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TREES: A Framework for Game-Mediated Experiential Tourism and Responsible Engagement

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Abstract: *This paper presents TREES (Tourism, Responsibility, Exploration, Environment, Story)—a comprehensive design framework for integrating experiential tourism, ethical engagement, and educational objectives into survival horror video games and immersive digital experiences. Building on empirical evidence from case studies of contemporary horror titles (The Last of Us, Resident Evil Village, Silent Hill, Amnesia: The Dark Descent), we demonstrate how narrative coherence, environmental authenticity, and player agency converge to create meaningful virtual tourism experiences. The framework synthesizes theoretical perspectives from flow theory [1], parasocial interaction research [2], phenomenology of place [3], dialogue tree design principles [4], and serious game pedagogy [5]. We argue that TREES provides actionable design guidance for developers seeking to create horror experiences that simultaneously entertain, educate, and foster pro-environmental awareness and cultural sensitivity. This paper contributes to the emerging intersection of game studies, tourism research, and educational technology*

Keywords— Digital Tourism; Game Design Framework; Experiential Learning; Responsible Gaming; Environmental Awareness; Narrative Design

1. INTRODUCTION

The relationship between video games and tourism has undergone significant scholarly attention in recent years [6]. Rainoldi et al. established that five pillars shape game-induced tourism: game world dynamics, immersion level, freedom of movement, character connection, and sense of realism [6]. Similarly, contemporary research demonstrates that video games function not merely as entertainment but as credible vehicles for cultural promotion and awareness-building. Nikolić confirms that video games "allow the presentation and promotion of tourist destinations and their attractions realistically and in detail through the game world, while players are motivated to visit these destinations in the real world" [7]. However, the potential of horror games specifically—as generators of meaningful virtual tourism experiences rooted in sustainability and responsible engagement—remains underexplored. This paper addresses this gap by introducing TREES, a framework born from analysis of survival horror titles that exemplify how narrative consistency, environmental design, and ethical messaging can align to create immersive digital journeys with real-world resonance.

2. THEORETICAL FOUNDATIONS

2.1 Flow Theory and Immersion in Games

Csikszentmihalyi defined flow as an optimal psychological state characterized by deep concentration, merging of action and awareness, and perceived control [1]. The theory has been extensively applied to game design. Research reveals substantial overlap between flow and immersion in video games, with both states sharing critical features: concentration, loss of time perception, balance between challenge and skill, and loss of self-awareness [8].

The eight dimensions of flow identified by Csikszentmihalyi remain foundational for understanding player engagement [1]:

1. Clear goals and immediate feedback
2. Equilibrium between challenge and personal skill
3. Sense of potential control
4. Merging of action and awareness
5. Focused concentration
6. Loss of self-consciousness
7. Distorted perception of time
8. Self-rewarding experience (autotelicity)

In the context of game-mediated tourism, flow becomes a mechanism through which players maintain engagement during extended virtual exploration, enabling them to simultaneously absorb environmental details, narrative cues, and cultural information.

2.2 Dialogue Trees, Player Agency, and Narrative Engagement

Modern narrative game design relies heavily on dialogue trees—branching conversational systems that provide player choice and consequence [9]. Contemporary research emphasizes that meaningful dialogue options significantly enhance player agency and immersion. A 2013 Stockholm University study found that adaptability and awareness are the top two factors limiting NPC (non-player character) believability [10]. Importantly, dialogue quality directly

impacts player-NPC parasocial relationships. Elvery demonstrates that parasocial interactions with NPCs can be "as varied and complex as social relationships" when dialogue systems are thoughtfully designed [2]. Similarly, Ho & Ng found that "players taking the perspective of NPC in prosocial VR games would increase their closeness and empathic feelings towards NPC, and also are easier to immerse themselves in the game" [11]. For tourism-oriented games, dialogue coherence and consistency are essential. Lankoski defines believability in games as structures where "it is possible to build and maintain coherent event indexes where each event or action is put in relation to each other, i.e., indexed by time, space, causality, intentionality, and actor/protagonist" [12]. This principle applies directly to the TREES framework's demand for narrative consistency.

2.3 Phenomenology of Place and Tourist Experience

Zhao, drawing on symbolic interaction and phenomenological perspectives, articulates that "sense of place is produced through the symbolic interaction between tourists and the place" across three dimensions: place image (sensory perception), place significance (semiological consciousness), and place engagement (existential emotion) [3]. Tung and Ritchie, in their examination of memorable tourism experiences, note that "tourists' positive memorable experiences are likely to stem from abundant options, moments of wonder, shared experiences, fringe activities, local uniqueness, and positive values" [13]. Notably, they emphasize that meaningful experiences emerge from mindfulness—a state where visitors "comprehend exhibitions better when emotion-eliciting exhibits were displayed" [13]. For video games functioning as virtual destinations, these principles suggest that environmental design, narrative framing, and emotional pacing directly influence whether a game is experienced as a meaningful "place."

2.4 Serious Games, Educational Outcomes, and Behavioral Change

Serious games research establishes that learning in games occurs through gameplay engaging learners in challenges adapted to their skill levels [5]. Critically, the integration of educational purpose with gameplay is "a delicate process that should be considered throughout games development, right up to the initial designing phase" [5]. Erdbrink, in her dissertation on persuasive game design for sustainability, identifies that explicit inclusion of responsibility-focused design elements—such as player commitments or ethical choices—significantly increases post-game behavioral change [14]. She notes: "Explicitly including a game design element for responsibility, such as promises, increased players' post-game vegan eating behavior to a certain extent" [14]. The implication for tourism-focused games is clear: intentional design decisions regarding environmental messaging, cultural respect, and player responsibility can translate virtual experiences into real-world behavioral shift.

2.5 Video Game-Induced Tourism and Place Authenticity

Recent meta-analysis of game-induced tourism confirms its validity as an academic phenomenon. The Resident Evil Village case study demonstrates concrete effects: the game "significantly increased global visibility for Romanian attractions such as Peleș Castle and local vampire folklore," with "many fans expressing, in online reviews, a desire to visit Romania after recognizing culturally specific elements in the game" [15]. Crucially, Rainoldi et al. identify that sense of realism is one of five critical pillars motivating players to visit real-world locations inspired by games [6]. Authenticity—not photorealism alone, but consistency and respect for cultural context—is essential.

3. Empirical Foundations: TREES Dimensions Illustrated Through Case Studies

The TREES framework emerged from systematic analysis of survival horror games that exemplify integration of tourism, responsibility, exploration, environmental consciousness, and storytelling. This section demonstrates how each dimension manifests in contemporary titles.

3.1 Tourism (T): Virtual Exploration and Destination Experience

Resident Evil Village exemplifies tourism-oriented design through deliberate recreation of Transylvanian cultural elements [15]. The game integrates architectural references to Peleș Castle, uses Romanian currency (lei), references local dishes (palincă), and incorporates genuine folklore. Capcom's designers explicitly collaborated with cultural heritage experts to ensure authenticity. Vintilă and Merciu document that "the game fosters interest in castles, local myths (e.g., vampire lore), and cuisine, all without resorting to heavy stereotypes. Instead, these elements are subtly woven into the game's lore" [15]. Similarly, Days Gone employs virtual ecotourism mechanics: players traverse Oregon's landscapes by motorcycle, encountering "peaceful moments immersed in the wild—watching deer in misty clearings or camping under starlit skies free of light pollution." The game encourages "discovery of iconic locations (waterfalls, caves, alpine lakes), herbal foraging, and mental snapshots of a lush, indifferent nature" [16].

3.2 Responsibility (R): Ethical Messaging and Behavioral Framing

The Last of Us constructs environmental responsibility narratives through environmental storytelling [17]. The game depicts a post-apocalyptic world where "nature reclaims urban ruins: cities like Boston and Pittsburgh are shown as picturesque ruins, with streets overrun by vegetation, crumbling buildings covered in vines, and wildlife roaming freely" [17]. The narrative framing is critical: players witness consequences of human irresponsibility (a fungal pandemic potentially exacerbated by climate change) and observe the

complex ethics of survival (individual sacrifice for collective good). This "lethal beauty" of decay implicitly communicates responsibility themes without didacticism. Dead Space similarly embeds responsibility messaging [18]. The series critiques "industrial exploitation and corporate greed" through "planet-cracking" operations by mega-corporations. The narrative presents "a dystopia: a giant hellscape of corporate avarice with Earth bled dry of all resources" [18]. These sci-fi horror scenarios function as cautionary tales about unchecked technological progress and resource depletion.

3.3 Exploration (E): Agency, Pacing, and Discovery Mechanics

Alan Wake demonstrates exploration through literary tourism [19]. Set in the "fictional town of Bright Falls, Washington," the game "creates an evocative setting that feels like a real mountain tourist destination." Gameplay reflects tourism structure: players explore local traditions, festivals, and scenic locations before narrative escalates [19]. Contemporary research on dialogue trees emphasizes that "dialogue trees allow players to explore different story arcs and character developments" through meaningful choices that "empower players to influence the story's direction and outcome, creating a sense of agency and control" [9]. For tourism-oriented design, this principle translates to structured exploration mechanics combined with optional narrative branches—allowing players to discover locations and stories at their own pace.

3.4 Environment (E): Sensory Immersion and Authenticity

Saturnalia exemplifies environmental authenticity [20]. The game is "deeply rooted in Sardinian folklore and cultural heritage: the game's narrative and art draw extensively from local traditions, architecture, and music." Developers conducted on-site research and collaborated with the Sardegna Film Commission [20]. Visual consistency—a critical component of environmental immersion—ensures that each element "feels like it belongs" [21]. Environmental storytelling, achieved through consistent visual cues and thematic coherence, conveys ecological and cultural messages without explicit narration.Research on VR heritage education confirms that "VR allows users to explore and practice by manipulating objects in the virtual environment to deepen their understanding and memory of cultural heritage through interactive learning" [22].

3.5 Story (S): Narrative Coherence, Character Consistency, and Meaning-Making

Amnesia: The Dark Descent demonstrates how narrative coherence supports thematic depth [23]. Set in a 19th-century Prussian castle, the game addresses "colonial plundering of artifacts" and "scientific abuse." The protagonist's descent into madness parallels historical guilt—"Daniel's guilt over atrocities committed during a colonial expedition in Algeria" [23]. Lankoski emphasizes that narrative believability requires consistency across all NPC behaviors and environmental conditions [12]. When maintained, this consistency allows players to construct coherent interpretations of events and develop emotional investment. Game narrative researcher Nicholls proposes interpreting some horror games as "virtual dark tourism"—"raising historical awareness and social justice through digital horror" [24]. The Town of Light, set in an abandoned Tuscan psychiatric hospital "based on real facts and patient testimonies," exemplifies this approach: "the game invites players to explore the site of suffering while empathizing with its former victims" [24].

4. TREES Framework: Five Pillars of Game-Mediated Experiential Tourism

4.1 Pillar 1: Authentic and Detailed Environments

- Design Principle: Create believable game worlds based on real or plausible locations, incorporating their geography, history, and culture.
- Implementation Guidance:
    - Collaborate with heritage experts, geographers, and cultural stakeholders during concept and level design phases
    - Incorporate recognizable landmarks, genuine folklore, native languages, and culinary traditions
    - Represent flora and fauna consistent with local ecosystems, even when fictional catastrophes alter them
    - Use environmental storytelling to communicate cultural and ecological information without exposition
- Research Support: Bowman et al. demonstrated that "in historical video games, a strong sense of place not only boosts player engagement but also increases the intention to visit the corresponding real-world locations" [25]. Similarly, research found that "players seek coherence and credibility even in imaginary worlds to experience them as satisfying tourist destinations" [26].

4.2 Pillar 2: Narratives with Socio-Environmental Themes

- Design Principle: Root horror scenarios in human irresponsibility—environmental, scientific, or ethical—creating cautionary narratives that spark reflection without becoming didactic.
- Implementation Guidance:
    - Design the origin of horror through chains of irresponsible human decisions (corporate negligence, environmental exploitation, scientific ethics violations)

- Use in-game documents, audio logs, and environmental cues to reveal causality and moral lessons
- Frame NPC behaviors and outcomes to reward cooperation, ethical science, and conservation; penalize selfishness or destructive exploitation
- Integrate environmental and cultural themes into core narrative arcs, not as sideline content

- Research Support: Erdbrink demonstrates that players' "explicit targeting of knowledge, attitude, subjective norm, perceived control, and responsibility concerning specific behavior can increase these behavioral predictors" [14]. Contemporary research on environmental horror confirms that "fear arises from human-induced disruption of natural order" [27].

4.3 Pillar 3: Exploration and Learning-Oriented Mechanics

- Design Principle: Balance survival mechanics with slow exploration and observation, encouraging players to treat game worlds as destinations rather than mere obstacle courses.
- Implementation Guidance:
  - Implement photo modes or travel journals where players document points of interest, earning lore entries or rewards
  - Design achievement systems celebrating optional location discovery and scenic viewpoints
  - Create puzzles based on cultural or environmental analysis (e.g., deciphering traditional artifacts, reading animal behavior)
  - Implement pacing: alternate intense fear sequences with quiet areas for exploration and recovery near aesthetically rewarding locations
  - For VR experiences, include interactive examination of objects with historical or cultural explanations

- Research Support: Serious game design research emphasizes that "game mechanics that motivate students and quantify their progress should reinforce the design purpose" [28]. Exploration-focused modifications of games like Alien: Isolation and Resident Evil 2 Remake demonstrate player demand for "museum-like" exploration divorced from combat. A 2023 Finnish research project using a modified, monster-free Amnesia: The Dark Descent found that "players noticed period-specific items and asked questions about them, turning gameplay into a true guided virtual visit" [29].

4.4 Pillar 4: Emphasis on Place Phenomenology (Sensory Experience)

- Design Principle: Leverage audio-visual design to immerse players in a sense of place rather than merely creating fear—making environment itself a pedagogical tool.
- Implementation Guidance:
  - Use locally authentic animal sounds, weather patterns, and day-night cycles that subtly shape gameplay (fog at dusk obscuring vision, rain extinguishing light sources)
  - Design visual panoramas and scenic overlooks that provide rewards after tense sequences, mirroring real travel structure
  - Employ visual contrast as environmental messaging: juxtapose natural beauty with industrial decay, or pristine ecosystems with toxic contamination
  - Implement sensory consistency—textures, materials, spatial proportions—to maintain immersion and believability

- Research Support: Zhao articulates that sensory interaction between humans and place produces "place images" that are foundational to meaningful tourism experience [3]. Research on ecological presence in VR demonstrates that "authenticity and immersion of tourists in virtual ecological environments significantly bolsters biospheric values and environmental self-identity" [30].

4.5 Pillar 5: Community Engagement and Transmedia Extensions

- Design Principle: Position the game within a wider educational and cultural ecosystem, transforming players from consumers into informed agents with potential for real-world action.
- Implementation Guidance:
  - Design rich photo modes and leverage player-created content; run community "virtual photography" contests
  - Collaborate with real tourism boards and heritage organizations; create dual guides (game + factual e-book on the region)
  - Develop transmedia content (comics, podcasts, behind-the-scenes documentaries) expanding lore with educational context
  - Establish official forums or discussion hubs where players engage with underlying themes: environmentalism, ethical science, cultural heritage preservation

- Implement post-game surveys or questionnaires assessing attitude change regarding environment, culture, and responsible tourism

- Research Support: Rainoldi et al. found that game-induced tourism extends beyond gameplay to community discourse and peer recommendations [6]. Contemporary research on gamification in tourism confirms that "gamification can create new experiences and improve visitation, making the destination more attractive and interactive for visitors" [31].

5. Integration of TREES with Contemporary Game Design and Tourism Theory

The TREES framework mandates that dialogue systems support both narrative coherence and player agency. Drawing on dialogue tree design principles [9], [32], meaningful dialogue options should:

1. Be relevant to narrative and character motivation

2. Provide clear consequences affecting story and relationships

3. Reflect the player's values and character identity

4. Maintain consistency with NPC backstories and world logic

Research on NPC believability identifies that gamers prioritize "realistic voice (53%), dynamic emotions (49%), understanding the player (47%), a complex backstory (41%), and clear motivation (39%)" [33]. In tourism-focused games, this extends to NPCs embodying cultural knowledge—serving as guides to local history, environment, and traditions.

The TREES framework requires that dialogue systems be tested for narrative consistency: do NPC responses align across different playthroughs? Do character motivations remain coherent even when players deviate from expected paths?

Csikszentmihalyi's flow theory informs TREES's emphasis on balanced challenge and exploration pacing [1]. In tourism-oriented horror, flow mechanics should:

1. Present exploration challenges matched to player skill (navigating unfamiliar terrain, deciphering cultural or environmental clues)

2. Provide immediate feedback (discovering new locations, unlocking lore entries)

3. Offer perceived control (optional versus mandatory exploration, difficulty settings)

4. Create clear, long-term goals (uncover the history of a place, understand the catastrophe's origin)

This aligns with findings from game experience research: players in flow states remain engaged for extended periods, absorbing environmental and narrative details more deeply [8].

TREES prioritizes NPC believability as a pathway to parasocial connection and empathy. Elvery documents that parasocial relationships with NPCs can be "as varied and complex as social relationships" when dialogue, behavior, and character development are sophisticated [2]. For responsible tourism games, this means:

- Designing NPCs who embody cultural values and environmental ethics

- Allowing players to develop relationships that reward ethical choices (protecting the environment, respecting cultural sites)

- Using character arcs to explore themes of guilt, redemption, and responsibility

Research on character immersion confirms that "when players align with the mood states presented by the avatar as an agent character, they are more likely to immerse themselves in the experience and emotionality of the avatar" through an empathic immersion process [34]. The TREES framework synthesizes experience design theory adapted for games [35], [36]. Contemporary research proposes a "4S model" (Scene, Socialization, Story, Stimulus) for immersive design [37]. TREES aligns with this, emphasizing:

- Scene: Authentic, detailed environments with cultural significance

- Story: Coherent narratives embedding environmental and ethical themes

- Exploration: Paced discovery mechanics enabling agency

- Stimulus: Sensory and emotional engagement driving memorable experiences

Tung and Ritchie note that "tourists derive greater satisfaction from educational experiences when emotion-eliciting cues are present in an environment" [13].

6. Implementation: Guidelines for Game Designers

The implementation guidelines for game designers start with the pre-production phase, which involves research and collaboration. During this phase, designers should identify the target location or culture and conduct field research. They should establish advisory boards that include heritage experts, environmental scientists, and cultural historians. It is important to document the geography, ecology, history, folklore, and contemporary challenges related to the setting. The narrative conceptualization aspect requires designing a horror scenario grounded in real societal or environmental concerns, developing an NPC cast embodying cultural values and relationships to the place, and mapping dialogue trees to ensure narrative consistency and player agency. Design documentation should include creating detailed art direction guidelines to ensure visual consistency, documenting the approach for environmental storytelling, and outlining the learning objectives and key messages to be conveyed.

In the production phase, environment development involves collaboration with cultural consultants to ensure architectural and decorative authenticity. Designers should implement environmental storytelling where every visual element communicates place and narrative while ensuring sensory consistency across audio, materials, and proportions. For dialogue and NPC systems, dialogue trees should be scripted with meaningful branching and consequences, behavior systems should be implemented where NPC reactions align with player choices, and narrative consistency testing should be conducted across multiple playthroughs. Mechanic integration requires designing exploration mechanics such as photo modes, journals, and collectibles that reward discovery, implementing pacing that balances intense sequences with contemplative moments, and integrating educational elements such as lore entries and cultural explanations in a non-obtrusive manner.

Testing and iteration involve player testing to assess immersion, narrative coherence, and emotional engagement. Players should be surveyed on attitude changes regarding environment, culture, and responsible tourism, and in-game learning should be measured through quizzes and dialogue choices as well as the intention to visit real locations. Consistency validation involves testing dialogue systems across multiple playstyles to verify NPC consistency, auditing environmental storytelling to ensure that every visual element reinforces the themes, and verifying narrative causality and character motivation coherence.

Post-release support includes community engagement through hosting photo mode contests and curating user-generated content. Establishing forums to discuss environmental and cultural themes as well as partnering with tourism boards on travel guides and cultural resources are important to maintain engagement. Data collection should focus on surveying long-term behavioral changes such as real-world tourism and environmental advocacy, tracking community discussions for qualitative evidence of attitude shifts, and documenting instances of game-induced tourism, such as players visiting real locations inspired by the game.

7. Case Study: Applying TREES to Resident Evil Village

Resident Evil Village exemplifies successful TREES implementation, though not by design intention [15]. Analysis reveals:

- Tourism (T): Game credits list collaboration with Capcom's heritage team and external advisors. Transylvanian architecture, currency, cuisine, and folklore are meticulously recreated, driving documented tourism interest in Peleș Castle and Romanian cultural sites.

- Responsibility (R): While not explicitly environmental, the narrative indicts corporate biotech negligence (the Umbrella Corporation's legacy) and unethical experimentation. Players witness community consequences of scientific irresponsibility.

- Exploration (E): The castle structure encourages backtracking and discovery; optional lore entries detail architectural history and cultural traditions. Photo mode enables player documentation of aesthetic moments.

- Environment (E): Visual consistency is paramount—every room's décor, materials, and proportions reflect authentic Transylvanian design. Sensory immersion is achieved through period-accurate architecture and ambient sound design.

- Story (S): Narrative coherence is maintained through careful character motivation documentation. NPCs' backstories explain their behaviors and alignment with thematic elements of guilt and community survival.

The game "stimulates players' motivation to learn about real places and traditions," with many fans expressing desire to visit Romania post-gameplay [15].

8. Limitations and Future Directions

While qualitative case studies and player feedback provide support for the TREES framework, there remains a lack of large-scale quantitative studies that rigorously measure game-induced tourism effects and associated behavioral changes on a statistical level. Furthermore, horror games as a genre present unique challenges regarding cultural representation, as their themes and imagery may perpetuate stereotypes through exoticization or mockery; TREES currently does not provide exhaustive strategies to prevent cultural appropriation or nuanced misrepresentation. Accessibility also represents an unresolved issue, particularly with VR implementations, which may unintentionally exclude players with disabilities; hence, TREES guidelines should emphasize principles of inclusive design to ensure equitable participation. Scalability is another key concern, as the adoption of TREES by independent or small studios requires significant resources and collaboration among diverse stakeholders, yet there is a clear need for more practical guidance tailored to teams operating under resource constraints.

For future research, there are several promising directions. Longitudinal studies should rigorously track players' behavioral changes, such as tourism visits, environmental advocacy, and cultural engagement, over periods of months or years after gameplay. It is essential to conduct cross-cultural analyses, applying TREES to horror games set in a variety of cultural contexts and examining how players from Western backgrounds engage differently with non-Western locations and traditions. The expanding reach of VR and emergent technologies—including haptic feedback and brain-computer interfaces—warrants exploration into how these systems may further enhance presence and learning in TREES-aligned games. Comparative analyses are needed as well, quantifying the effects of game-induced tourism relative to similar influences from film, literature, or other forms of media.

Finally, the field would benefit from developing and testing TREES-aligned serious games, particularly as educational tools for integration into school heritage curricula and museum installations, to expand empirical evidence and real-world application.

9. Conclusion: TREES as a Paradigm for Responsible Digital Tourism

The TREES framework represents a synthesis of contemporary game design theory, tourism experience design, and educational pedagogy. By integrating Tourism, Responsibility, Exploration, Environment, and Story, designers can create horror games and immersive experiences that transcend entertainment to function as tools for awareness, cultural engagement, and behavioral change.

The evidence is compelling: The Last of Us sparks ecological reflection [17]; Resident Evil Village drives tourism interest in Romania [15]; Amnesia generates curiosity about colonial history and psychiatric heritage [23]. These effects emerge not accidentally but from deliberate design choices regarding narrative coherence, environmental authenticity, and ethical framing.

Survival horror games emerge as a powerful medium for a new paradigm of virtual tourism rooted in conscience, place, and learning [38]. The TREES framework provides structured guidance for realizing this potential.

In an era where physical tourism faces sustainability challenges and global crises restrict movement, digital tourism mediated through thoughtfully designed games offers a complementary frontier. Games can allow players to explore the world—real or imagined—while reflecting on collective fears and humanity's relationship with the planet.

The invitation to game designers, tourism stakeholders, and educators is clear: leverage the emotional power of interactive narrative to create experiences that frighten, captivate, and ultimately inspire responsibility—toward culture, environment, and community. Through TREES, horror games can become vehicles not of escapism but of engagement with the world's complexity and beauty

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10. References

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