiritual undertones, *Through the Mirror* elevates its aesthetic beyond genre convention. It speaks not just to the eye, but to the ethical imagination.

Fig. 1. Revelation at the Mirror
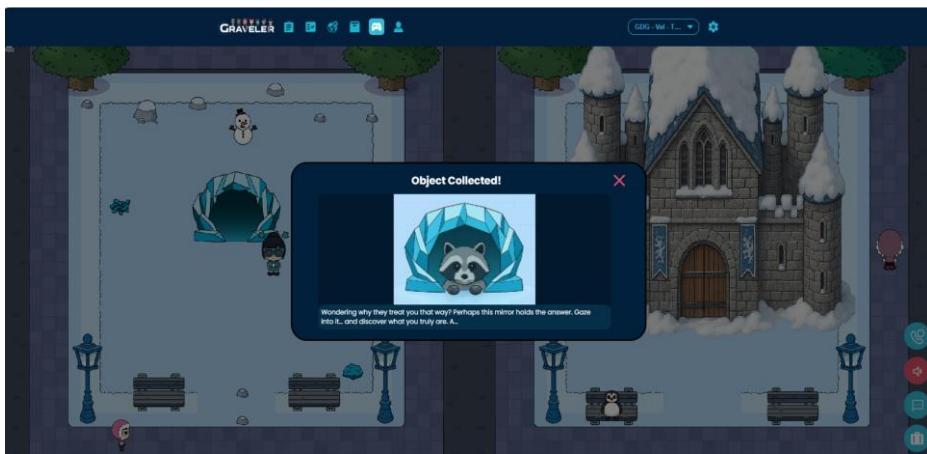
Fig. 2. The Call to the Temple

2.3. Mechanics, Dynamics, and Aesthetics

Following the MDA framework (Hunicke et al. 2004), *Through the Mirror* balances structured game elements with symbolic learning and affective progression.

Mechanics. The game employs an inventory system, achievement system, top- down navigation, object interaction (e.g., collecting and delivering), and dialogue sequences (e.g., with scripted and AI-based non-player characters (NPCS)). Key scripted mechanics include mirror-triggered identity revelation, altar-based task submission, and transformation-linked progression between narrative "worlds".

Dynamics. Rather than emergent play, the dynamics unfold as ritualized narrative progression. In World 1, the player moves through a surreal dream space designed to simulate emotional and perceptual alienation—a pre-programmed city that reacts to the player through increasingly disturbing dialogue. The dynamics serve symbolic immersion rather than reactive complexity. In World 2, exploration becomes collaborative and contemplative, with optional engagement in building, diplomacy, and civic design. In World 3, the player's reflection deepens as gameplay shifts toward external ethical action—submission to the AI altar becomes a form of meta-narrative agency.

Aesthetics. The emotional arc is tightly choreographed: (1) Disorientation and unease in World 1 (dream), (2) Revelation and gentle wonder in World 2, (3) Transcendent responsibility in World 3. These affective states are carried by visual atmosphere, narrative pacing, and symbolic architecture—reinforcing the pedagogical goal of transformation through reflection.

3. Learning Outcomes and Feedback

Through the Mirror aims to: disrupt simplistic notions of "invasive species" and human exceptionalism; encourage empathy through experiential narrative; and bridge the game world and civic world through direct action tasks. Following Arnab et al.'s framework (Arnab et al. 2015), Through the Mirror connects game design patterns (i.e., the game actions and rules) with pedagogical patterns (i.e., the pedagogical practices incorporated in the narrative and game world) to form several key "serious game mechanics". The game rules (e.g., inventory, achievements, 2D navigation) and actions (e.g., collecting, delivering, NPC interaction), which necessitate the player's discovery and reaction, were designed as serious game mechanics by connecting them with the following learning objectives.

One central learning objective of the game is the critical reexamination of how species are labeled as "invasive." While raccoons (Procyon lotor) are of- ten portrayed as threats to biodiversity in Europe, recent scientific research challenges this assumption. Germany's Projekt Waschbär, a long-term ecological monitoring initiative, has shown that although raccoons consume native fauna such as ground-nesting birds and amphibians, the levels of predation are too low to significantly endanger protected species. The study concludes that the ecological impact of raccoons in Central Europe is relatively minor, and warns against overgeneralized or emotionally driven management strategies (Engelmann et al. 2012).

Additional reviews (Stope 2023) echo this caution, emphasizing that the current data on raccoons' effect on native ecosystems remains limited and inconclusive. De- spite their high visibility in urban environments, raccoons are among the least scientifically studied carnivores in Europe. This gap in knowledge calls for restraint in labeling and greater public awareness that ethical wildlife policy must be grounded in robust evidence, not cultural fear. "The culling of raccoons is not only legal but openly encouraged by many sectors of society. In the hunting season spanning 2021 and 2022, over 200,000 raccoons were killed by hunters in a misguided attempt to control the population – despite the fact that mass culling can lead to a population increase as their reproduction goes into overdrive" (Davies 2024).

Early playtests have revealed strong emotional and cognitive responses to the twist and the real-world call. Many players expressed discomfort, reflection, and curiosity—some researching urban wildlife issues, others designing posters or initiating conversations about animal policy. One tester remarked: "I never thought about what it would feel like to be treated as a pest. Now I wonder what our city policies are actually based on." Results from a short survey are presented in world cloud form below for an open-ended first question, and in tabular form for 2 yes/no items below from 12 play testers.

Table 1. Participant Responses on 2 Items Post-Gameplay

Question	Yes	Maybe	No
Do you feel more sensitive to the situation of raccoons after playing this game?	0	2	
Do you think such games can positively impact our behavior towards wildlife?	2	0	

Fig. 1. Wordcloud of responses to open question: "What did you feel while playing this game?"

Conclusion and Next Steps

Still in development, Through the Mirror demonstrates the potential of symbolic, emotionally resonant serious games to not only convey knowledge but to reshape ethical sensibilities. By leading players from exclusion to revelation, and from virtual empathy to real-world action, the game crafts a pedagogical arc rooted in multispecies ethics, philosophical learning, and civic imagination. The game's modular structure allows for future expansion into new geographies and species- specific contexts, including foxes, pigeons, wild boars, or other urban nonhumans often misunderstood or vilified. Each new setting could invite players to embody unfamiliar perspectives, reframe coexistence, and challenge dominant narratives about ecological purity and control. More than a simulation or interactive story, Through the Mirror functions as a mirror itself—reflecting not only what we see, but how we are seen, and how we might choose to respond. The player is not merely an agent of choice within the game but is ultimately called to become what the deity names them: a steward of creation. The journey does not end with the game's closing screen, but with the player's willingness to act in their own city, with their own hands and voice. In this way, Through the Mirror is a call to cross thresholds: from gameplay to responsibility, from human-centered design to ethical imagination, from alienation to kinship. It offers no solutions, only the quiet challenge to begin.

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