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Digital storytelling and hopeful last chance tourism experiences

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ABSTRACT

Last chance tourism, which can be described as the practice of tourism in environmentally damaged or threatened spaces, is an emerging trend that has been considered problematic due to the pressure that it places on already fragile environments. This article explores the possibilities of turning last chance tourism experiences into hopeful tourism experiences, by creating emotionally driven last chance tourism experiences in controlled and safe environments through digital storytelling. We draw on literature on transformative, hopeful and flourishing tourism to argue that last chance experiences provide unique opportunities for eliciting reflection among tourists and promote a greater environmental awareness if they are driven by emotionally engaging narratives. Our study explores the outcomes of an experiment conducted at the Ajuda Botanical Garden (Lisbon, Portugal) with a futuristic mixed-reality game that places users as members of a scientific expedition looking for plants that have become extinct in the twenty-second century. The results of this study show how the game's last chance narrative generated contradictory, mixed feelings among the participants, which ultimately led to hopeful existential reflection about nature conservation action. With this in mind, we reflect on the potential of transformative last chance tourism experiences guided by digital narratives.

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Introduction

Tourism impacts life on the planet. It is widely acknowledged that the tourism sector is a significant contributor to greenhouse gas emissions which are accelerating climate change across the globe, and that overtourism can generate significant geological and biological damage to the environment (Dodds & Butler, 2019; Hoogendoorn & Fitchett, 2018; Scott et al., 2012, 2019). Perhaps paradoxically, tourism activities are also one of the most susceptible to global environmental change, given that tourists

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tend to seek comfortable weather and aesthetically pleasant natural areas (Dogru et al., 2019; Kaján & Saarinen, 2013). Nevertheless, and despite a massive turn to sustainability in tourism studies, some touristic practices remain problematic in terms of their environmental impact (Hall et al., 2017; McCool & Bosak, 2019). One of the practices that have concerned tourism scholars in the last decade is the emergence of last chance tourism.

Last chance tourism encompasses all tourism activities and experiences that take place in endangered environments in which the main purpose is to experience an element of the planet that is becoming scarce or even extinct (Lemelin et al., 2013). The lure of last chance tourism has been associated with the desire to experience the aesthetics of degraded and changing remote environments and feelings of eco-anxiety, ecological grief and solastalgia (i.e., psychological trauma as a result of environmental change) (Bahja et al., 2022; Bahja & Hancer, 2021; Kucukergin & Gürlek, 2020; Lemelin & Whipp, 2019; Mkono & Hughes, 2020). However, last chance tourism not only draws upon environmental degradation as an object to be gazed at, but also tends to contribute toward further environmental degradation by attracting human activity to already fragile ecosystems (D'Souza et al., 2023; Dawson et al., 2011).

Although there is significant literature on the dangers and paradoxes of the growing popularity of last chance tourism, there is a clear lack of alternatives that respond to this industry niche without further contributing toward environmental degradation, despite the wide interest in understanding how tourism can become a tool for social and environmental improvement. Indeed, the last decade has been ripe with concepts that imagine alternative forms of tourism that respond to prevailing human and planetary challenges, such as transformative tourism (Soulard et al., 2021; Teoh et al., 2021), hopeful tourism (Pritchard et al., 2011; Pritchard & Morgan, 2013), flourishing-oriented tourism (Cheer, 2020), or regenerative tourism (Bellato et al., 2023; Cave & Dredge, 2020). While these terms differ in terms of how they conceptualize tourism-driven social change, they share similar pathways and goals for making tourism more effectively beneficial for local communities and ecosystems.

With this in mind, our purpose in this paper is to explore the possibilities of turning last chance tourism motivations into hopeful tourism experiences, by creating emotionally-driven last chance tourism practices in controlled and safe environments through digital storytelling. We draw on an experiment conducted at the Ajuda Botanical Garden in Lisbon, Portugal, where a multidisciplinary team of scholars created a futuristic mixed-reality game that places visitors in the twenty-second century looking for plants that have become extinct. Our main argument is that last chance tourism experiences have the potential to become transformative experiences if they provide: (i) strong emotional content that elicits nature connectedness, and (ii) contextual narratives that frame local experiences into global processes. Creating last chance tourism experiences in safe environments such as botanical gardens can contribute towards avoiding long-haul flights to fragile environments and promote new imaginative forms of 'proximity tourism' (Diaz-Soria, 2017; Jeuring & Haartsen, 2017). Methodologically, the experiment draws on non-representational theory and creative methods to understand the performances and affects of the experience of the mixed-reality game by the garden visitors.

The paper is further divided into four sections. First, we review and relate literature on last chance tourism and transformative and hopeful tourism, and discuss the potential of digital storytelling to connect both concepts. Secondly, we present the study conducted at the Ajuda Botanical Garden, describing the mixed-reality game and the data collection methods. Thirdly, we describe how the game's last chance narrative elicited mixed feelings among the participants, which led to existential reflection about conservation action. We conclude the paper by discussing the potential of transformative last chance tourism experiences and the need for further research on the potential of digital narratives.

From last chance experiences to hopeful tourism

Tourism is intertwined with environmental change in many ways. On one hand, tourism is impacted negatively by climate change and the deterioration of natural attractions as the flow of tourists can become reduced in the most affected regions (Rosselló et al., 2020). On the other hand, tourism can contribute to climate change and extinction events, especially when tourists explicitly seek terrestrial or marine landscapes at risk of disappearing (Dawson & Lemelin, 2015; Lemelin et al., 2010, 2013; Lemelin & Whipp, 2019) or fly to very remote locations, thereby creating a huge carbon footprint. Moreover, though the urgency of reducing long-haul travel and decoupling tourism from air transport is recognized, a challenge that continues to be under discussion and for which solutions need to be found is how to make proximity tourism experiences more stimulating and satisfying (Gössling et al., 2019; Jeuring & Haartsen, 2017).

Recently, research in tourism has been concerned with the growing interest in the experience of environmental change, especially regarding climate change, landscape degradation, and the extinction of species. In this matter, researchers have highlighted the paradoxes among the tourists who seek last chance experiences. Although these tourists are generally in favour of sustainable practices and exhibit sustainable behaviours and attitudes in their places of residence, they do not always adopt the same attitudes and behaviours when they travel (Dawson et al., 2011; Groulx et al., 2016, 2019; Lemelin et al., 2010). On the other hand, these tourists are interested in destinations that are in danger of disappearing, which, paradoxically, accelerates the danger of disappearance of these same destinations, due to the greater deterioration that the effect of human intervention has on them (Dawson et al., 2011; Lemelin et al., 2013).

While much of the literature on last chance tourism has been focused on what occurs in the endangered destinations, the host perspectives, and the ethical considerations of this niche (D'Souza et al., 2023; Dawson et al., 2011; Groulx et al., 2016, 2019; Miller et al., 2020; Piggott-McKellar & McNamara, 2017; Schweinsberg et al., 2021), these paradoxes also led researchers to question why these tourists seek last chance experiences, and the explanations have been manifold. Few tourists actually deny climate change and its consequences, yet they might tend to minimize the consequences of their actions and to exacerbate the urgency of visiting these places before they disappear (Denley et al., 2020; Font & Hindley, 2017; Kucukergin

& Gürlek, 2020; Salim & Ravanel, 2023). In this sense, last chance tourism becomes a self-centred practice influenced by subjective and personal norms, and individual attitudes regarding perceived behavioural control and the consequences of one's practices (Hindley & Font, 2018; Woosnam et al., 2022). Nevertheless, it is striking that a significant motive for engaging in last chance tourism is also a sense of hopelessness, that is, the belief that our practices will not lead to effective change and these places will disappear no matter what (Font & Hindley, 2017). While literature on last chance tourism grows, terms such as ecoanxiety, ecofatigue, and ecological grief have become popular in tourism literature (Crossley, 2020; Cunsolo & Ellis, 2018; Walker & Moscardo, 2014). In recent years, tourism researchers have explored the psychology of environmental suffering, and have looked at the close relationship between tourism and ecoanxiety (Joshua et al., 2023; Mkono, 2020). It has been noted that ecoanxiety is not only an important driver of specific tourism behaviours, but also a significant component of several tourism experiences. Within this context, solastalgia, which can be defined as the psychological trauma experienced because of environmental change, pain or anguish caused by the loss of places (Albrecht et al., 2007; Galway et al., 2019), has become a significant concept for tourism experiences associated with the loss of biodiversity caused by climate change (Lalicic, 2020).

Taking into account that last chance tourists tend to be concerned with climate and environmental change (Denley et al., 2020), but often display a sense of hopelessness about the issue (Font & Hindley, 2017), we are interested in exploring how last chance tourism experiences can become hopeful tourism experiences. Literature on hopeful and transformative tourism experiences is on the rise. Several recent studies highlight the need to promote greater global, individual, and collective awareness of global challenges through tourism (Cavender et al., 2020; Kirillova et al., 2017a; Ormond & Vietti, 2022; Pisters et al., 2019; Soulard et al., 2021; Teoh et al., 2021; Walker & Ngara Manyamba, 2020).

Such endeavour has a long history. Since the beginning of the millennium, critical tourism scholars have reflected about the social force of tourism and its potential for social reconciliation (Higgins-Desbiolles, 2003). More recently, as environmental concerns also afflicted tourism, critical tourism scholars have developed the concept of hopeful tourism (Pernecky, 2020; Pritchard et al., 2011), a transformational perspective on the possibilities of tourism to intertwine hopeful imagination and effective action, by embedding education, science, and activism into tourism practices (Ateljevic et al., 2012; Brosnan et al., 2015; Pritchard & Morgan, 2013). While the proposal was received with cautiousness by scholars concerned with the naïve optimism of hopeful tourism (Higgins-Desbiolles & Whyte, 2013), it sparked further debates on the transformational role of tourism. Recent works have looked closely at how suppliers, facilitators and receivers of tourism are transforming their practices to respond to prevailing social and environmental issues, leading to a notion that tourism can be a tool to regenerate places and ecosystems (Bellato et al., 2023; Cave & Dredge, 2020; Lew, 2017, 2018). Other works also reflected upon the need to underpin praxis with ethical and creative transformational concepts that recognize the need to harmonize human activity with the ecologies and rhythms of the natural world (Chhabra, 2021; Higgins-Desbiolles et al., 2019; Morgan et al., 2018). In short, what is fundamentally at stake in these

new positive approaches is no longer trying to ensure that tourism does not have a negative impact on places, but that it becomes an instrument for improving places and creating better living conditions on Earth (Cheer, 2020).

Tourism experiences have been at the heart of these concerns. Indeed, a central concern of hopeful and transformative tourism has been the creation of moments of learning during travelling (Ormond & Vietti, 2022). It has been argued that such moments of learning are always an act of co-creation that involves the actions of tourism service providers and tourists themselves (Teoh et al., 2021), and that such acts of co-creation must involve both meaningful narratives (Soulard et al., 2021) and intense, and often contradictory, emotions (Walker & Ngara Manyamba, 2020). Kirillova et al. (2017a) have found that existential reflection must be triggered in the tourism experience to initiate the meaning-making process that leads to transformative behavioural change. They show that such trigger episodes, which tend to occur at the end of travel, involve intense contradictory emotions that lead tourists to reflect on which meaningful life changes they can make, in terms of their everyday life practices (Kirillova, 2019; Kirillova et al., 2017b). Narratives are one of the most important triggers in this matter. There is a growing interest in how narratives can play a part in the development of hope (Anderson, 2006), as

tourism narratives produce varied affect, including sombre mood and a sense of loss or, alternatively, an uplifting sense of hope, demonstrates not only that some signification of affect is possible, but also, and perhaps most importantly, that affect can, to some degree, be consciously directed by actors upon others. (Tucker & Shelton, 2018, p. 73)

Despite this growing interest in transformative experiences in tourism, and the wide acknowledgement of the danger that last chance tourism poses, no known studies have explored the possibility of creating hopeful and transformative last chance tourism experiences. With this in mind, we draw on the insight that narratives and emotions are crucial for transformative experiences (Kirillova et al., 2017a, 2017b; Soulard et al., 2021; Walker & Ngara Manyamba, 2020) to explore how emotionally-driven last chance tourism experiences can be created in controlled and safe environments through digital storytelling. We argue that this could provide last chance experiences for tourists concerned with climate change and environmental degradation that counter feelings of hopelessness, without the damaging impact of traditional last chance tourism. In the next sections, we explore these possibilities by drawing on a mixed-reality game created at a botanical garden in Lisbon.

Methodology

The COVID-19 global pandemic had a profound impact on tourism worldwide. Lisbon, as a tourism-oriented city, was deeply affected by the pandemic (Ferreira et al., 2022). In this context, tourism service providers in Lisbon were forced to rethink their products and seek innovative ways to promote tourism activities. At the same time, the global impact of the COVID-19 global pandemic has led tourism scholars to reiterate tourism as a tool for sustainable transformation of places and ecosystems (Brouder et al., 2020; Higgins-Desbiolles et al., 2022). With this in mind, a multidisciplinary team of scholars of the Universidade de Lisboa working at the Ajuda Botanical Garden



Figure 1. The location of Ajuda Botanical Garden. Source: Authors.

developed a mixed-reality game with the purpose of providing a transformative and hopeful last chance experience in the garden (Figure 1).

Origenes botanica is a mixed-reality game developed by a multidisciplinary team from the Universidade de Lisboa, which included geographers, landscape architects, and graphical artists (Paiva et al., 2023). The game plot places the user in the year 2100, when climate change and environmental degradation have led a significant number of species to disappear during the Sixth Great Extinction. The user is a member of a scientific team that arrives at the Ajuda Botanical Garden with the purpose of collecting species that have become extinct in the wild, but can still be found in the protected environment of gardens. The end goal of this expedition is to replant those species in their original environments. Throughout the game, the user must find six different species in the garden, each of them representing a different geographical area (namely Africa, Asia, Macaronesia, Middle East, Oceania, and South America) and a different conservation threat (deforestation, ecosystem degradation, wildfire, gathering, pests, and urbanization). The user receives instructions on what to look for by the chief scientist, and when a species is found, its ecological and cultural history is slightly unveiled. When the user has found the six species, the members of the scientific team reflect on what could have been done to prevent the Sixth Great Extinction, providing some clues about contemporary sustainable practices.

In this sense, the narrative draws upon the last chance trope, as it presents a scenario in which the plants in the garden are the last survivors of its species, but

also attempts to elicit a sense of hope as the opportunity of replanting the species in their native environments is also presented. Furthermore, the style of ‘future-past’ narrative and the reflections made by characters in the game about contemporary sustainable practices are meant to lead visitors into contextualizing this last chance experience in contemporary global conservation issues.

As a mixed-reality game, *Origenes botanica* includes a digital interface that guides users through a real-world location. The digital interface was developed in ESRI Story Maps, a story-mapping software that allows combining different media (text, video, photography, and audio) with cartography (Figure 2). The purpose of using story-mapping software was the possibility of combining a graphic narrative that guides the user throughout the garden with cartography that contextualizes the local experience into global conservation issues. This mixed-reality approach is meant to immerse visitors in an embodied emotional experience akin to last chance experience in remote environments. Although the experience does not take place in a remote environment, it is meant to involve a similar sense of presence and exploration, which could not be possible, for instance, in virtual reality apps. In the game, the graphic narrative provides the user with clues on how to find each species, and whenever the user finds a species, its ecological and cultural history is told through a combination of a text-based webmap.

The real-world location of *Origenes botanica* is the Ajuda Botanical Garden. Founded in 1768, this is the oldest botanical garden in Portugal. It contains about 1600 plant species of diverse origins in an area that comprises about 3.5 hectares. The garden is divided into two main segments and two smaller areas. The southern part is the scenic section of the garden, where the largest trees are located and framed by topiary. The northern part is the scientific section of the garden, where the plants are organized into sections by continents. The two smaller areas include the garden of scents, where one can find edible herbs, and the Lisbon garden, where species native to the Lisbon region are located. The game’s trajectory is U-shaped, starting

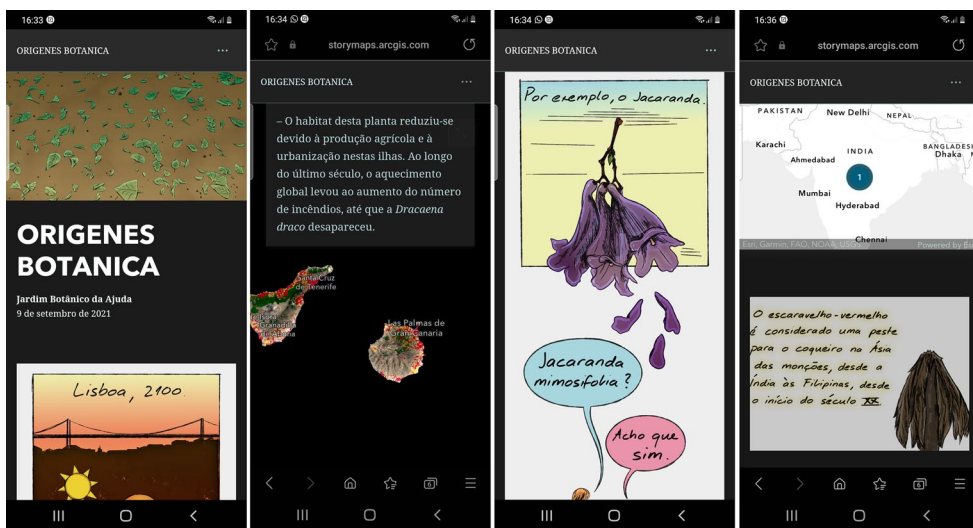


Figure 2. The interface of *Origenes botanica*. Source: Authors.

in the southern part, crossing the two largest sections, and ending in the northern part of the garden.

The data collection for this study took place through three performative workshops were conducted between March and May 2022. A total of 19 participants took place in the workshops. 10 of them were men and 9 were woman. Ages ranged from 19 to 36 years old. Participants were selected following an open call through the social media of the Universidade de Lisboa, the institution that manages the Ajuda Botanical Garden. To ensure that the experience was as close to a touristic experience as possible, only participants who were visiting the botanical garden for the first time were selected.

Given our interest in understanding the emotiveness of the experience of digital storytelling, and drawing inspiration by the emergence of non-representational and creative methodologies (Boyd & Edwardes, 2019; Phillips & Kara, 2021; von Benzon et al., 2021), the performative workshops aimed to allow participants to engage



Figure 3. Phases 1 and 2 of the performative workshops. Source: Authors.

and immerse themselves in the experience and to undertake creative modes of expression to communicate their experiences. The workshops were divided into two phases (Figure 3). First, participants were asked to play the *Origenes botanica* game at the Ajuda Botanical Garden. After a fifteen-minute break, participants were invited to a creative session in which they were given an orthophoto map of the botanical garden and a vocabulary of emotions, and asked to draw the trajectory that they undertook during the game, the species they encountered, as well as the emotions they felt throughout the gameplay. After completing their maps, they were encouraged to share them and present them to the group, and a group discussion followed. The discussion was recorded by the researchers. The recordings were transcribed into text, and coded manually to identify narratives of emotional experience and reflections about environmental concerns and global conservation threats. The analysis of the information obtained through these workshops allowed us to understand the emotional and reflexive processes that emerged during the experience of the digital narrative. In the next sections, we approach this data in greater detail.

A hopeful last chance experience

Last chance experiences are profoundly emotional, but also entail significant potential for reflexion. Both processes are deeply intertwined as the emotional valence of the experience triggers different reflexive thoughts. In the workshops, we encountered two sets of associations between emotional experiences and reflexive thought, which we describe in the next subsections.

Blending environmental concerns and positive feelings

The game experience generally led to participants reporting ambiguous emotional states in which negative and positive emotions were blended. Negative emotions stemmed mainly from the game's narrative of environmental collapse. These were akin to the feelings that are often mentioned in last chance tourism studies, namely a sense of ecoanxiety and ecological grief (Crossley, 2020; Cunsolo & Ellis, 2018; Walker & Moscardo, 2014), as participants showed concern and sadness over the eventual disappearance of currently endangered plant species. However, other elements of the experience countered such feelings. One of these elements was the aesthetics of the garden itself, as some participants recollected:

I felt concerned for the species that are facing extinction, but also admired by the environment and fond of it, because not only the species facing extinction, but the others, the plants and trees are so cute that I was like 'wow'. I was surprised with some of the plants, also because I was looking at other plants as well, because they are so cute, their beauty, their shape. So I was like wow, that's cute.

I was feeling joyful and excited because I think the garden is very beautiful and very well taken care of. So it is pleasant to walk, but then I also felt worried to learn that there are many endangered species.

Indeed, it is widely recognized that the aesthetics of nature experiences triggers positive feelings (Biglin, 2020; Birch et al., 2020; Vujcic et al., 2019). In this sense, the

garden's beauty provided an important contrast to the troublesome narrative of the game throughout the experience of the game.

Other participants reported that despite feeling the negativity of the environmental narrative, the game dynamics provided a contrasting enticing experience. In the words of a participant:

I was excited because I came excited for the game and I was like that throughout. The game is dynamic. I also felt a bit vague due to the confusion that the game caused. But it was a slight confusion, because I was in the midst of the play so I had to always be attentive to my surroundings, so it always felt somewhat vague. But going back, I felt excited and also admired by what was around me. I had never been here before so now I want to return to look at everything in greater detail.

In this regard, the gaming experience provided challenges that participants had to overcome, leading to feelings of enthusiasm, excitement, and reward. Rather than leading to the sense of hopelessness generally associated to last chance experiences (Font & Hindley, 2017), participants reported that the experience led to a mix of feelings that also allow them to balance their perspective. That is, they were able to enjoy the aesthetic appreciation of the species, while also being concerned with the global threats affecting them. The game narrative was important for the blending of such feelings as it led participants to enter a state of focused attention in which the details of the narrative and the garden itself became significant and intertwined, as the following quote illustrates:

I felt delighted; it was the first thing I felt after entering the garden. Throughout the game, I felt attentive because the experience itself required a lot of attention to many details and specific things. Then, I was interested by the experience in which I was involved. I was interested in the many specific things and details that I could visualize in this space, given the wide diversity of species that there is. But I also felt worried by the fact that there are so many species, according to the stories, to the information that there are species facing extinction, or that there is an excessive use of these species. So at the same time, I felt bothered, but then also happy at the end of the experience.

This high state of attention provoked by the game experience allowed participants to reflect upon their experience and their emergent emotions. In this sense, although this experience provoked the psychological reactions that are common in last chance experiences, such as ecoanxiety and ecological grief (Albrecht et al., 2007; Galway et al., 2019), these did not lead to exacerbating the problematic urgency of visiting endangered places before they disappear that drives last chance tourists (Denley et al., 2020; Kucukergin & Gürlek, 2020; Salim & Ravanel, 2023). Rather, echoing the insight that narratives and emotions are crucial for transformative experiences (Kirillova et al., 2017a, 2017b; Soulard et al., 2021; Walker & Ngara Manyamba, 2020), *Origenes botanica* narrative played a pivotal role in directing participants to hopeful and transformative reflections. We explore topic in further detail in the next section.

Linking last chance experiences with global threats

As mentioned earlier, participants reported that the mixed feelings suggested by the game experience led them to balance their perspective on the issue of global

conservation. Indeed, participants generally reported that while they became worried or concerned about the conservation status of the species, they were also hopeful about the future and confident that solutions to conservation threats can be found and enforced. While some participants described the overall experience as 'ultimately depressing', most reported feeling 'happy' at the end of the experience. As mentioned previously, intense contradictory emotions are often important triggers that lead tourists to reflect on which meaningful life changes they can make (Kirillova, 2019; Kirillova et al., 2017b; Walker & Ngara Manyamba, 2020).

Participants were generally able to remember the global conservation threats mentioned in the narrative and associate these threats to specific species, although some conservation threats, especially climate change, deforestation and human activity, were mentioned more often than others, such as invasive species or overcollecting. This may indicate that the experience was more successful in activating previous knowledge on conservation issues than providing new knowledge. Indeed, although the narrative does not highlight any global threat over others, some participants identified the 'main' threat and reflected upon it:

If mankind is the main factor in deforestation or the main problem, it is important to raise awareness about the impact that we have. But often it is a group of few people who have a lot of benefit and end up creating harm for many people that had little or nothing to do with their actions. I mean like firms and so on.

On the other hand, participants were also able to state global conservation threats not mentioned in the game, which is an indication that the experience led to significant existential reflection (Kirillova et al., 2017a). More importantly, participants were generally positive toward conservation action and its possibilities. This indicates that the last chance experience was also a hopeful experience. Participants mentioned different elements of the narrative that have elicited positive feelings toward the future. One of these was the experience of learning, as one participant describes:

This is an enriching experience because most of these places do not have a didactical point-of-view. When one goes to a park, it is merely to contemplate the surroundings and one ends up not knowing the history of the tree: where it comes from, what happened, is this the only one of its kind here?

Learning was understood as an experience that led to a greater appreciation of the value of plants and ecosystems, which in turn also leads to a desire to preserve species to ensure that their aesthetical and environmental benefits are guaranteed. In this sense, this experiment echoes the notion that moments of learning are crucial for transformative tourism experiences (Ormond & Vietti, 2022). Nevertheless, it must be taken into account that the fact that participants tended to reinforce previous knowledge on conservation issues also implies that such moments of learning are acts of co-creation (Soulard et al., 2021; Teoh et al., 2021), which might limit the extent to which tourism service providers can promote environmental awareness in hopeful last chance tourism experiences.

Other participants stated that the idea of the future led them to confront reality and their own actions, and to feel motivated about personal and collective behavioural change. In the words of some participants:

The perspective of the future is inspiring. To look at a scenario, to make the worst possible scenario for each species, and to know now what is going to happen, and then there is the question: do we keep doing little or nothing about it?

I was surprised about the garden, but even more so with the fact that a major part of the species is already undergoing extinction. It was a shock with reality.

In sum, the idea of the 'last chance' which was exacerbated by the game's narrative, rather than creating a sense of hopelessness (Font & Hindley, 2017), lead to hopeful perspectives on global conservation. This was due to the blending of negative emotions stemming from the game's last chance narrative of environmental disaster (Denley et al., 2020; Galway et al., 2019; Kucukergin & Gürlek, 2020), and the positive emotions stemming from the garden's landscape and the game dynamics. The information on contemporary sustainable practices and the ecological and cultural history of endangered species provided by the game's narrative led the participants to reflect and situate their own emplaced experience within wider global issues, and to learn and feel motivated to support and engage in conservation action (Kirillova et al., 2017a; Ormond & Vietti, 2022; Teoh et al., 2021). This highlights the role that meaningful narratives can play in the co-creation of intense and contradictory emotions (Soulard et al., 2021; Walker & Ngara Manyamba, 2020) that can ultimately lead to hopeful and transformative experiences (Ateljevic et al., 2012; Brosnan et al., 2015; Pritchard & Morgan, 2013).

Conclusion

In this article, we sought to research alternatives to explore the tourist desires that fuel last chance tourism, without further contributing toward the dangers and paradoxes that this industry niche is generating. The last chance trope not only demands an ethical discussion in tourism, as it puts into controversy the desire to materialize tourist experiences with the multiscale consequences of their actions, but also requires the exploration of alternatives that can respond to the demand for these kind of experiences in controlled and proximity environments. Moreover, last chance experiences are crucial moments to foster awareness on the impact of tourism itself, especially regarding climate and nature conservation issues. If the tourism industry actively promotes a distinct form of awareness and knowledge about the limits of the planet by leading travellers and tourists to develop emotional bonds with other people and places, then tourism can become a tool for positive change. We have seen that digital narratives can not only be successful in eliciting the sense of degradation of natural environments and the feelings of eco-anxiety, ecological grief and solastalgia that underpin the desire for last chance experiences, but also connect these emotions to hopeful perspectives on future action and sustainable practices.

Thus, digital narratives can be a strategic tool for tourism services to provide products that respond to the environmental interests of tourists in a positive and transformative manner, thus contributing toward a greater sustainability in the industry. However, more research is needed to understand how digital narratives can perform such role and in which type of tourism products can they become more effective. There are questions regarding the contents, effects, and contexts of such narratives that need to be addressed in future studies. First, it is important to understand in

greater detail how stories of environmental change can become tools for transformation, rather than reiterating existing feelings of hopelessness regarding climate change and nature conservation or greenwashing troublesome processes of environmental change by beautifying degradation. This implies critical qualitative inquiries into the contents of such stories and the processes they describe. Secondly, we must understand how digital narratives can actually result in behavioural or systemic change, rather than merely evoking the need for change or motivating individuals to change their practices. This requires more long-term, longitudinal studies that are able to grasp how digital narratives in tourism products affect both the practices within the destination and the *ex post* practices of tourists. For instance, if there is a shift toward digital narratives in last chance tourism, it is also important to understand how the decline of such practices might affect host communities in existing last chance tourism destinations. Thirdly, tourism geographers must attune to how wider contexts of tourism-induced environmental change can inform new transformative digital narratives, while remaining cautious about how digital narratives can be instrumentalized during these processes. This implies careful attention to the creative geographies of the tourism sector and the cultivation of a critical approach that takes into account the power inequalities that compose the networks of tourism geographies. Such a research agenda on the role that digital narratives can play in the co-creation of transformative tourism experiences for individuals with an interest in the environment can be a crucial step toward more sustainable tourism.

Disclosure statement

No potential conflict of interest was reported by the authors.

Ethics approval

This study's methodology was approved by the Ethics Committee of the Institute of Geography and Spatial Planning of the Universidade de Lisboa. All research participants provided informed consent.

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Data availability statement

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available.

References

- Albrecht, G., Sartore, G. M., Connor, L., Higginbotham, N., Freeman, S., Kelly, B., Stain, H., Tonna, A., & Pollard, G. (2007). Solastalgia: The distress caused by environmental change. *Australasian Psychiatry*, 15(1_suppl), S95–S98. <https://doi.org/10.1080/10398560701701288>
- Anderson, B. (2006). Becoming and being hopeful: Towards a theory of affect. *Environment and Planning D: Society and Space*, 24(5), 733–752. <https://doi.org/10.1068/d393t>
- Ateljevic, I., Morgan, N., & Pritchard, A. (2012). *The critical turn in tourism studies: Creating an academy of hope*. Routledge.
- Bahja, F., Alvarez, S., & Fyall, A. (2022). A critique of (ECO)guilt research in tourism. *Annals of Tourism Research*, 92, 103268. <https://doi.org/10.1016/j.annals.2021.103268>
- Bahja, F., & Hancer, M. (2021). Eco-guilt in tourism: Do tourists intend to behave environmentally friendly and still revisit? *Journal of Destination Marketing & Management*, 20, 100602. <https://doi.org/10.1016/j.jdmm.2021.100602>
- Bellato, L., Frantzeskaki, N., & Nygaard, C. (2023). Regenerative tourism: A conceptual framework leveraging theory and practice. *Tourism Geographies*, 25(4), 1026–1046. <https://doi.org/10.1080/14616688.2022.2044376>
- Biglin, J. (2020). Embodied and sensory experiences of therapeutic space: Refugee place-making within an urban allotment. *Health & Place*, 62, 102309. <https://doi.org/10.1016/j.healthplace.2020.102309>
- Birch, J., Rishbeth, C., & Payne, S. (2020). Nature doesn't judge you – how urban nature supports young people's mental health and wellbeing in a diverse UK city. *Health & Place*, 62, 102296. <https://doi.org/10.1016/j.healthplace.2020.102296>
- Boyd, C., & Edwardes, C. (2019). *Non-representational theory and the creative arts*. Palgrave Macmillan.
- Brosnan, T., Filep, S., & Rock, J. (2015). Exploring synergies: Hopeful tourism and citizen science. *Annals of Tourism Research*, 53, 96–98. <https://doi.org/10.1016/j.annals.2015.05.002>
- Brouder, P., Teoh, S., Salazar, N., Mostafanezhad, M., Mei Pung, J., Lapointe, D., Higgins-Desbiolles, F., Haywood, M., Hall, C., & Clausen, H. (2020). Reflections and discussions: Tourism matters in the new normal post COVID-19. *Tourism Geographies*, 22(3), 735–746. <https://doi.org/10.1080/14616688.2020.1770325>
- Cave, J., & Dredge, D. (2020). Regenerative tourism needs diverse economic practices. *Tourism Geographies*, 22(3), 503–513. <https://doi.org/10.1080/14616688.2020.1768434>
- Cavender, R. C., Swanson, J. R., & Wright, K. (2020). Transformative travel: Transformative learning through education abroad in a niche tourism destination. *Journal of Hospitality, Leisure, Sport and Tourism Education*, 27, 100245. <https://doi.org/10.1016/j.jhlste.2020.100245>
- Cheer, J. M. (2020). Human flourishing, tourism transformation and COVID-19: A conceptual touchstone. *Tourism Geographies*, 22(3), 514–524. <https://doi.org/10.1080/14616688.2020.1765016>
- Chhabra, D. (2021). Transformative perspectives of tourism: Dialogical perceptiveness. *Journal of Travel & Tourism Marketing*, 38(8), 759–768. <https://doi.org/10.1080/10548408.2021.1986197>

- Crossley, É. (2020). Ecological grief generates desire for environmental healing in tourism after COVID-19. *Tourism Geographies*, 22(3), 536–546. <https://doi.org/10.1080/14616688.2020.1759133>
- Cunsolo, A., & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*, 8(4), 275–281. <https://doi.org/10.1038/s41558-018-0092-2>
- D'Souza, J., Dawson, J., & Groulx, M. (2023). Last chance tourism: A decade review of a case study on Churchill, Manitoba's polar bear viewing industry. *Journal of Sustainable Tourism*, 31(1), 14–31. <https://doi.org/10.1080/09669582.2021.1910828>
- Dawson, J., Johnston, M. J., Stewart, E. J., Lemieux, C. J., Lemelin, R. H., Maher, P. T., & Grimwood, B. S. R. (2011). Ethical considerations of last chance tourism. *Journal of Ecotourism*, 10(3), 250–265. <https://doi.org/10.1080/14724049.2011.617449>
- Dawson, J., & Lemelin, H. (2015). Last chance tourism: A race to be last? In M. Hughes, D. Weaver, & C. Pforr (Eds.), *The practice of sustainable tourism. Resolving the paradox* (pp. 133–145). Routledge.
- Denley, T. J., Woosnam, K. M., Ribeiro, M. A., Boley, B. B., Hehir, C., & Abrams, J. (2020). Individuals' intentions to engage in last chance tourism: Applying the value-belief-norm model. *Journal of Sustainable Tourism*, 28(11), 1860–1881. <https://doi.org/10.1080/09669582.2020.1762623>
- Diaz-Soria, I. (2017). Being a tourist as a chosen experience in a proximity destination. *Tourism Geographies*, 19(1), 96–117. <https://doi.org/10.1080/14616688.2016.1214976>
- Dodds, R., & Butler, R. (2019). The phenomena of overtourism: A review. *International Journal of Tourism Cities*, 5(4), 519–528. <https://doi.org/10.1108/IJTC-06-2019-0090>
- Dogru, T., Marchio, E., Bulut, U., & Suess, C. (2019). Climate change: Vulnerability and resilience of tourism and the entire economy. *Tourism Management*, 72, 292–305. <https://doi.org/10.1016/j.tourman.2018.12.010>
- Ferreira, D., Carmo, R. M., & Vale, M. (2022). Is the COVID-19 pandemic accelerating the platformisation of the urban economy? *Area*, 54, 443–450. <https://doi.org/10.1111/area.12785>
- Font, X., & Hindley, A. (2017). Understanding tourists' reactance to the threat of a loss of freedom to travel due to climate change: A new alternative approach to encouraging nuanced behavioural change. *Journal of Sustainable Tourism*, 25(1), 26–42. <https://doi.org/10.1080/09669582.2016.1165235>
- Galway, L. P., Beery, T., Jones-Casey, K., & Tasala, K. (2019). Mapping the solastalgia literature: A scoping review study. *International Journal of Environmental Research and Public Health*, 16(15), 2662. <https://doi.org/10.3390/ijerph16152662>
- Gössling, S., Hanna, P., Higham, J., Cohen, S., & Hopkins, D. (2019). Can we fly less? Evaluating the 'necessity' of air travel. *Journal of Air Transport Management*, 81(10), 101722. <https://doi.org/10.1016/j.jairtraman.2019.101722>
- Groulx, M., Boluk, K., Lemieux, C. J., & Dawson, J. (2019). Place stewardship among last chance tourists. *Annals of Tourism Research*, 75, 202–212. <https://doi.org/10.1016/j.annals.2019.01.008>
- Groulx, M., Lemieux, C., Dawson, J., Stewart, E., & Yudina, O. (2016). Motivations to engage in last chance tourism in the Churchill Wildlife Management Area and Wapusk National Park: The role of place identity and nature relatedness. *Journal of Sustainable Tourism*, 24(11), 1523–1540. <https://doi.org/10.1080/09669582.2015.1134556>
- Hall, C., Gössling, S., & Scott, D. (2017). *The Routledge handbook of tourism and sustainability*. Routledge.
- Higgins-Desbiolles, F. (2003). Reconciliation tourism: Tourism healing divided societies!. *Tourism Recreation Research*, 28(3), 35–44. <https://doi.org/10.1080/02508281.2003.11081415>
- Higgins-Desbiolles, F., Bigby, B. C., & Doering, A. (2022). Socialising tourism after COVID-19: Reclaiming tourism as a social force? *Journal of Tourism Futures*, 8(2), 208–219. <https://doi.org/10.1108/JTF-03-2021-0058>
- Higgins-Desbiolles, F., Carnicelli, S., Krolikowski, C., Wijesinghe, G., & Boluk, K. (2019). Degrowing tourism: Rethinking tourism. *Journal of Sustainable Tourism*, 27(12), 1926–1944. <https://doi.org/10.1080/09669582.2019.1601732>
- Higgins-Desbiolles, F., & Whyte, K. P. (2013). No high hopes for hopeful tourism: A critical comment. *Annals of Tourism Research*, 40(1), 428–433. <https://doi.org/10.1016/j.annals.2012.07.005>

- Hindley, A., & Font, X. (2018). Values and motivations in tourist perceptions of last-chance tourism. *Tourism and Hospitality Research*, 18(1), 3–14. <https://doi.org/10.1177/1467358415619674>
- Hoogendoorn, G., & Fitchett, J. (2018). Tourism and climate change: A review of threats and adaptation strategies for Africa. *Current Issues in Tourism*, 21(7), 742–759. <https://doi.org/10.1080/13683500.2016.1188893>
- Jeuring, J., & Haartsen, T. (2017). The challenge of proximity: The (un)attractiveness of near-home tourism destinations. *Tourism Geographies*, 19(1), 118–141. <https://doi.org/10.1080/14616688.2016.1175024>
- Joshua, J., Jin, Y., Ogunmokun, O., & Ikhide, J. (2023). Hospitality for sustainability: Employee eco-anxiety and employee green behaviors in green restaurants. *Journal of Sustainable Tourism*, 31(6), 1356–1372. <https://doi.org/10.1080/09669582.2022.2043877>
- Kaján, E., & Saarinen, J. (2013). Tourism, climate change and adaptation: A review. *Current Issues in Tourism*, 16(2), 167–195. <https://doi.org/10.1080/13683500.2013.774323>
- Kirillova, K. (2019). Existentialism and tourism: New research avenues. *International Journal of Tourism Cities*, 5(3), 429–442. <https://doi.org/10.1108/IJTC-02-2019-0033>
- Kirillova, K., Lehto, X., & Cai, L. (2017a). What triggers transformative tourism experiences? *Tourism Recreation Research*, 42(4), 498–511. <https://doi.org/10.1080/02508281.2017.1342349>
- Kirillova, K., Lehto, X., & Cai, L. (2017b). Tourism and Existential Transformation: An Empirical Investigation. *Journal of Travel Research*, 56(5), 638–650. <https://doi.org/10.1177/0047287516650277>
- Kucukergin, K. G., & Gürlek, M. (2020). 'What if this is my last chance?': Developing a last-chance tourism motivation model. *Journal of Destination Marketing & Management*, 18, 100491. <https://doi.org/10.1016/j.jdmm.2020.100491>
- Lalicic, L. (2020). Solastalgia: An application in the overtourism context. *Annals of Tourism Research*, 82, 102766. <https://doi.org/10.1016/j.annals.2019.102766>
- Lemelin, H., Dawson, J., & Stewart, E. (2013). *Last chance tourism. Adapting tourism opportunities in a changing world*. Routledge.
- Lemelin, H., Dawson, J., Stewart, E. J., Maher, P., & Lueck, M. (2010). Last-chance tourism: The boom, doom, and gloom of visiting vanishing destinations. *Current Issues in Tourism*, 13(5), 477–493. <https://doi.org/10.1080/13683500903406367>
- Lemelin, H., & Whipp, P. (2019). Last chance tourism: A decade in review. In D. Timothy (Ed.), *Handbook of globalisation and tourism* (pp. 316–322). Edward Elgar.
- Lew, A. A. (2017). Tourism planning and place making: Place-making or placemaking? *Tourism Geographies*, 19(3), 448–466. <https://doi.org/10.1080/14616688.2017.1282007>
- Lew, A. A. (2018). Why travel?—travel, tourism, and global consciousness. *Tourism Geographies*, 20(4), 742–749. <https://doi.org/10.1080/14616688.2018.1490343>
- McCool, S., & Bosak, K. (2019). *A research agenda for sustainable tourism*. Edward Elgar.
- Miller, L. B., Hallo, J. C., Dvorak, R. G., Fefer, J. P., Peterson, B. A., & Brownlee, M. T. J. (2020). On the edge of the world: Examining pro-environmental outcomes of last chance tourism in Kaktovik, Alaska. *Journal of Sustainable Tourism*, 28(11), 1703–1722. <https://doi.org/10.1080/09669582.2020.1720696>
- Mkono, M. (2020). Eco-anxiety and the flight shaming movement: Implications for tourism. *Journal of Tourism Futures*, 6(3), 223–226. <https://doi.org/10.1108/JTF-10-2019-0093>
- Mkono, M., & Hughes, K. (2020). Eco-guilt and eco-shame in tourism consumption contexts: Understanding the triggers and responses. *Journal of Sustainable Tourism*, 28(8), 1223–1244. <https://doi.org/10.1080/09669582.2020.1730388>
- Morgan, N., Pritchard, A., Causevic, S., & Minnaert, L. (2018). Ten years of critical tourism studies: Reflections on the road less travelled. *Tourism Analysis*, 23(2), 183–187. <https://doi.org/10.3727/108354218X15210313504535>
- Ormond, M., & Vietti, F. (2022). Beyond multicultural 'tolerance': Guided tours and guidebooks as transformative tools for civic learning. *Journal of Sustainable Tourism*, 30(2–3), 533–549. <https://doi.org/10.1080/09669582.2021.1901908>
- Paiva, D., Madail, M., Carvalho, L., Sousa, A., Soares, A., Azambuja, A., & Brito-Henriques, E. (2023). Cartografia narrativa, story-mapping e conhecimento ambiental. In G. Leal, R. Campos, & A. Pavoni (Eds.), *Intervenções Cartográficas*. Outro Modo.

- Pernecky, T. (2020). Critical tourism scholars: Brokers of hope. *Tourism Geographies*, 22(3), 657–666. <https://doi.org/10.1080/14616688.2020.1760925>
- Phillips, R., & Kara, H. (2021). *Creative writing for social research: A practical guide*. Policy Press.
- Piggott-McKellar, A. E., & McNamara, K. E. (2017). Last chance tourism and the Great Barrier Reef. *Journal of Sustainable Tourism*, 25(3), 397–415. <https://doi.org/10.1080/09669582.2016.1213849>
- Pisters, S. R., Vihinen, H., & Figueiredo, E. (2019). Place-Based Transformative Learning. A framework to explore consciousness in sustainability initiatives. *Emotion, Space & Society*, 32, 100578. <https://doi.org/10.1016/j.emospa.2019.04.007>
- Pritchard, A., & Morgan, N. (2013). Hopeful tourism: A transformational perspective. In Y. Reisinger (Ed.), *Transformational tourism: Tourist perspectives* (pp. 3–14). CABI.
- Pritchard, A., Morgan, N., & Ateljevic, I. (2011). Hopeful tourism. A new transformative perspective. *Annals of Tourism Research*, 38(3), 941–963. <https://doi.org/10.1016/j.annals.2011.01.004>
- Rosselló, J., Becken, S., & Santana-Gallego, M. (2020). The effects of natural disasters on international tourism: A global analysis. *Tourism Management*, 79, 104080. <https://doi.org/10.1016/j.tourman.2020.104080>
- Salim, E., & Ravanel, L. (2023). Last chance to see the ice: Visitor motivation at Montanvers-Mer-de-Glace, French Alps. *Tourism Geographies*, 25(1), 72–94. <https://doi.org/10.1080/14616688.2020.1833971>
- Schweinsberg, S., Wearing, S., & Lai, P.-H. (2021). Host communities and last chance tourism. *Tourism Geographies*, 23(5–6), 945–962. <https://doi.org/10.1080/14616688.2019.1708446>
- Scott, D., Hall, C., & Stefan, G. (2012). *Tourism and climate change. Impacts, adaptation and mitigation*. Routledge.
- Scott, D., Hall, C., & Stefan, G. (2019). Global tourism vulnerability to climate change. *Annals of Tourism Research*, 77, 49–61. <https://doi.org/10.1016/j.annals.2019.05.007>
- Soulard, J., McGehee, N. G., Stern, M. J., & Lamoureux, K. M. (2021). Transformative tourism: Tourists' drawings, symbols, and narratives of change. *Annals of Tourism Research*, 87, 103141. <https://doi.org/10.1016/j.annals.2021.103141>
- Teoh, M. W. Y., Wang, Y., & Kwek, A. (2021). Conceptualising co-created transformative tourism experiences: A systematic narrative review. *Journal of Hospitality and Tourism Management*, 47, 176–189. <https://doi.org/10.1016/j.jhtm.2021.03.013>
- Tucker, H., & Shelton, E. J. (2018). Tourism, mood and affect: Narratives of loss and hope. *Annals of Tourism Research*, 70, 66–75. <https://doi.org/10.1016/j.annals.2018.03.001>
- von Benzon, N., Holton, M., Wilkinson, C., & Wilkinson, S. (2021). *Creative methods for human geographers*. Sage.
- Vujcic, M., Tomicevic-Dubljevic, J., Zivojinovic, I., & Toskovic, O. (2019). Connection between urban green areas and visitors' physical and mental well-being. *Urban Forestry & Urban Greening*, 40, 299–307. <https://doi.org/10.1016/j.ufug.2018.01.028>
- Walker, K., & Moscardo, G. (2014). Encouraging sustainability beyond the tourist experience: Ecotourism, interpretation and values. *Journal of Sustainable Tourism*, 22(8), 1175–1196. <https://doi.org/10.1080/09669582.2014.918134>
- Walker, J., & Ngara Manyamba, V. (2020). Towards an emotion-focused, discomfort-embracing transformative tourism education. *Journal of Hospitality, Leisure, Sport and Tourism Education*, 26, 100213. <https://doi.org/10.1016/j.jhlste.2019.100213>
- Woosnam, K. M., Ribeiro, M. A., Denley, T. J., Hehir, C., & Boley, B. B. (2022). Psychological antecedents of intentions to participate in last chance tourism: Considering complementary theories. *Journal of Travel Research*, 61(6), 1342–1357. <https://doi.org/10.1177/00472875211025097>