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Destruction of heritage, community, and anthropomorphism

1. Introduction

Within the extensive literature on heritage tourism, two primary approaches emerge. The first revolves around heritage management and has delved into various topics such as funding (Garrod & Fyall, 2000), collaboration with stakeholders (Aas et al., 2005), technology management (Bec et al., 2019), and interactions with residents (Nicholas et al., 2009). The second approach is centered on heritage experience and explores the pre-experience, the experience itself, and the post-experience phases. This includes the examination of visitor motivations (Poria et al., 2006), the experience of nostalgia (Lee, 2015) and authenticity (Chhabra et al., 2003), as well as visitor loyalty (Yi et al., 2018). While the first approach is more product-centric, the second is more consumer-centric (Massara & Severino, 2013).

More precisely, this second approach proves valuable in gaining insights into how individuals form connections with heritage sites. As bearers of a shared history, heritage sites serve to connect people with one another and reinforce their sense of common belonging (Ballesteros & Ramirez, 2007). Heritage sites also function as symbols of a community's cultural identity (Poria et al., 2003), embodying traditions, values, and practices passed down through generations, thereby fostering a sense of unity (Yu Park, 2010). Individuals consequently develop a form of attachment to these attractions (Woosnam et al., 2018), even cultivating feelings of love (Andriotis et al., 2020). However, existing studies on the role of heritage in strengthening community ties are predominantly situated in contexts where sites are preserved and accessible to visitors. Yet, what transpires when heritage experiences demise or severe destruction? Owing to ecological, political, or economic factors, heritage sites are increasingly susceptible to damage, decay, and destruction (DeSilvey, 2017). While the loss of heritage can pose challenges for individuals given its profound significance, it can also have adverse consequences for the heritage tourism industry, which relies on the utilization of historic resources (Timothy, 2018). This raises the pivotal question of how communities respond to such loss.

We build upon the anthropomorphism literature, which asserts that individuals have a propensity to attribute human characteristics to nonhuman entities (Epley et al., 2007). However, while anthropomorphism has been extensively employed in marketing to comprehend consumers' relationships with brands (Alvarez & Fournier, 2016; Fournier, 1998), there is a notable gap in research concerning its application to heritage. In this study, we extend this perspective, contending that due to the profound attachment people harbor for

heritage (Chen & Chen, 2010; Poria et al., 2006), individuals anthropomorphize heritage sites, endowing them with human characteristics. Applied to the context of the destruction of heritage, this implies that such loss is perceived as akin to the loss of a close person, prompting individuals to engage in mourning processes (Kübler-Ross & Kessler, 2005). In this context, we raise the following research question: What are the community effects of the destruction of heritage sites?

This question holds substantial implications for heritage site management strategies when confronted with the prospect of destruction. Grasping how communities anthropomorphize heritage sites in times of crisis can guide proactive preservation endeavors, disaster preparedness plans, and post-disaster recovery initiatives, ultimately contributing to the protection of shared heritage. Our research question also carries implications for community well-being, particularly in regions where heritage plays a pivotal role in cultural identity. Exploring how communities respond to the loss of heritage not only deepens our comprehension of collective grief but also emphasizes the necessity for community support mechanisms, heritage education, and collaborative endeavors to alleviate the emotional and psychological repercussions of such losses.

To address our research question, we examine the case of Notre-Dame Cathedral, the most visited site in France with an average of 36,000 visitors each day¹, and a site that garnered significant attention in a highly publicized event in 2019. Utilizing social network analysis, which afforded us access to the spontaneous and natural reactions of individuals (Kozinets, 2006), our findings underscore the inclination of people to anthropomorphize heritage sites. Specifically, we demonstrate that heritage anthropomorphism, in the face of destruction, gave rise to an active virtual community of mourners, uniting tourists, locals, officials, and managers in a manner reminiscent of a funeral procession. Moreover, our findings reveal that the discussions within the community center around three principal themes: the loss of collective memory, the loss of identity, and mobilization. In this way, our study contributes (1) to the literature on heritage tourism by examining the community effects of the destruction of heritage sites, (2) to the literature on individuals' relationships with heritage by exploring 'negative' relationships, and (3) to the anthropomorphism literature by extending its application to heritage.

2. Theoretical background

¹ <https://www.globe-trotting.com/post/les-lieux-et-monuments-les-plus-visites-en-france>

2.1. Heritage tourism and community

Heritage, as defined by Ashley (2005), encompasses resources from the natural and human realms that societies aim to transmit to future generations, forming the foundation for heritage tourism (Timothy, 2018). In contemporary times, international travel is closely linked to heritage, driven by tourists seeking a sense of security in the past amidst global uncertainties and expressing identity through historical connections (Waite, 2000).

Poria et al. (2003) specifically identify four types of heritage tourists: (1) tourists motivated by the heritage attributes and considering the site as part of their own heritage, (2) tourists motivated by the heritage attributes but not considering the site as part of their own heritage, (3) tourists aware of the heritage attributes but motivated by other factors, and (4) tourists not aware of the heritage attributes of the site. Similarly, McKecher (2002) proposes two dimensions to segment the heritage tourism market: (1) the importance of heritage motives in tourists' decisions to visit a destination and (2) the depth of the level of engagement with the site. Heritage tourism thus attracts different profiles of tourists, transcending cultural and geographical differences, as they share in the collective appreciation of shared history and cultural heritage. Tourists visiting heritage attractions form a temporary yet emotionally resonant community bound together (Steriopoulos et al., 2023) by their shared experiences and reverence for the historical and cultural significance of the site (Goulding & Domic, 2009). Consequently, tourists develop attachment and loyalty to heritage sites (Chen & Chen, 2010).

In a broader relational perspective, heritage tourism possesses the ability to unite tourists, locals, and management, thereby creating a community around heritage attractions (Hampton, 2005). Previous research has established that heritage sites foster cohesion and solidarity within communities (Yu Park, 2010). These attractions act as cultural and historical repositories, linking individuals through shared traditions, values, and practices. By safeguarding collective memory, heritage attractions cultivate a profound sense of belonging and unity, as well as a feeling of cohesion and pride (Poria et al., 2003). They symbolize a community's cultural identity, instilling a deep sense of pride and shared heritage. Heritage is rooted in memory and communal identity through the transmission of resulting collective memories (Goulding, 2000; Lowenthal, 1998). Locals, through their participation and involvement in heritage activities (Alexander & Hamilton, 2016), can assist tourists who may not have a personal connection to the heritage site in experiencing a deeper emotional connection by interacting with them (Zhang & Smith, 2019). Heritage attractions serve as focal points for both tourism and local engagement, where residents often play a crucial role

in the preservation and promotion of these sites. This involvement leads to stronger community ties and collaborative heritage management efforts (Moayerian et al., 2022).

The literature on the meaning and impact of heritage tourism predominantly focuses on heritage preservation, often overlooking the question of how communities respond when heritage sites disappear or suffer serious damage due to destruction. As explained by DeSilvey and Harrison (2020, p. 1), “the destabilization of current ecological, political and economic orders is accompanied by the anticipation of accelerated and unpredictable loss in many contexts, including those related to a broad range of heritage objects, places and practices”. Heritage items are increasingly vulnerable to damage, decay, and destruction (DeSilvey, 2017). Given that heritage is considered an “irreplaceable” and “non-renewable resource” (DeSilvey & Harrison, 2020), the loss of heritage may have detrimental consequences not only for heritage managers (Groizard & Santana-Gallego, 2018), but also for their audience, including locals and tourists. Examining the destruction of archaeological heritage sites by ISIS in Iraq, Khalidi (2017) argues that such actions aim to obliterate the local sense of belonging and the collective memory of local communities. According to Ben-Malka and Poria (2020), the value of heritage is incalculable and even priceless. Due to the profound meaning heritage attractions hold for people, there is a possibility that they perceive the destruction of heritage as akin to the death of a human being, suggesting a form of anthropomorphism.

2.2. An anthropomorphic perspective on heritage loss

Anthropomorphism refers to “the tendency to imbue the real or imagined behavior of nonhuman agents with humanlike characteristics, motivations, intentions, or emotions” (Epley et al., 2007, p. 864). While the earliest mentions of anthropomorphism can be traced back to at least the sixth century BC, with the Greek philosopher Xenophanes describing human representations of gods (Williams et al., 2020), the inclination towards anthropomorphism in humanity has been on the rise (Brown, 2010). This increase is primarily attributed to humankind's innate need to personify (Guthrie, 1995). The 21st century has witnessed a surge in the number of non-human objects that can be anthropomorphized (Waytz et al., 2010), in a variety of situations, personality types, and cultures (Epley et al., 2008).

In the social psychological literature, two main questions pertaining to anthropomorphism have been explored. The first question delves into why individuals feel the need to anthropomorphize, given that they are aware that objects are not humans. According to Epley *et al.* (2008), the anthropomorphism process serves to satisfy two fundamental needs:

the need for social connection, allowing individuals to form bonds with non-human entities, and the need for control, as anthropomorphism engages individuals in a process of understanding their environment. The second line of research focuses on the consequences of anthropomorphism, as these processes influence judgments and behaviors (Aggarwal & McGill, 2012). Individual and cultural differences play a role in determining the degree of moral care and concern for the anthropomorphized object, the level of responsibility attributed to it, and the social influence derived from it (Waytz et al., 2010). For instance, humanizing animals enhances support for animal welfare (Butterfield et al., 2012) while anthropomorphizing nature promotes environmental protection behavior (Tam et al., 2013).

Although anthropomorphism has been applied to gods (Epley et al., 2007), nature (Tam et al., 2013), and technological objects (Shin & Kim, 2020), it has garnered significant attention in the field of marketing. Previous research in this domain has centered on consumer-brand relationships, operating under the assumption that consumers can establish relationships with brands in a manner similar to their interactions with other individuals (Fournier, 1998). People personify brands to treat them as active ‘other’ (Alvarez & Fournier, 2016). Diverse anthropomorphic representations of products create “personalities” for brands that influence consumers and shape how they express their own identity through these objects (Aggarwal & McGill, 2012). Some recent studies have extended the concept of anthropomorphism to the field of tourism (Chan & Gohary, 2022; Ding et al., 2022). In many of these previous works, the expression of positive or negative emotions is a key outcome, particularly influencing attitudes toward the destination and the intention to visit it (Chan & Gohary, 2022). For instance, Kwak et al. (2020) reveal that anthropomorphizing a tourist destination as culturally distant results in a lower intention to visit, while intentions are higher when the destination is perceived as culturally close.

While the tourism literature has primarily focused on anthropomorphism in the context of destinations, we extend this perspective to heritage, defining heritage anthropomorphism as the inclination to attribute human-like physical features, qualities, and behaviors to a heritage site. Few articles have touched upon anthropomorphic characteristics of heritage sites, such as the phallic shape of Tiya stelae in Ethiopia (Worku Tadesse, 2023), the sincerity of the center of Rome, or the sophistication of the Chartres Cathedral (Hassan et al., 2021). Based on our definition, we propose that communities of individuals associated with heritage sites, including residents, tourists, and professionals, perceive the destruction of these sites as the loss of a close person, leading to the development of mourning processes (Kübler-Ross & Kessler, 2005). The social scientific study of death and loss, inspired by Freud's vision of

mourning as a process to detach emotionally from the deceased, has led to significant research (Benoliel, 1994). For Freud (1957), the mourner's goal is to reach the objective realization that the object of attachment no longer exists. Expanding on these concepts, Kübler-Ross (1969) proposed a five-stage model of grief: (1) denial: a conscious or unconscious rejection of facts, information, and the reality related to the situation at hand, (2) anger: the mourner experiences negative emotions such as resentment and frustration, (3) bargaining: engages in a process of strategizing on how to adapt to the situation, (4), depression: the stage during which the mourner experiences intense states of sadness and, (5) acceptance: acknowledgement of the reality of the situation.

Beyond human, previous research has explored how individuals cope with the death of their pets. Gadberry and White (2013) show, for instance, that as pets are anthropomorphized, they are mourned in a manner similar to humans, with honors such as cremation or burial in a cemetery. However, the literature has yet to investigate the extent to which communities mourn heritage sites.

3. Method

3.1. Case study: the fire at Notre-Dame

To comprehend how communities mourn the destruction of heritage sites, we employed a case study method, as it proved to be the most suitable approach for thoroughly investigating this complex phenomenon. Case study research is particularly apt when the objective is to gain holistic and in-depth insights into a contemporary phenomenon within a real-life context (Yin, 2017). Eisenhardt (1989, p. 534) defines a case study as “a research strategy which focuses on understanding the dynamics present within single settings”. The case study method in this research adhered to the guidelines for qualitative methodologies outlined in the literature (Yin, 2017). While acknowledging the potential limitations in terms of generalizability associated with focusing on a single case, delving deeply into one context facilitates the generation of rich, context-specific insights and knowledge. Therefore, the findings of this study may be considered as an instrumental case (Stake, 1995) contributing to a broader understanding of the anthropomorphism of heritage sites.

Specifically, we chose to focus on the Notre-Dame de Paris Cathedral fire for four primary reasons. Firstly, Notre-Dame de Paris Cathedral, commonly referred to as ‘Notre-Dame’, holds international renown and serves as a symbol of French cultural heritage. Representing an exemplary specimen of French Gothic architecture, Notre-Dame's construction spanned from the 12th to the 14th centuries, highlighting the extensive labor

spread over nearly three centuries. Throughout its history, Notre-Dame played various roles, from serving as a Royal Church in the Middle Ages to witnessing the baptism of several dukes and the coronation of Napoleon the 1st in 1804, as well as hosting the funerals of several Presidents of the French Republic (Erlande-Brandenburg, 2001). As articulated by Personnaz and Tardivel (2020, p. 65), transcends its religious significance; it is a heritage site: “Notre-Dame holds a special place in French heritage. The cathedral of Paris is one of the most significant components of this heritage. [...] The cathedral is located at the point of convergence of multiple historical, artistic, technical, hospitality, liturgical and spiritual dimensions The cathedral's historical importance, intricate architecture, and cultural significance provide a compelling context for examining the emotional bonds people form with their heritage.

Second, its position in French history has rendered it a profoundly significant entity in international popular culture, featuring numerous allusions in painting, literature, cinema, television series, and video games. Notre-Dame, with an annual average of approximately twenty million visitors (of which fourteen million enter the cathedral), stands as the most frequented monument in France, equating to an average of over 36,000 visitors daily¹. Prior to the 2019 fire, on peak days, the number of visitors surpassed 50,000. Its global renown ensures that its preservation or destruction holds implications for individuals and communities well beyond the borders of France, making it a relevant case for the examination of heritage anthropomorphism.

Third, on April 15, 2019, a fire ignited in the framework of Notre-Dame, persisting for nearly 15 hours before 600 firefighters successfully extinguished it. In a matter of hours, the frame and roof of the nave, the transept, and the iconic spire that dominated the entire structure were obliterated. Upon its collapse, the spire caused extensive damage to the large vault of the transept crossing, a portion of the vault in the north arm of the building, and another section in the nave. Fortunately, the overall structural integrity of the cathedral was preserved, along with the two towers, the façade, the principal stained-glass windows, and the treasures and artworks housed within. This incident presented a distinctive opportunity to investigate spontaneous reactions and the formation of online communities, offering valuable insights into the ramifications of heritage loss in the digital age.

Fourth, the media coverage reached staggering proportions globally, providing an unprecedented insight into the spontaneous and authentic reactions of individuals. Over 5 million people tuned in to watch the 8 o'clock news on TF1, the primary French TV channel, which provided live coverage of the events throughout its entire broadcast. According to

Kantar (2019), an analysis of the online and offline impact of the fire revealed that its media exposure surpassed that of intentionally publicized events: 52 views per person on the evening of April 15 (in comparison, there were 43 for the 2018 soccer World Cup and 31 for the 2019 European elections), with an average of 180 views per person during the week of the fire. This marked the highest media exposure in 2019. Television, at 69%, was the predominant source of media exposure, followed by social media at 12%, prompting our data collection focus towards social networks.

3.2. Data collection

To investigate how individuals reacted to the Notre-Dame fire, we analyzed messages shared on social media post-disaster². This approach offers insights into the natural, unscripted expressions and sharing of emotions, as Kozinets (2006, p. 281) notes, being “more naturalistic and unobtrusive” compared to traditional methods like surveys or interviews. Specifically, we employed Social Network Analysis (SNA), a method used to examine social structures through network analysis (Otte & Rousseau, 2002). Social network analysis helps in understanding the social environment of entities, their relational dynamics, and the nature of interpersonal and group interactions (Galaskiewicz & Wasserman, 1993). Aligning with social network analysis sociological focus (Burt, 2007), our study extends beyond just tourists, encompassing all social actors contributing to Notre-Dame's social fabric. This perspective, increasingly adopted in tourism research (e.g. Baggio et al., 2010; Larsen & Bærenholdt, 2019), posits that tourism sites are part of a network that forms their social capital, facilitating access to diverse resources.

We chose Twitter/X data for its accessibility compared to other more private networks like Facebook or Instagram (Kontopoulos et al., 2013). Twitter/X's suitability for research, particularly in exploring online emotional dynamics, is well-documented (Baviera et al., 2019). With its vast user base of 436 million monthly actives and approximately 500 million tweets per day (We Are Social-Hootsuite, 2020), Twitter/X's openness to diverse content types (text, links, videos, emoticons) aligns with our research needs. Crucially, its conversational nature, enabling users to initiate and engage in ongoing discussions, makes it an ideal platform. Additionally, Twitter/X's utility in analyzing sentiment in communication is established (Baviera et al., 2019; Thelwall et al., 2011), further justifying its selection for our study.

² Appendix 2 provides additional information about the data collection and analysis.

Data from Twitter/X was gathered on April 16, 2019, using NodeXL Pro software³, one day post-fire, and provided by Twitter/X. The selection criteria focused on tweets containing “Notre-Dame”, “Notre Dame”, “Notre_Dame”, or “NotreDame” keywords or hashtags, or those engaged in related conversations. We also tracked user metrics like followers, tweet counts, and likes. For methodological rigor and triangulation (Yin, 2017), we included offline and online articles published the following week by prominent French newspapers: Le Monde, Le Figaro, 20minutes, Le Parisien, and Ouest France, totaling 559 articles and 814 pages. This was to gain insights into the fire’s portrayal in French societal discourse.

3.3. Data analysis

Our three-step analysis began with examining the network structure through structural metrics. We pinpointed conversational communities by assessing the exchange density, highlighting distinct dialogues within the network (Hansen et al., 2010). Additionally, we employed the Harel-Koren Fast Multiscale layout algorithm to graphically represent these communities, facilitating a visual understanding of the network’s conversational clusters (Hansen et al., 2010). This approach effectively illustrates the hierarchical interplay among network actors. It involves two primary phases: computing individual horizontal positions through recursive methods and adjusting vertical placements to prevent overlaps, ensuring a coherent visual layout.

The second phase involved sentiment analysis to decode the emotions embedded in online exchanges. This process entailed assigning emotional values to messages, categorizing them as either positive or negative. Due to the unstructured nature of the data, we utilized natural language processing techniques (Liu, 2020). This method involved tokenizing the collected sentences and matching the terms against a pre-categorized linguistic dictionary of positive and negative emotions, enabling a systematic evaluation of the emotional undertones in the communications.

In the third stage, we delved into both online dialogues and press articles, employing content analysis to extract prevalent themes. Following Spiggle (1994) methodology, we executed three-tiered coding. Initially, we scrutinized the tweets, guided by our sentiment analysis, to uncover primary topics. Subsequently, through axial coding, we aligned these topics with anthropomorphism literature, discerning similarities and contrasts. The final step

³ <https://nodexlgraphgallery.org/Pages/Graph.aspx?graphID=193957>

involved contrasting these topics to distill them into more abstract themes: shock and denial, anger and sadness, questioning life, memory sharing, and recovery. For methodological rigor, intercoder reliability was ensured by an 84% coding agreement. This was achieved via a comprehensive coding protocol, complete with category definitions and examples, coupled with regular team discussions to resolve discrepancies and consolidate categorization.

4. Findings

Overall, our analysis suggests that the destruction of Notre-Dame is perceived as the loss of a human being, indicating a process of anthropomorphism of the cathedral. Heritage anthropomorphism translates in four ways:

- (1) the attribution of human physical characteristics to Notre-Dame, which can include a morphology, a voice or a skeleton (“This commitment will not be able to erase for a long time the terrible images of this immense fire which will have spared Notre-Dame only its stone skeleton and the memory of a poignant evening of mourning, national and planetary”, *Le Monde*, April 17, 2019);
- (2) the attribution of human qualities to the cathedral, which can be perceived as vulnerable or beautiful (“The sudden vulnerability of Notre-Dame, seriously disfigured in a handful of hours” *Le Figaro*, April 19, 2019);
- (3) the attribution of human physical behaviors to Notre-Dame (“When you live in the perimeter of Notre-Dame, you live with it! [...] We live to its rhythm, to its colors, to its music!”, *Le Monde*, April 17, 2019);
- (4) the attribution of superhuman characteristics, leading people to perceive Notre-Dame as a protective and immortal deity. (“The most famous of cathedrals will be reborn because its influence goes beyond us. She is like immortal”, *Ouest France*, April 17, 2019).

Based on this, the findings are organized into three sections: the emergence of a virtual mourner community, the feelings expressed in the community, and the types of grief expressed in the community conversations.

4.1. The emergence of a virtual mourner community

The data reveal that the destruction of Notre-Dame has spawned a large online community, bringing together diverse individuals. The network comprises 21,216 Twitter users, 6,394 tweets (25.5% of the links), 752 replies (11.76% of the tweets, 3% of the links), and 17,939 mentions (71.5% of the links, $M = 2.81/\text{tweet}$), creating a total of 20,085 connections. This represents a substantial network of users and messages focused on a single

event. Indicators from network analysis show that many people participated in the conversation and reacted predominantly to emotions expressed by other individuals with whom they do not a priori have strong or regular ties. Specifically, to observe if the members of this network are strongly interconnected, we used two measures: the reciprocated users pair ratio (RU), which measures the proportion of individuals who reply to each other, and the reciprocated links ratio (RL), which indicates the general percentage of reciprocated links in the network. In our case, these indicators are low (RU = 0.0027, RL = 0.0054), indicating that few individuals respond to messages received by the whole network.

However, it's noteworthy that the network demonstrates extensive interactions, as shown by its Network Modularity (NM), which gauges the proportion of links among users within closer circles. The high modularity of our network (NM = 0.81) implies frequent communication within distinct social groups. This is further supported by the geodesic distance metric, representing the average (Mean Geodesic Distance, $M_{GD} = 8.83$) and maximum ($Max_{GD} = 28$) number of steps between two users. This indicates that, on average, a message traverses through about 9 connections to reach another network member. Such a pattern underscores that individuals discussing Notre-Dame were not initially interconnected, reflecting spontaneous community formation (Hansen et al., 2010).

A more detailed analysis reveals that the community is organized into clusters, each distinct from the others (Figure 1). The size of each cluster is determined by the number of people interconnected in the same conversation, indicating the density of their exchanges. Clusters are formed based on the frequency of communication among users. Appendix 1 demonstrates that cluster membership significantly differs on almost all the main metrics typically used in SNA, as well as in terms of individuals' online social capital (number of followers, number of accounts followed, number of favorites received) and the tone of conversations. This suggests that the Notre-Dame incident sparked distinct dialogues among individuals who grouped based on specific themes.

The diversity of people who have come together to share their grief online is also illustrated by the multiplicity of languages used in the community (Figure 2). English predominates as the usual transnational language in online communities, accounting for 52% of exchanges among the 33 languages used in the community. However, most clusters are highly international, with the audience divided by theme rather than by nationality, mixing local actors with tourists or officials from various other countries⁴.

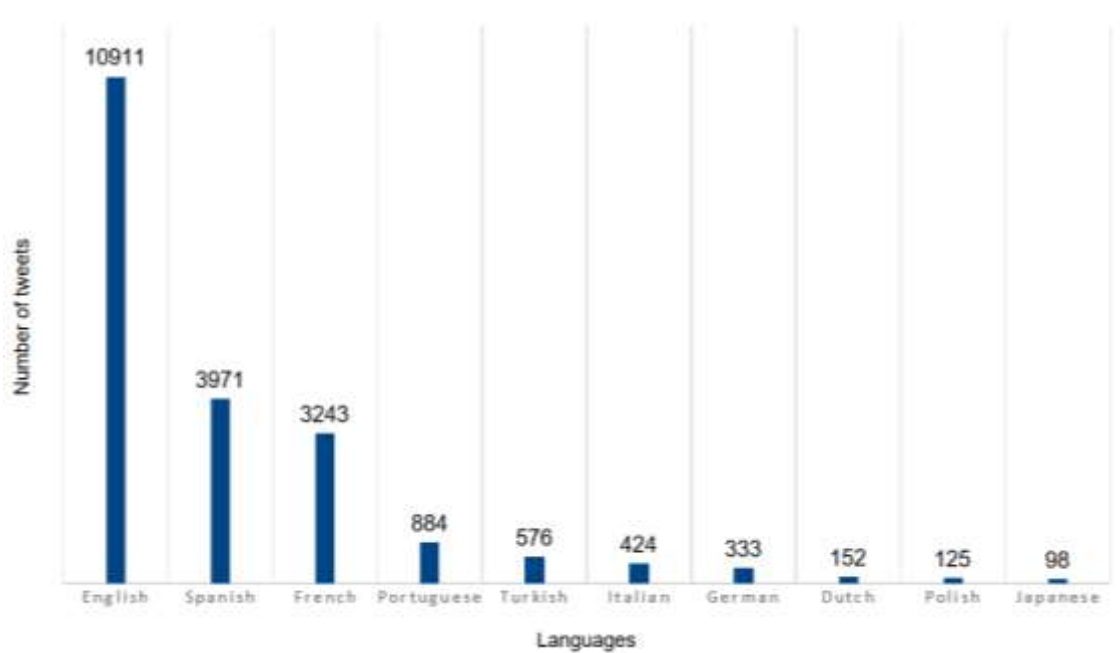


Figure 2. Languages used in the social network

This finding contributes to the heritage tourism literature by demonstrating that the event of Notre-Dame's destruction gave rise to a virtual community that spontaneously united to share their grief. This virtual community comprises a diverse array of members, including tourists, locals, managers, and policymakers. Previous research suggests that heritage tourism can generate tensions between tourists and locals. For example, tourists may only experience heritage sites momentarily, while locals have long-term involvement (Zhang & Smith, 2019). Similarly, the priorities of locals and heritage organizations, focused on protecting and preserving heritage attractions, may differ from the interests of tourists and tourism professionals, who are more concerned with the commodification of heritage (Aas et al., 2005). Our results build upon this literature, indicating that, in the context of heritage

⁴ The rest of the analyzes (sentiment analysis and thematic analysis of the conversations) were conducted only on English-language tweets.

destruction, tourists and locals put aside their tension and widely use digital platforms to share and process their grief. Despite having distinct motivations for joining this community of mourners, the destruction of heritage sites has the power to bring people together.

4.2. The feelings expressed in the community

Sentiment analysis was conducted to evaluate the emotional tone across the network's dialogues (Liu, 2020). Words were sorted into positive and negative categories (Table 1) and assessed using lexicons where lemmas⁵ are tagged with affective weights indicating their emotional valence (Thelwall et al., 2011).

Words	Count	Saliency	% sentiment words
Positive List	7,436	0.015	42.11
Negative List	10,224	0.019	57.89
Non-categorized Words	490,705	0.966	
Total Words	507,916	1.000	3.48

Table 1. Top words categorized in sentiment lists

In semantic networks, emotive words typically constitute a small fraction (3.48%), overshadowed by the prevalence of common vocabulary and function words. Our analysis, therefore, focuses on the proportion of emotionally charged words. Negative terms prevail, with expressions of negativity and anger comprising 57.89% of emotion-laden words. This negativity stems from the distress witnessed in media portrayals, evoking horror and mourning over the loss of a universal symbol. Conversely, the lexicon of positivity clusters around themes of hope, support for restoration, donations, reverence, and collective solidarity amidst the calamity, echoing through shared prayers and rescue efforts for Notre-Dame.

Significant variances in emotional tone were observed across main clusters (Table 2), with a t-test confirming this for both positive and negative sentiments ($M\%_{\text{negative}} = 2.59$, $t = 3.77$, $p = 0.013$; $M\%_{\text{positive}} = 2.16$, $t = 5.12$, $p = 0.004$). G3 and G6 are the most negative, with G5 and G7 closely following, expressing grievances about perceived preferential support for certain sites. They lament the disproportionate sympathy and aid offered to Notre-Dame

⁵ A lemma refers to the simplest form of a word that allows it to be classified and located in a dictionary. A lemma is used to represent all the other possible forms. For example, the lemma "play" represents "plays", "playing", "played", etc.

compared to other affected sites, such as African American churches (G3) or the Al-Aqsa Mosque (G5). Conversely, G7's negativity is shaped by conspiratorial beliefs around intentional destruction. The most positive sentiments are found within G6, G3, and G7, where there's a marked eagerness to assist Notre-Dame and Catholic heritage broadly (G6), to expedite reconstruction, and to aid those most impacted by the tragedy (G3).

Clusters	Nb users	Nb tweets	Negative Words	(%)	Positive Words	(%)	Total Words
G2-Western Leaders	871	1,330	259	1.05	276	1.12	24,713
G3-American Christians	568	656	442	3.16	535	3.82	13,998
G4-French Far Right	480	612	113	0.67	128	0.76	16,822
G5- Middle Eastern Voices	428	449	307	2.67	189	1.65	11,477
G6-Mobilised Donors	424	441	322	2.82	574	5.02	11,436
G7-Conspiracyists	422	485	313	2.61	384	3.20	11,997
Total G2-G7	3193	6394					90,443

Table 2. Sentiment analysis for clusters G2-G7

What the data suggest here is that because heritage is part of the collective identity of individuals (Yu Park, 2010) and is something that must be preserved, safeguarded, and transmitted (Smith, 2006), people feel the need to get closer when the monument is threatened. Instead of mourning alone, individuals feel the necessity to navigate this challenging time collectively and share their emotions, whether negative (focused on the shock of the loss) or positive (centered on the hope of being able to save Notre-Dame).

4.3. *The community's conversations*

The thematic analysis reveals that, in the case of its destruction, informants anthropomorphize Notre-Dame through different forms of grief (Kübler-Ross & Kessler, 2005).

4.3.1. *Shock and denial*

The data show first that the news of the Notre-Dame Cathedral fire was perceived by people as a shock similar to that of if they had been told of a serious accident involving a loved one.

Shock is the feeling that appears most spontaneously and quickly after the start of the fire.

Learning about the fire puts people in a state of bewilderment:

“Horried by the images of the fire devastating Notre-Dame Cathedral - a unique world heritage gem that has reigned over Paris since the 14th century. My thoughts are with the people and the French government”.

As with the news of the death of a loved one, people are trying to cope with the pain that comes with shock. This reaction is marked by refusing to believe that they are losing a loved one. In a way, denial slows down the grieving process. Indeed, during this stage, individuals' emotions are somewhat numbed, which allows them not to feel overwhelmed. They refuse to realize the impossible:

“I don't really have words for how I feel about Notre-Dame today, but the closest I can get is thinking about how impossible losing something as immutable and symbolic as that cathedral felt before today. It's like watching an ocean dry up, it wasn't supposed to be possible”.

In refusing to believe the information about the loss, individuals use arguments and challenges. The rejection of the information thus gives way to a discussion during which people seek to justify why it is not possible for the cathedral to disappear.

4.3.2. Anger and sadness

The confrontation with the facts, i.e. with the reality of the images of the Cathedral burning, generate an attitude of revolt. This anger, which is often turned toward others, leads individuals to seek out those responsible for the tragedy:

“Human genius built Notre-Dame Cathedral. It took 180 years of construction, starting in 1163. Man's imbecility and lack of preservation destroyed much of Notre-Dame Cathedral. It was one day, in 2019. Destroying is much easier than building”.

But behind this angry reaction are also hidden grief and unexpressed fears. Indeed, the informants implicitly communicate their fear of losing the Cathedral for good. The strong emotions expressed here are forms of acceptance of the tragedy. While shock and denial suggest a reluctance to accept the loss of the cathedral, anger and the sadness prove, on the contrary, that people realize the drama and react to it with strong emotions:

“The sight of Notre-Dame in flames is unbearable--a painful reminder that nothing, particularly that which is of value, should be taken for granted. All can be lost”.

By accepting the death, individuals actually begin the grieving process, i.e., they begin to embrace the idea that the cathedral was, at least in part, destroyed by fire.

4.3.3. Questioning life

Interestingly, the data also show that the process of mourning a heritage monument leads people to question themselves. As with the loss of a loved one, informants may have to ask existential questions (Simko, 2015), a similar process is observed during the loss of Notre Dame. Indeed, heritage sites being a common good which belongs to all and which are at the heart of identity transmission and construction mechanisms (Goulding & Domic, 2009), their loss causes a scar that raises many questions.

“Why has the burning of Notre-Dame moved so many? Because we believe in beauty, majesty, faith, art, history, and the human expressions thereof. We recognize in this cathedral our common humanity. A scar now emerges in our connections to our past, our future, and each other”.

As this quote suggests, Notre-Dame represents for some informants a “common humanity”, i.e. something that brings people together and that they share. Losing part of their identity causes people to question who they are and who they can be:

“The majesty of Notre-Dame—the history, artistry, and spirituality—took our breath away, lifting us to a higher understanding of who we are and who we can be. Being here in Paris tonight, my heart aches with the people of France. Yet I know that Notre-Dame will soon awe us again”.

4.3.4. Memory sharing

Another way to express the grief revealed by the data is to share memories of the deceased. When a loved one dies, it is common to share memories of him or her and recall his or her life. In the case of Notre-Dame, individuals thus trace the “life” of the monument, like a biography of the deceased. It is also about remembering the beauty of Notre-Dame and its uniqueness, as if to better realize the loss that is actually happening:

“Notre-Dame is 850+ years old..... during the summer solstice the sun filters through the glass to form a heart on the mosaic on the floor... it's a masterpiece of medieval architecture, this is heartbreaking.”

More than remembering the life the deceased had, people also recall their own memories of the deceased. Interestingly, the data show that people remember the first time they “met” Notre-Dame, as if they had met a natural person, which is another illustration of the personification that happens with the cathedral:

“Had the pleasure of meeting Notre-Dame at a charity do once. It was surprisingly down to earth, and very funny.”

In the wake of the sudden loss of heritage, people looked back at their interactions with the monument, just as individuals do when they are confronted with the loss of a dear other (Kübler-Ross & Kessler, 2005).

4.3.5. Recovery

Finally, the fifth major theme of the grieving process that the data have highlighted is recovery. After absorbing the shock of the fire, a large majority of people try not to stay depressed but to turn the mourning process into something positive. The intense collective emotion felt by individuals at the loss of Notre-Dame must thus give rise to a collective energy, symbolized in particular by the wave of donations received from all over the world which will allow the cathedral to be rebuilt:

“The French people will rebuild it, will undoubtedly raise it up again. And we will be there, the whole world is and will be with France. The cathedral of Notre-Dame will rise from its ashes.”

For some individuals, if recovery is possible, it is also due to the qualities of the monument which, through its history, has already shown that it is resilient and able to withstand severe crises:

“I know many of you are crying for Notre-Dame de Paris, but remember she is resilient. Notre-Dame de Paris survived when Prussia bombed Paris with artillery. She survived Two World Wars. If you think one fire will destroy her, then you don't know Notre-Dame de Paris.”

The recovery phase extends over time. Even if the virtual community decreases in size, it persists with individuals who closely follow the stages of the Cathedral's reconstruction.

From a global perspective grounded in anthropomorphism, our analysis illustrates that individuals perceive the destruction of heritage sites as akin to the loss of a human persona. In advancing this line of research, we present evidence that adverse events, such as the partial or complete loss of a monument, can engender a unique form of attachment among individuals who grieve its disappearance (Kübler-Ross & Kessler, 2005). The data uncover various manifestations of grief, encompassing shock and denial, expressions of anger and sadness, contemplation of life's meaning, the sharing of memories, and the subsequent process of recovery.

5. Discussion

5.1. Theoretical contributions

Figure 3 distills our study, mapping the genesis of a virtual mourning community post-heritage destruction. Initiated by a triggering event, it unfolds through immediate emotional reactions and online expressions. The subsequent formation of a cohesive online mourning community becomes pivotal, with leaders and authorities playing a role in sustaining community interest.

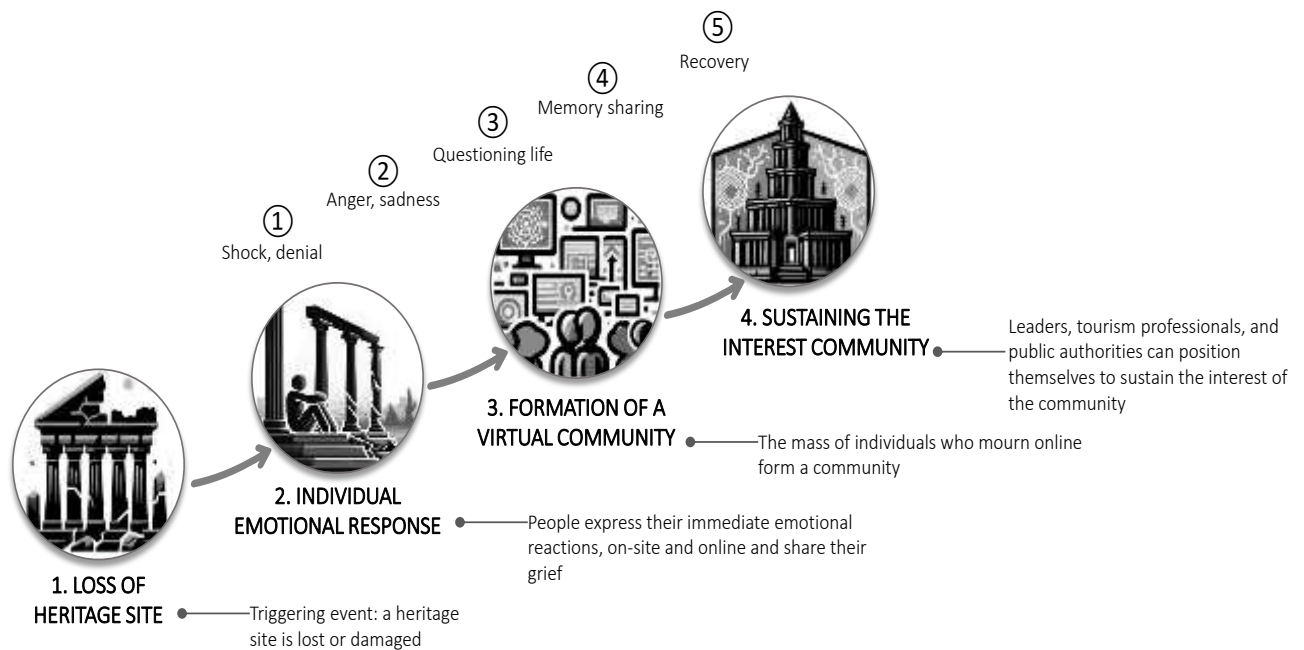


Figure 3. The process of creation of a virtual community of mourners following the destruction of heritage

Based on these findings, this research makes several contributions. First, we contribute to the literature on individuals' relationships with heritage objects. Individuals not only develop relationships with heritage sites in positive contexts (Andriotis et al., 2020; Woosnam et al., 2018), but also in contexts of loss and destruction. Personifying heritage sites therefore prompts individuals to reflexively experience them in a more emotional way and find a means to render the loss into a representation to which they can relate in an interpersonal way (Delbaere et al., 2011). Our data show that, when a heritage site is threatened, communities are afraid of losing this collective memory and a part of their identity and will therefore raise their profile, not only by reuniting but also by making donations. The boundary conditions of

such virtual community transcend traditional spatial and temporal limitations. Our results indicate a remarkable diversity of mourners in terms of geographical origin, illustrating that the virtual community is not confined by geographic boundaries. Temporal boundaries also prove fluid as the community persists over time, emphasizing its enduring nature rather than being restricted to the immediate aftermath of the heritage site's loss. Conversely, online platforms and communication channels played a crucial role in shaping the boundaries of the virtual community. Certain platforms (such as Twitter/X), characterized by their accessibility, interactivity, and multimedia capabilities, proved more adept at fostering the emergence and sustenance of the community. Moreover, within the virtual community, distinct clusters emerged, often driven by influential leaders who played a pivotal role in guiding discussions (Hansen et al., 2010). The leadership dynamics within these clusters underscored the role of key individuals in shaping the direction and tone of the collective mourning process, highlighting the influence of leadership as a boundary-defining factor within the virtual community.

Second, we contribute to the literature on anthropomorphism. Previous research has focused on consumer–brand relationships under the assumption that consumers can establish relationships with brands in the same way as they do with other people (Fournier, 1998). People personify brands so that they can be treated as active ‘others’ (Alvarez & Fournier, 2016). Although this view has been applied to destination (Chan & Gohary, 2022) or nature (Tam et al., 2013), we suggest that people also attribute human characteristics to heritage sites. We define heritage anthropomorphism as the tendency to attribute a heritage site not only human-like physical features, qualities, and behaviors, but also to superhuman features, thus considering monuments as a deity or goddess. Attributing human and superhuman characteristics to heritage sites is a means of creating social ties with those for whom this heritage is important. Heritage constitutes an integral facet of the collective identity of individuals (Yu Park, 2010). When a heritage site faces a threat, individuals tend to anthropomorphize the site. Consequently, the endangered site is perceived akin to a person confronting mortality. Within this framework, there emerges a collective inclination for individuals to unite. Rather than mourning in solitude, there is a communal aspiration to collectively traverse difficult circumstances, sharing both the adverse emotions associated with the potential loss and optimistic sentiments focused on the prospect of preserving the monument.

Third, this research on the community effects of the destruction of heritage can have implications and provide insights in various contexts. The study's findings hold significant relevance in contexts closely tied to the destruction of heritage, notably in the aftermath of natural disasters and within war and conflict zones. In the wake of natural disasters, such as earthquakes, floods, or hurricanes, communities often face not only physical but also cultural losses (Adie & de Bernardi, 2023). Similarly, in war and conflict zones, intentional destruction of cultural heritage compounds the challenges faced by affected communities (Khalidi, 2017). By applying the framework of heritage anthropomorphism, we can gain valuable insights into how communities come together, express shared sorrow, rebuild, and forge a collective identity amidst such destruction. Beyond the immediate destruction of heritage, this research also sheds light on the impact of urban development and gentrification on local communities (Skoll & Korstanje, 2014). As cities evolve and historical neighborhoods undergo transformation, the study's insights into heritage anthropomorphism can elucidate the emotional responses of communities witnessing the alteration or loss of familiar cultural landmarks. Extending the scope to encompass environmental conservation and ecosystem loss, this research can also help comprehending the emotional and communal dimensions associated with the destruction of natural heritage. Ecosystems, species habitats, and natural landmarks, when compromised, evoke strong emotional reactions akin to the mourning observed in this research (Cunsolo & Ellis, 2018).

Fourth, our investigation introduces an innovative methodology that captures the transnational essence of tourism behaviors and user engagement on social media platforms (Otte & Rousseau, 2002). Using a comprehensive research protocol, we collected a substantial dataset directly from users, facilitating segmentation analysis based on discussions and emotional expressions. Despite its potential, tourism research has not fully capitalized on these opportunities to comprehend behaviors and trends within online platforms (Baggio et al., 2010; Larsen & Bærenholdt, 2019). Our research addresses this gap and contributes to dynamics the understanding of online communities and the viral dissemination of information (Galaskiewicz & Wasserman, 1993). Through this exploration, we illustrate the interest of archetypal clusters in comprehending the nature and structure of spontaneous online communities. These clusters not only help researchers decipher socially connected networks that extend across the phygital world, transcending geographical boundaries (Kozinets et al., 2017), but also offer a visual representation of how connections form among tourists, locals and other actors such as politicians or media.

5.2. Managerial implications

In terms of managerial implications, several recommendations are possible. Firstly, our results demonstrate that the destruction of Notre-Dame has given rise to a diverse online community that came together on Twitter to share their grief. While we focused on Twitter as it is considered one of the most conversational networks for quickly expressing emotions, we can assume that individuals also expressed themselves on other social networks such as Facebook or Instagram. Therefore, in cases of heritage destruction, it would be beneficial for the managers of these attractions, as well as officials, to create their own platform where individuals can converge, share their grief, and express experiences or memories associated with the place. Having a unified platform could also facilitate the collection of donations to rebuild the damaged site, as our data show that part of the online community's conversations revolved around positive emotions and mobilization to save the site. Managers should leverage this mobilization to raise awareness of heritage losses and highlight how donations can help mitigate these losses.

Second, monuments and heritage sites should pay close attention to online comments and reactions of people across different networks and platforms. This, of course, should be done while ensuring proper consent, data protection, and anonymity measures to comply with privacy regulations and user expectations. By collecting this easily accessible information, they will have significant data on what emotionally resonates with their audience. This knowledge can be used to adapt communication strategies and enhance the relationship they have with their audience. Additionally, our results highlight the profound impact that the loss or destruction of a monument can have on individuals, equating it to the loss of a loved one. In such contexts, it is essential to support individuals by providing as much information as possible on the circumstances of the accident and the extent of the damage caused. This could aid individuals in processing the shock of the announcement more easily, facilitating a quicker transition toward more positive emotions.

5.3. Limitations and directions for further research

This study has several limitations that deserve further research. First, we have studied the immediate and spontaneous online responses of individuals following the destruction of a heritage site using Twitter. Although these data have advantages in terms of naturalness and intrusiveness (Kozinets, 2006), they are also short (a tweet cannot go beyond 280 characters) and not always representative. Similarly, although the study's validity has been reinforced through the use of a combination of social network, sentiment, and content analysis, these

methods come with limitations. For example, sentiment analysis relies on predefined emotion dictionaries and may not capture the nuances of emotions expressed by users. Additionally, social network analysis cannot fully capture the complexity of individual interactions. Therefore, future studies could enhance this research by employing other methods, such as semi-structured interviews to gain in-depth insights into individuals' perceptions or utilizing questionnaires on a representative sample.

Second, we have examined the spontaneous reactions of individuals in a specific manner, but further research should track people's online reactions over time. For instance, it can be assumed that the collective emotion following the destruction of a heritage object fades over time. To what extent does the destruction or alteration of heritage sites change the relationship with them?

Third, the managerial implications of this research suggest the creation of dedicated platforms for people to share their grievances after the destruction of heritage sites and to collect donations. It would be interesting for future studies to delve into these two aspects more deeply. What factors could encourage the adoption of such platforms for individuals? And to what extent can these online conversations influence real-world mobilization and reconstruction efforts?

Fourth, this research has investigated anthropomorphism in the case of the Notre-Dame cathedral fire. It would now be interesting to study heritage anthropomorphism in a broader context and not only during periods of destruction. Moreover, it would also be useful to explore whether all sites have the potential to be anthropomorphized. What characteristics should a monument possess to be personified? At the individual level, what factors, including personal experiences, cultural background, and individual beliefs, can influence the degree and nature of anthropomorphism exhibited by individuals toward heritage sites? Addressing these questions could provide additional insights into heritage anthropomorphism.

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