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The use of new technologies in Dark Tourism processes: the case study of the Portuguese chapels of bones

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ABSTRACT

The year 2020 will forever be known for the appearance of the pandemic COVID-19. With such a phenomenon, the use of technologies started to make even more sense. Indeed, and suddenly, in March of the same year, individuals were forced to avoid socializing and to cancel or drastically reduce tourism practices. This sector of the Economy, which helped countries like Portugal to get out of the Troika's financial crisis entered a technical bankruptcy without the support of the other sectors of the Economy. Tourism seems to be forgotten, while financial resources were drained for the health sector and for the search for a miraculous vaccine. At the same time, the word "death" returns to daily conversations, in parallel with other words such as confinement, protection, mask or hand washing. This phenomenon so fashionable in the 16th/17th centuries baroque culture and in the "Still Lifes" art's current, seems to emerge again. And with that the practices of Dark Tourism too. Among these practices, visits to bone chapels stand out. Before the pandemic, such visits were organized using a research service such as "google maps". The impossibility of going to the sites personally requires that they adhere to the use of technologies applied to Tourism. Among them, the ArcGIS / ESRI application stands out. The present work intends to demonstrate that the use of technologies can be one of the arguments for the sustainability of Dark Tourism, as well as in the script of the Chapels of Bones.

Keywords: Dark tourism, Chapels of Bones, ArcGIS / ESRI application, Covid19, Death

1. INTRODUCTION

The subject of daily news, since March 2020, has to do with the suffering and number of deaths caused by COVID-19. Thus, and suddenly, what appeared to be a locally controlled pneumonic phenomenon turns, firstly, into a transient disease, which simultaneously attacks many individuals in a certain location or region (Wuhan epidemic) and then into an outbreak of a disease with international geographical distribution, very wide and simultaneous (pandemic in the rest of the world) (Yoo, 2021).

With this, the world economy, regardless of whether it is more capitalist or socialist, more democratic, or dictatorial, found itself reversing its upward trend towards a steep downward trend. In fact, confinement, compulsory withdrawal, and the inability to adapt all economic functions to teleworking, led to another disease: unemployment (Fana et al., 2020; Witowska et al., 2026).

The Tourism sector that corresponded in 2019 to a contribution of 6.9% in the Portuguese GDP and to 336000 jobs (Turismo de Portugal, 2020) screams for financial aid.

The solution seems to be to redefine the concept of Tourism, looking for new audiences through new areas of intervention (for example, Dark Tourism) or new ways of acting (instead of being present choose to communicate by using new technologies).

In the portuguese case, among the most sought-after types of tourism are Beach Tourism, Business Tourism or Cultural Tourism (Richards, 2013; Lopes & Soares, 2017; Rodrigues et al., 2027). The pandemic phenomenon encouraged the need for contact with the environment and consequently increased Nature Tourism (Niezgoda & Markiewicz, 2021). Above-average deaths caused by the global health problem also prompted questions of the transcendent and that earthly life is short-lived. In this sense, Dark Tourism emerges as a new area of Tourism to bet (Cai et al., 2022; Ravichandran, Fernandes, & Srivastava, 2026).

In Portugal, this typology is not much sought after, despite the existence of some of its forms, namely, with visits to the Battle Fields or places of torture, with the cult of relics, with the ornament "alminhas" or with visiting the Chapels of Bones.

In this work will be presented the conclusions of the field investigation carried out during the pandemic period of 2020-2022 and considering the existence of products of Dark Tourism in Portugal. Here the focus was on the chapels of bones.

This study reveals and presents then the existence of 8 chapels of bones in Portugal. At the same time, it proposes a tourist circuit among them of about 500 km length. The initial idea was to propose this circuit conducted in person. However, the possibility of the lingering pandemic problem led to organize it in the use of new technologies, either through Google Maps or the ArcGIS/ESRI application.

At the structure level, the paper will start by addressing the concept of Dark Tourism and COVID-19 pandemic in tourism, followed by the presentation of the route of the chapels of bones in the Google Maps and ArcGIS/ESRI applications. It will finish by concluding that after pandemic the concept of Portuguese Tourism changed its classic areas of intervention, admitting the inclusion of Dark Tourism. At the same time, Tourism and Technologies must be increasingly intertwined.

2. Concept and recent approaches to Dark Tourism

2.1 State of Art for the Concept of Dark Tourism

The branch of Tourism now presented has to do with the so-called macabre tourism that dominates mainly the countries of southern Europe and a little Portugal in the 16th to 18th centuries. So, for example, in Austria, in Hallstatt, skulls are drawn and painted. In Portugal, little bones and chapels are decorated. This type of Tourism is also called Dark Tourism.

The main authors studying this subject are Philip Stone (2006) or Paul Koudounaris (2015) who, in a general definition, consider Dark Tourism as the act of traveling to destinations and places associated with death, suffering and macabre or apparently macabre. For Lousa (2017) and Joseph (2026) remembering death means believing in dispossession, humility, devotion. Thus, contemplating skulls should be a lesson in humility. But what is observed is that in these monuments the human bones, instead of leading to reflection or spiritual recollection, as initially proposed in the Baroque period, trigger a contrary relationship of horror or fascination with death.

Among the typologies of places associated with the practice of Dark Tourism are: cities or destinations of terror; battlefields; houses of terror; scary hotels; concentration camps, cemeteries; serial killer houses, prisons, morbid museums, death-related monuments or bone chapels (Fonseca et al., 2015; Wight et al., 2026).

Initially Stone (2006) proposes a spectrum that classifies Dark Tourism from the darkest to the lightest. More recently, the same author develops and proposes that this concept brings together a set of mediating institutions (in this case, the chapels of bones) where a spectacular death mindset introduces an open mind to mortality as well as tourist encounters with fatality (Stone, 2019).

From another perspective, Koudounaris (2015) presents the portrait of death as a moment of transition, rather than seeing it as an irreversible and impenetrable frontier with life.

As it has inspired various manifestations of popular and / or mass culture, this typology of tourism is called Dark Tourism. As for the motivations of these tourists can also be very diverse. Among them stand out: the historical interest; the education; the memories; the identification with deceased persons; the tribute to the victims or the simple curiosity of the facts occurred.

In Portugal little is known about this phenomenon, as the data are practically non-existent (Liberato et al., 2019). However, it will be used the case study of the Chapels of Bones, proposing a possible route to identify one of the Dark Tourism phenomena in this country.

The definition of such places in Portugal is under construction. From what is known - and it is almost nothing, since not even the official reports of Tourism of Portugal contain statistical or other data about this tourism market segment - it can´t be said little about it. What it isn´t know, however, leads to affirm that, in general, these journeys seem to be made more for the enjoyment of the spaces than with the deliberate intention of visiting places of death, or associated with peculiar, violent or traumatic deaths. And if there are those who visit certain spaces with this purpose, it is usually a restricted and very marginal public.

Thus, it is the understanding of this paper that this reflection is, to a certain extent, a novelty in studies of this type in Portugal. In this way, it is intended to raise much more questions than offer definitive or even structured results.

2.2 Historical-artistic contextualization and concepts of Ossuaries and Chapels of Bones

According to Lang (1998) and Nugent, Farrow and Foster (2026) between the Middle Ages and around 1850, cemeteries were overcrowded, given the high number of deaths that occurred relatively easily. In fact, at the time medicine was not very advanced, wars between peoples were rife and, consequently, deaths caused by plagues continued, in addition to all types of natural disasters.

There was then a need to create ossuaries and bone chapels. For Liutikas et al. (2026) the ossuary was a sacred place where solidarity between the living and the dead was affirmed and which, generally, took the form of a small house leaning against the wall of the church or placed in a corner of the cemetery. Thus, parishioners went there to pray for their deceased and perform a set of very relevant rites, thereby showing the faith they had, while visiting their deceased loved ones and becoming aware of the concept of “death”.

Ossuaries and bone chapels are not strictly the same thing, despite both being places intended for the storage or display of human bones, when the cemeteries' capacity was full (Horák, et al., 2022). However, while ossuaries primarily focus on storing and preserving skeletal remains, bone chapels are often sites of religious or artistic significance. These are usually small chapels or churches adorned with human bones, arranged in intricate patterns or designs, as a form of artistic expression that wishes to remember death (Guarino, 2023; Machado, 2023).

From another perspective, Weiss (2005) and Liutikas (2026) argue that this phenomenon is closely associated with historical or artistic facts, giving some examples. Thus, at a historical level, he points to the counter-reformation, which took place between 1545-1648, as the event that promoted a Catholic movement as a reaction to the growth of Lutheran movements. This fact highlighted concepts such as "sin" or "final judgment", often associated with worldly practices in life. At an artistic level, he highlights the "Vanitas" paintings as the aesthetic current of the counter-reformation period, which portrays religious scenes, which show saints, whose exemplary lives reflect the image on the abandonment of riches or earthly pleasures to dedicate themselves to prayer and meditation.

"Vanitas" paintings are a specific genre of still life paintings that were popular in the Netherlands and Flanders during the 16th and 17th centuries, especially during the Baroque period. These paintings were full of symbols and objects intended to represent the transience of life, the futility of pleasure and the certainty of death (Horváth, s/d; Liquiats & Abbats, 2022; Koç, 2023; Waale, 2026).

The term "Vanitas" comes from the Latin word meaning "empty" or "vanity", and works of art of the same name are intended to show the ostentation and fleeting nature of earthly activities. "Vanitas" paintings typically feature a variety of objects, each carrying a symbolic meaning (Kell et al., 2022; Liaqat & Abbas, 2022; Cheney, 2026. Among them the following stand out:

(i) Human Skulls and Bones: which symbolize the inevitability of death and the transience of life (Kajinishi et al., 2023; Sluyter, 2023);
(ii) Hourglasses or Clocks: which represent the passage of time and the fleeting nature of life (Horváth, S/d.; Bruyere, 2023);
(iii) Withered flowers or withered bouquets: which emphasize the ephemeral nature of beauty and life (Kell et al., 2022; Todorović, 2022; Bruyere, 2023);
(iv) Extinguished candles or flickering flames: which symbolize the brevity of life (Lübbren, 2023; Solnit, 2022);
(v) Books, Globes and Musical Instruments: which indicate temporary human knowledge, achievements and pleasures (Chang et al., 2022; Cane & Gabrielle, 2022).

The arrangement of these objects in the paintings was therefore intended to provoke contemplation on the transitory nature of life, the inevitability of death and the futility of material activities.

Artists often used these symbols to create elaborated and detailed compositions that conveyed moral, religious, and philosophical messages. The "Vanitas" paintings were a reminder of the temporal nature of life and the importance of focusing on spiritual and moral values rather than worldly possessions or achievements. Bone chapels follow this moralizing trend, not only in the artistic representations of the arrangement of skeletons and bones, but also in the phrases for which they are known. Among these phrases, those mentioned in table 1 stand out, with their respective interpretation and indication of the place where they are implemented.

Table 1- Emblematic phrases from some chapels of bones

Name of the Chapel	Sentence	Interpretation of the sentence
Chapel of Bones of Évora (Portugal) **Chapel of Bones of Campo Maior (Portugal)**	"We who are here, we wait for you"	It intends, on the one hand, to invite the traveler to enter the space and, on the other hand, to demonstrate the baroque man's macabre taste for necrophilia.
Chapel of Bones of Faro Cathedral (Portugal)	"Consider here that this state will arrive."	This chapel is dedicated to Souls, remembering that today we are body, but tomorrow we may only be spirit.
Church of Sainte-Ségolène in Metz (France)	"Just as you once smoked us, just like you we will be as we are; Do more than you have, something else will take away."	Here the sentences correspond well to the idea of the need to abandon earthly goods.
Church of Notre-Dame of Bar-le-Duc (France)	"Look at yourself and consider, as I am as you will be." "To be born, to plow and to die, we only make death end";	The order of the sentences clearly tells the living to look at themselves as if they were in a mirror to know their future.
Chapel of Bones of Sedlec Kutná Hora (República Checa)	"ad sanctus"	Which means burial near saints. This chapel is closely associated with the 18th century, when there was a paradigm shift, where artistic performances stopped having such a religious representation and became more pagan. This is how the fear of death and non-salvation evolves into the allegory of life and that the religious aspect gives way to indifference, in the face of an inevitable end.
Chapel of Bones of Wamba, Valladolid (Spain)	"As you see yourself, I saw myself. As you see me, you will see yourself."	Which means it all ends here. Think and you will not sin.

Source: own systematization

More recently Walker (2022) talks about Necropatrimonial Tourism and Calderón-Fajardo (2023) distinguishes it from Dark Tourism. In sub-chapter 2.3 these two perspectives are presented.

2.3 Development of the concepts of Necropatrimonial Tourism and Dark Tourism

Necropatrimonial Tourism and Dark Tourism develop from visiting local events associated with death, tragedy or darker aspects of history, but there are distinctions between them. Thus, while Necropatrimonial Tourism covers a broader spectrum of tourist activities related to death, suffering, tragedy or macabre events. In particular, it includes visits to places associated with historical atrocities, disasters, war zones, places of murder or murder, as well as places linked to paranormal or supernatural phenomena; Dark Tourism is more

expansive and includes a wider range of locations that attract tourists due to their dark or morbid associations (Calderón-Fajardo, 2023).

In another way, Necropatrimonial Tourism focuses specifically on historical sites or destinations associated with death, funerary practices, funeral rites and cultural rituals related to mortality. Therefore, their activities often take place in: historic or non-historic cemeteries, mausoleums, ossuaries or cultural ceremonies related to death, while in Dark Tourism the visits lean towards a broader scope of dark or tragic events, covering a wide range of historical, cultural and often sensationalized sites.

Cumulatively, Machado (2023) proposes 5 categories of dark tourists, respectively: the dark contemplative tourist' (which is the one who visits places associated with a human tragedy with the purpose of developing their knowledge. As an example, refer to the visit to concentration camps), the 'dark history tourist' (which is one who has in his tourist visit plan to visit historical sites marked by the tragedy, such as, for example, memorials), the 'dark passive tourist' (which is the one who has the purpose of its tourist itinerary to visit dark places, without actively engaging in contemplation, reflection or seeking a deeper understanding), the 'dark enthusiast tourist' (which is someone who has a deep and passionate interest in exploring places, events or phenomena associated with darker aspects of human history or with macabre themes or disturbing subjects. This type of tourist actively seeks experiences related to death, tragedy, crime, horror or the unusual) and the 'dark occasion tourist'(which is an individual who becomes involved in morbid or tragic events, such as funerals, at the same time as they are taking place). Of all these categories, those who have the greatest motivation to participate in Dark Tourism are, according to the same author, the ‘dark enthusiast tourists’ (Machado, 2023).

The research work now carried out shows that the places where these dark events in history take place also have bone chapels.

Likewise, Stone (2006) proposes a Dark Tourism spectrum that will categorize different types of tourist sites or attractions based on the degree of tragedy associated with them (also called level of darkness). This spectrum helps to understand the various categories of affinity or interest that people may have for these places. This classification then includes several levels ranging from an almost non-existence of darkness (which includes visiting more fun attractions and less associated with tragedies or deaths, such as events linked to “Halloween” or amusement parks with a theme horror) to those that are downright tragic or dark (such as, for example, places linked to religious or spiritual tragedies, such as places of religious persecution or martyrdom, which have significance for certain religious or cultural groups).

The spectrum therefore serves as a framework for understanding and categorizing places or events that may attract visitors due to their darker or darker themes. Each category represents a different level of connection to the tragedy, catering to diverse interests among visitors involved in what is known as “Dark Tourism.”

More recently, this author has developed new studies that contribute to the evolution of the concept of Dark Tourism, namely:

> (i) proposed the concept of “spectacular death”, when he states that Dark Tourism changes the concept of death and leads the individual to a new mentality about it, where all activity around death is produced as a spectacle and consumed as an experience tourism (Stone, 2019);

(ii) highlighted that Dark Tourism is concerned with death and dying, but through its social-scientific study and empirical practice, it concluded that this concept says more about life and the living (Stone, 2020);
(iii) explores various locations in England that have historical, cultural, or macabre significance, catering to individuals interested in Dark Tourism or exploring offbeat destinations (Stone, 2021);
(iv) photographed with Peter Hohenhaus 300 locations from catacombs to nuclear bunkers with the aim of providing a true Dark Tourism travel guide (Stone, 2022a);
(v) informed and inspired with the research work he carried out on children's experiences in Dark Tourism (Stone, 2022b; Kerr et al., 2023; Icoz & Gonul, 2026).

From another perspective, Dark Tourism responds to the need for contemporary tourists to live unique, impactful and perhaps extreme experiences. According to Khaydarova and Joanna (2022) and Sanyal and Malik (2026). Should I visit or should I not? An explanation for motivations and constraints to visit dark tourist destinations using behavioural reasoning theory. Current Issues in Tourism, 29(1), 40-59., places related to tragic events are growing in popularity around the world and, in this sense, the term “Dark Tourism” includes very different practices and activities ranging from heritage tourism, educational tourism, through film tourism or adventure tourism. It includes several niches according to the theme or location of the visit. Among them are places of public executions and deaths, places of deaths by extermination, assassinations, battlefields or places where famous people died (for example, refer to: James Dean, John Fitzgerald, Kennedy), places of internment (such as mausoleums, war monoliths and cemeteries), places related to slavery, places affected by environmental disasters such as hurricanes, tsunamis, prisons, or simulations of events related to death and catastrophe.

For Khaydarova & Joanna, 2022; Hoang et al., 2026 and Yang & Li, 2026 travellers interested in Dark Tourism experiences come from various age groups, including both elderly people and young students. Some of them are attracted by the cultural and historical aspects of places, others seek information more linked to nature.

2.4 Chapels of bones in Europe and the Iberian Peninsula

As mentioned in 2.2), the Counter-Reformation had a significant impact on several European countries, but its influence and development were more pronounced in certain regions of Europe. Among these countries, the following stand out:

(i) Italy: Being the heart of Catholicism, Italy implemented a key event in the Counter-Reformation that became known as the Council of Trent. In this meeting of the highest hierarchies of the Catholic Church, dogmas of faith questioned by Protestants were reaffirmed, such as the seven sacraments, papal authority, salvation through works or the cult of saints (O'Malley, 2012). In addition to this event, the Italian Church, especially in cities like Rome, emphasized artistic and architectural projects to promote this religion, resulting in the flourishing of Baroque art and architecture (Gramsci, 2023);
(ii) Spain: The Counter-Reformation was deeply rooted in Spain. The Spanish monarchy was devoutly Catholic and actively supported this religion's efforts against Protestantism. The Spanish Inquisition, created to combat heresy, was a significant aspect of the Counter-Reformation in that country (Borges, 2005; Campanella, 2022);
(iii) Portugal: Similar to Spain, Portugal was a staunchly Catholic country that supported the Counter-Reformation. Missionary activities were prominent, particularly in overseas colonies, as Portugal sought to spread Catholicism in Africa, Asia and the Americas (Cymbalista, 2005; Lousa, 2017);

(iv) Austria and parts of Central Europe: Habsburg-controlled territories, including Austria, parts of Germany, and Eastern Europe, were areas where the Counter-Reformation exerted considerable influence. The Habsburg rulers were stubborn defenders of Catholicism and efforts were made to reestablish this religion in regions affected by Protestantism (Carneiro, 2006);
(v) Poland and parts of Eastern Europe: The Counter-Reformation was present in these regions, with efforts to maintain and strengthen Catholicism against the influence of Protestantism and Eastern Orthodox Christianity (Leite, 2012).

Although the Counter-Reformation had a substantial impact in these areas, it is important to note that its effects varied between different countries and regions in Europe. Factors such as existing religious demographics, political alliances, and the strength of Protestant movements influenced the extent and nature of the Counter-Reformation's influence in each area.

As in any historical period, the cultural and artistic community follows the evolution of the history of the population in which it operates and innovates in terms of artistic production. As mentioned in 2.2, this was what happened in this period of the counter-reformation with the appearance of the chapels of bones and the aesthetic current called “Vanitas”.

The number of bone chapels across Europe is unknown. This is due to the concept itself, which is often confused with that of sanctuary. However, some of them are visitable and, due to their characteristics, identified as Dark Tourism phenomena.

Following the reasoning of the list of countries above, table 2 shows some examples of bone chapels existing in these European regions.

Table 2 - Examples of Chapels of Bones by European regions/by European countries

European country/region	Name and location of the Chapel of Bones
Italy	. Crypt of Santa Maria della Concezione, Rome. . Chapel of Bones of Otranto, Otranto. . Catacombs of the Capuchin Monastery, Palermo. . Chapel of Bones of Novara, Novara. . Church of dead, Rome.
Spain	. Chapel of Bones of Wamba, Valladolid. . Chapel of Bones of São Bernardino, La Iglesuela del Cid, Teruel. . Crypt of Capuchin, Briviesca, Burgos.
Portugal	. Chapel of Bones of S. Sebastião Church, Lagos. . Chapel of Bones of Igreja do Carmo, Faro. . Chapel of Bones of Catedral of Faro, Faro. . Chapel of Bones of Pechão, Olhão. . Chapel of Bones of Alcantarilha, Silves. . Chapel of Bones of S. Francisco Church, Évora. . Chapel of the souls of Campo Maior, Campo Maior, Portalegre. . Chapel of Bones of the church of Santa Maria da Graça, Monforte, Portalegre.
Austria and Central Europe	. Chapel of Bones of Hallstat, Austria. . Chapel of Bones of Eggenburg Channel, Austria. . Ossuary of St Florian, Austria. . Ossuary of Chammünster, Germany. . Chapel of Bones of St Ursula Cologne, Germany. . Chapel of Bones of Sedlec Kutná Hora, Czechia. . Ossuary of Melnik, Czechia. . Ossuary of Krtiny, Czechia. . Catacombs of S. Sebastião, Czechia.

	. Catacombs of Paris, France. . Ossuary of Marville, France. . Church of Aitre St Maclou Rouen, France. . Ossuary of Douaumont, France.
Poland and Oriental Europe	. Chapel of Bones of Niš, Servia. . Chapel of Bones of Kudowa-Zdrój, Czermna, Poland.

Source: Own systematization

Although it is not yet clear in Portugal, in the rest of the world there is a greater demand for Dark Tourism. Proving this is data from Future Market Insights which, in a forecast study of the evolution of that market, between 2022-2032, estimated that the Dark Tourism market will reach 30 billion dollars in 2022, that the compound annual growth rate of sales over this period of years is equal to 2%, with market valuation reaching 36.5 billion dollars by 2032 (in https://www.futuremarketinsights.com/reports/dark-tourism-sector-overview, consulted on 12/26/2023).

One of the forms of offering Dark Tourism in Europe and the Iberian Peninsula are bone chapels (Pascoal, 2023).

In another way, and from the preliminary research work carried out for this paper, it was realized, through in-depth interviews carried out with those responsible for the 8 bone chapels existing in Portugal, on the one hand, that the reasons evoked for visiting those spaces are related to visiting a local cultural space, rather than the need to visit a place related to "death" and, on the other hand, there are no records (be they of the number of visits to these spaces, or overnight stays in the places where the chapels are located or even the value of merchandising purchases) that allow us to speak of a demand on the part of dark tourists.

The opposite situation occurred in the case of the European chapels of bones visited so far, respectively, Sedlec Kutná Hora and Hallstat.

In Sedlec Bone Chapel, also known as the "Church of Bones," is often considered a site of dark tourism due to its macabre and unusual nature. Here are some reasons why it falls into this category:

(i) Morbid Decoration: The chapel is adorned with human bones, creating an eerie and unsettling atmosphere. The bones of around 40,000 to 70,000 individuals are artistically arranged to decorate the chapel interior, including bone chandeliers, a bone coat of arms, and bone arrangements on the walls (Cunha, 2022; Gandhi, Pandey and Aggarwal, B., 2026);
(ii) Historical Context: The chapel's creation was in response to an overabundance of remains from the Black Death and the Hussite Wars in the 14th and 15th centuries. The bones were originally exhumed from the cemetery and then used to decorate the chapel as a form of "memento mori", reminding visitors of the impermanence of life (Horák et al., 2022; Drtikolová Kaupová et al., 2026);
(iii) Unique Experience: For some visitors, the chapel's uniqueness and unconventional decoration draw them in. It's a departure from typical tourist attractions, catering to those interested in exploring unusual and darker aspects of history and art (Krejčí, S/d; Gandhi, Pandey & Aggarwal, 2026);
(iv) Contemplation of Mortality: Dark tourism often involves confronting themes of mortality, tragedy, and the macabre. Visitors to the Sedlec Bone Chapel often engage in

contemplation about life, death, and the transient nature of existence, contributing to its classification as a dark tourism destination (Wangchuk, s/d).

While some may find it morbid or unsettling, others are intrigued by its historical significance and unique artistic expression. The chapel exists at the intersection of history, art, and mortality, inviting visitors to contemplate the darker aspects of human existence.

In a different way, the Chapel of ones of Hallstatt in the Holiday Region of Dachstein Salzkammergut has been in existence since the 12th century. Kept in here, are 1200 human skulls. 610 of them have been hand-painted and arranged according to individual family groups. The dates of death marked on them. The tradition of recording and painting goes back to the year 1720 AD (Inge, 2014; Griffin et al., 2022).

The graveyard in Hallstatt is very small and there is no space to make it larger. In former times, cremation was prohibited, and there was a serious lack of room for new graves to be dug. Ten to fifteen years after burial graves were re-opened, and the skulls and long bones which took up the most space were removed. The skulls were "cleaned" and then left outside under sun and moon until all that remained of these gruesome skulls was a smooth "ivory" surface. Since the graves are decorated with flowers, the skulls were finally symbolically painted with wreaths of flowers. A snake was symbolically painted on the two skulls under the cross, which is considered a symbol of death and sin (Adam and Eve). Above these two skulls, the cross of redemption (Schmid, 2023).

3. Dark Tourism: Recent challenges and upcoming strategies

3.1 Dark Tourism and the COVID-19 challenge

Tourism, independently of its specific areas was one of the sectors of the Economy most affected by the COVID-19 (Khalid et al., 2021). According to Sousa et al. (2023) and Bäuerle et al. (2020) this pandemic led to general fear, mainly due to the speed of transmission throughout the world. However, the slight increase in travel in 2022 (Recchini, 2023) reveals that tourists want to travel again. To do this, it is necessary to reflect on the security conditions to be offered or new strategies, as developed in chapter 3.2 of this work.

Indeed, Sousa et al. (2023) point out a series of risks that tourists may perceive and which could alter their demand rates. Among them, health risk stands out (the existence of hygiene and safety conditions to avoid contracting the virus), psychological risk (related to the anxiety created by the pandemic), social risk (which relates to the way friends and family come to decision to travel in the middle of a pandemic) and the risk linked to the image of the destination with misleading advertising surrounding the pandemic.

While sustaining the livelihoods dependent on the sector must be a priority, rebuilding tourism is also an opportunity for transformation with a focus on leveraging its impact on destinations visited and building more resilient communities and businesses through innovation, digitalization, sustainability, and partnerships.

The key to accelerating the recovery consists of the millions of livelihoods that depend upon a sector affected by months of inactivity, and building a sustainable and responsible travel experience that is safe for host communities, workers and travellers. To that end, the sector needs to advance efforts to build a new model that promotes partnerships, places host people at the centre of development, advances evidence-based policies and carbon neutral investment and operations.

According to the United Nations (United Nations, 2020, p.5) this model must address 5 priority areas:

(i) Manage the crisis and mitigate the socio-economic impacts on livelihoods, particularly on women's employment and economic security;
(ii) Boost competitiveness and build resilience;
(iii) Advance innovation and the digitalization of the tourism ecosystem;
(iv) Foster sustainability and inclusive green growth; and
(v) Coordinate and establish partnerships to transform tourism and achieve the Sustainable Development Goals.

From the above, it can be seen that in this post-pandemic period, two previously known situations must be taken into account.

Firstly, with COVID-19 a new type of destination emerged, characterized as a "smart destination". This concept applies to all routes where technology influences the tourist experience, increasing competitiveness between destinations (Liberato et al., 2019; Dar, 2022; Nikbin, Foroughi, & Batouei, 2026).

Secondly, the tourist offer must have technological information resources that contain elements that facilitate travel preparation and, equally, allow access to available digital data that accompany dark tourists in the different phases of their experience (Liberato et al., 2020). From Costa's (2021) perspective, the technological issue is critical and plays a fundamental role in Tourism. Likewise, digitalization is an aspect to consider, as consumers search for destinations and plan their trips digitally, and when they arrive there, they interact and experience the place mostly by the use of mobile phones and computers.

3.2 The ARCGIS-ESRI application as an upcoming strategy for Dark Tourism

Starting from the observation of the change introduced in Tourism in the pandemic phase, namely with the implementation of technologies in that sector, it is easily understood that specifically and, at the level of Dark Tourism, new action strategies must be sought.

One of them concerns the creation of itineraries. Therefore, instead of using a road map to try to plot a path, somebody can use digital tools.

In Costa's (2021) opinion, this means that technology is a critical area and plays a central role in the tourism sector. For the same author, the definitive introduction of technologies in that sector must be done on three levels, that is, at the organizational level, at the business domain level and at the human resources domain level.

At the first level, the administration (national and regional) must create digitalization models and plans and establish objectives, results and benefits for the way they communicate with each other and with companies ('intra-network' and 'extra-network').

On the second level, company operations must be supported by modern communication and information access platforms; Particular attention should be paid to small businesses, where the costs of digitalization may be unbearable.

On the third level, the digitalization of the tourism sector must be carried out alongside a human resources training policy, since the issue is not only to improve the hardware, but also the skills of human resources.

Among the digital tools that Dark Tourists can use to develop itineraries are "google maps" and "ARCGIS-ESRI".

According to Mehta et al. (2019), Google Maps is an online mapping service, developed by Google, that provides detailed geographical information, route planning, and navigation for users around the world. It offers various functionalities, namely: Maps; Navigation; Traffic Information and Local Businesses. It also discovers attractions nearby or saves favourite places or photos.

For Raju and Kaliyaperumal (2020) and Nowak et al. (2020) ArcGIS is a powerful geographic information system (GIS) software suite developed by Environmental Systems Research Institute (ESRI). It is used for creating, analyzing, managing, and visualizing geographic data. ArcGIS allows users to work with maps, spatial data, conduct spatial analysis, and create interactive visualizations to understand and interpret geographical information. It offers a range of tools for mapping, spatial analysis, data management, and collaboration, making it valuable across various industries like urban planning, environmental management, natural resources, government, healthcare, among others. Besides this, ArcGIS includes different software components catering to different needs, from desktop applications for mapping and analysis to server-based solutions for sharing and publishing maps online.

Google Maps and ArcGIS (ESRI) are both powerful geospatial tools, but when used in the context of Dark Tourism they differ in several ways (Krokusová et al., 2015; Mangut & Mallo, 2022; Albanese & Rossetti, 2023; Ghazi & Abdullah, 2023). Table 3 summarizes them according to their specific features:

Table 3 - Differences between google maps and ArcGIS (ESRI) when implemented in Dark Tourism processes

Feature	Google maps in Dark Tourism Processes	ArcGIS (ESRI) in Dark Tourism Processes
Accessibility and User Base:	. Google Maps is widely accessible to the general public and is often the go-to mapping tool for most people due to its ease of use and availability on various devices. It's suitable for casual users exploring dark tourism sites.	. ArcGIS, on the other hand, is a more specialized GIS platform primarily used by professionals and researchers. It offers advanced capabilities for analysis, data management, and customization, making it suitable for in-depth research and documentation related to Dark Tourism.
Depth of Information and Customization:	. Google Maps provides basic information about locations, directions, and reviews. While it might offer information about popular Dark Tourism sites, it might lack the depth, historical context, or specialized data that ArcGIS can provide.	. ArcGIS allows users to integrate extensive historical data, multimedia content, and perform spatial analysis, enabling a more comprehensive understanding of the historical significance of dark tourism sites. It offers customization options for creating detailed maps with specific layers of information.
Spatial Analysis and Research:	. Google Maps, while useful for navigation and basic information, might not offer the tools necessary for in-depth spatial analysis or historical research associated with Dark Tourism sites.	. ArcGIS excels in spatial analysis, enabling researchers and professionals to study relationships between Dark Tourism sites, analyzes patterns, and contextualizes historical events within geographic contexts.
Target Audience and Usage:	. Google Maps caters to a broad audience and is more suitable for tourists or casual users seeking	. ArcGIS is better suited for professionals, historians, and researchers aiming to delve deeper into the historical context,

	general information about dark tourism sites, directions, and nearby amenities.	spatial relationships, and comprehensive documentation of dark tourism locations.
Data Sources and Integration:	. Google Maps relies primarily on its own data sources and user-generated content. While it provides valuable information, it might lack the depth of historical data or specialized content that could be integrated into Dark Tourism research.	. ArcGIS allows for the integration of diverse data sources, including historical archives, specialized datasets, and multimedia content, enriching the understanding and documentation of Dark Tourism sites.
In summary:	While both Google Maps and ArcGIS have their uses in exploring Dark Tourism, ArcGIS (ESRI) offers more advanced tools and capabilities for in-depth research, spatial analysis, and comprehensive documentation of historical significance associated with these sites. However, Google Maps remains more accessible and user-friendly for general navigation and basic information about such locations.	

Source: Adapted from Krokusová et al., 2015; Mangut and Mallo, 2022; Albanese and Rossetti, 2023; Ghazi and Abdullah, 2023; de Castro & Castellanos, 2025; Sprenger et al. (2026)

In view of the above, it now remains to analyze the phenomenon of Dark Tourism in Portugal, particularly regarding the 8 bone chapels identified throughout this work.

To this end, it is proposed to present, in the following chapter, a tourist circuit between them, of approximately 500 km.

This journey can either be carried out physically in person or using new technologies.

However, the recent experience with the COVID-19 pandemic leads to questioning the use of alternative online strategies, in the event of a new confinement or, if the dark tourist has some type of impediment to carrying out this tourist experience in person.

To this end, a research methodology and subsequent fieldwork will be used using the digital tools "Google Maps" and "Arcgis-ESRI".

4. METHODOLOGY

4.1 RESEARCH DESIGN AND OBJECTIVES

This study adopted a qualitative, exploratory and descriptive case study approach to examine Portuguese bone chapels as potential dark tourism sites and to explore how digital mapping tools could support their presentation and inclusion in a tourism itinerary. Fieldwork was undertaken between 2020 and 2022, within the context of the COVID-19 pandemic and the restrictions affecting travel and access to cultural heritage.

An exploratory approach was appropriate given the limited information available on these sites as a connected tourism offering and the lack of consistent evidence concerning visitors' motivations. The descriptive component addressed the chapels' historical and religious contexts, their geographical distribution and the conditions under which they were visited. This combination allowed the study to develop an initial understanding of the phenomenon without if visits to places displaying human remains necessarily constituted dark tourism (Lehmann & Lehmann, 2010; Ward et al., 2018).

The overall objective was to explore how digital technologies might contribute to the continuity and accessibility of tourism practices associated with these sites. The specific objectives were:

(i) to document the eight Portuguese bone chapels identified in the study and propose an itinerary connecting them;
(ii) to examine their potential relationship with dark tourism, while considering their established cultural and religious functions;
(iii) to explore the use of Google Maps and ArcGIS/ESRI to locate the chapels, present the proposed itinerary and support access to information about them.

The research therefore addressed two related questions: how might the chapels be understood within the framework of dark tourism, and how could digital mapping support their communication as a connected heritage offering?

4.2 Case selection and scope

The empirical study covered the eight bone chapels identified in Table 2, located in the Algarve and Alentejo: Lagos, Alcantarilha, the two sites in Faro, Pechão, Évora, Campo Maior and Monforte. These sites formed the geographical and thematic scope of the investigation. Their shared use of human bones within religious settings provided a basis for examining their connections with death, remembrance and devotion, while their different histories and visiting conditions allowed the study to consider variation within this heritage group.

The chapels were examined both individually and as components of a proposed itinerary. The investigation focused on their historical background, religious significance, management and visitor information, alongside their potential interpretation through dark tourism. It did not seek to produce a comprehensive inventory of Portuguese funerary heritage or a representative account of national demand for dark tourism.

4.3 Data collection

Data collection combined bibliographic and documentary research, site visits, direct observation, in-depth interviews and a focus group. These sources provided complementary perspectives on the chapels and informed the preparation of the itinerary.

Bibliographic and documentary research addressed the origins of the sites, the circumstances surrounding their construction, their devotional functions and their subsequent use as visitor attractions. The materials consulted included scholarly publications, local historical accounts and information available from tourism and heritage bodies. Visitor figures were also considered where these were available, although differences in recording practices limited their comparability.

Field visits were made to all eight chapels. Direct observation focused on the physical characteristics of the spaces, the display of human remains, their relationship with the surrounding religious buildings and the information available to visitors. Attention was also paid to observable visitor reactions and behaviour. Such observations provided contextual evidence but were not treated as sufficient, on their own, to establish visitors' motivations.

In-depth interviews were conducted with priests and caretakers associated with the chapels. These interviews explored the history and use of the sites, continuing devotional practices, arrangements for receiving visitors and the availability of information on visitor numbers and profiles. A focus group with staff responsible for culture at Monforte Municipal Council provided an additional institutional perspective on the local chapel and its tourism context.

Visitors were also approached with the intention of administering a questionnaire about dark tourism. During these approaches, the reasons expressed for visiting were more closely associated with cultural interest than with an explicit interest in death-related tourism. As the paper does not report a completed questionnaire dataset, these exchanges were treated as exploratory contextual material rather than as survey evidence. They cannot establish the prevalence of motivations among the wider visitor population.

4.4 Interpretation of the material

The qualitative material was examined through descriptive content analysis, informed by the concepts discussed in the literature review. The interpretation focused on the chapels' historical origins, devotional meanings, visitor information and management, and their possible connections with cultural, religious and dark tourism.

Documentary accounts, interview material and field observations were considered together when developing the site descriptions. Where information was unavailable, uncertain or based on the accounts of local informants, this constrained the interpretation. In particular, the absence of consistent visitor records prevented systematic comparisons of attendance across the eight sites.

A distinction was maintained between the characteristics of the heritage offering and the motivations of those visiting it. The presence of human remains and references to mortality supported consideration of the chapels within dark tourism scholarship, but did not establish that visitors understood their experience in those terms. The assessment of tourism potential was therefore qualitative and exploratory, rather than a measurement of demand or market viability.

4.5 Development of the digital itinerary

The geographical information assembled during the study was used to present an itinerary connecting the eight chapels through Google Maps and ArcGIS/ESRI. The proposed route linked Lagos, Alcantarilha, Faro, Pechão, Évora, Campo Maior and Monforte. Google Maps provided the route representation and an indicative driving distance of 463 km.

The two platforms were explored as tools for presenting the same group of sites. Google Maps supported the identification of locations and the visualisation of the journey between them. ArcGIS/ESRI was explored as a framework for geographical presentation and the possible development of more detailed site information.

The digital outputs were treated as preliminary demonstrators. The mapping already produced was distinguished from proposed additions, including historical narratives, images, visitor guidance and virtual tours. These prospective features were not treated as implemented or evaluated components of the study.

The investigation did not include user testing, a controlled comparison of the platforms or measurement of their effects on visitation, learning or sustainability. Its contribution lies in documenting the chapels, proposing a connected itinerary and identifying possibilities for their digital presentation. Conclusions concerning wider tourism development must therefore be understood within these exploratory limits.

5. Results and Discussion: Presentation of the Path of the Chapels of Bones in the Google Maps and ArcGIS/ESRI applications

When somebody wants to define a Dark Tourism itinerary or route, he or she can resort for scripting software (Crampton, 2002). These include google maps. Has mentioned in the revision of literature chapter google maps is a Google mapping service that allows to: search

for an address, plot routes; alternate routes between walking, driving or public transport, measuring distances and walking the streets.

In another way, nowadays it is not necessary to upload maps and information documents of what somebody wants to know or visit, since through the GPS of the mobile phone, georeferencing software (GIS - Geographical Information Systems) it is possible to have access to this information in a common and reduced cost way (Burrough et al. 2015). One such tool is the ArcGIS application from ESRI Portugal - Geographic Information Systems.

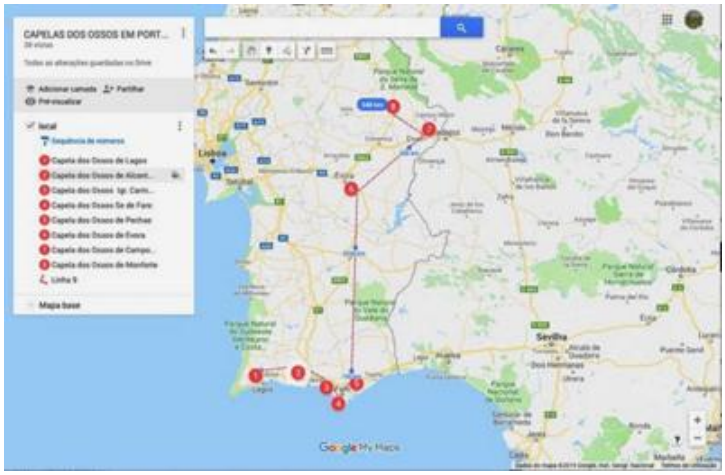
According to Price (2023) ArcGIS Online is a cloud-based analysis and mapping tool. It is used to create maps, analyze data, allowing the sharing and collaboration of the results obtained. It has a set of specific applications according to the workflow, maps and information from around the world and tools for mobile devices. The data and maps are stored in a secure and private infrastructure and can be configured to meet somebody's mapping and IT requirements. This tool also allows tourists to work with intelligent dynamic data styles to explore and view 2D and 3D data.

Below is the route of the Portuguese chapels of bones using both applications, as well as a set of information inherent to their study collected during the research field work.

5.1 GOOGLE MAPS ITINERARY PROPOSAL

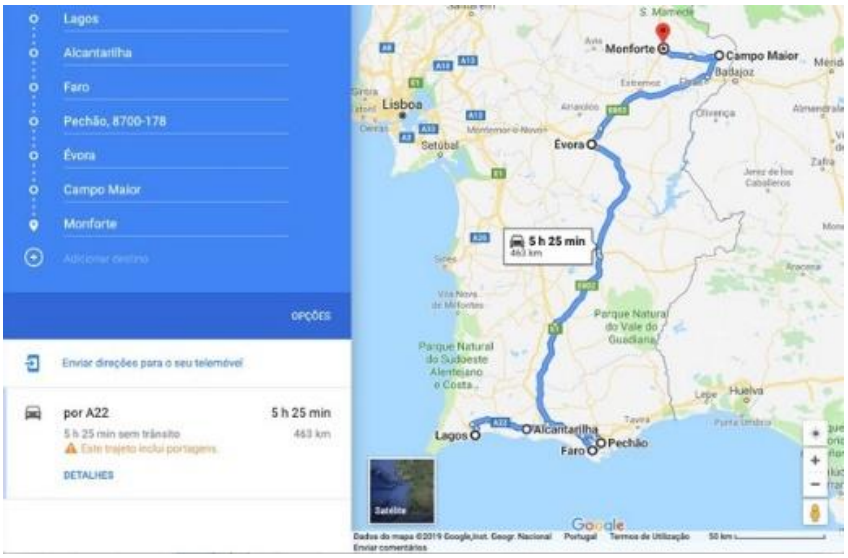
As mention in the chapters before, the google maps is not very difficult to be used by the average literate tourist. Thus, it allows not only making the route but also calculating the total km of the route. Therefore, the itinerary now proposed and carried out in the fieldwork begins in Lagos, going to Alcantarilha, Faro, Pechão, Évora, Campo Maior and ending in Monforte (see figure 1). In total, and according to google maps, this Dark Tourism route is 463km (see figure 2 and 3).

Figure 1 - Chapel of Bones Itinerary I



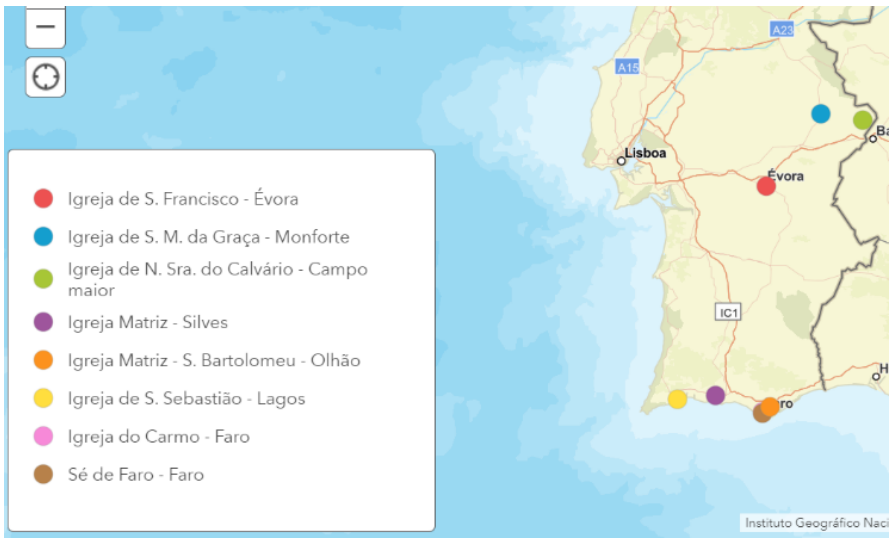
Source: Own systematization

Figure 2 - Chapel of Bones Itinerary II



Source: Own systematization

Figure 3 - Chapel of Bones in Portugal



Source: Own systematization

In figures 1,2 and 3 is represented the dark tourism google maps itinerary proposed in this research work in three different ways. This means, in figure 1 it is possible to see the names of the 8 chapels of bones, its location on the map and most productive sequential path to follow. In figure 2 the cities, towns and villages where the 8 chapels of bones are located are identified, as well as the total number of km to travel by car and the total number of hours this journey will take from Lagos to Monforte. Figure 3 identifies the location on the map of the 8 chapels of bones, making it only possible to analyze the greater or lesser distance between them and, depending on this, the dark tourist can make decisions about the route to follow.

According to the potential of the Google Maps application, other aspects can still be explored. In other words, when creating a Google Maps output for dark tourists interested in visiting the 8 portuguese chapels of bones, the aim is to provide easily accessible, concise, and relevant information. In figures 1,2 and 3 the roadmap proposed was summarized to

create location pins or pinpoint locations of the Portuguese chapels of bones on the map for easy identification. Each pin was labeled with the name of the chapel and an easily recognizable icon. It was also mentioned easy-to-follow directions, missing navigation feature to guide users from their current location to the chapels. However, and according to the revision of literature chapter, the Google Maps application permits to include other kind of information.

So, to the pinpoint locations, directions and navigation can be added:

(i) Brief Descriptions: This means can be provide short descriptions or snippets about each chapel directly on the map pins or in a sidebar, such as, key historical facts, significance, and unique features of each chapel;
(ii) Visual Content: this means, could be incorporate Street View imagery where available to give users a visual preview of the chapels and their surroundings. Could be also included relevant photographs of the chapels to offer a glimpse of their architecture or distinctive elements;
(iii) Visitor Information: this means, display opening hours, entrance fees (if applicable), and any specific visitor guidelines directly on the map or in the sidebar. Could be also, highlighted nearby amenities like parking lots, restrooms, eateries, or accommodations;
(iv) Additional Resources: this means, to include links or references to external resources for those seeking more in-depth historical or cultural information about the chapels. Or, incorporate user-generated content such as reviews, ratings, or photos shared by other visitors;
(v) Safety and Etiquette Tips: this means, to provide tips on respectful behavior when visiting these historical sites, emphasizing their cultural significance and the importance of respectful tourism practices.

5.2 ArcGIS/ESRI itinerary proposal

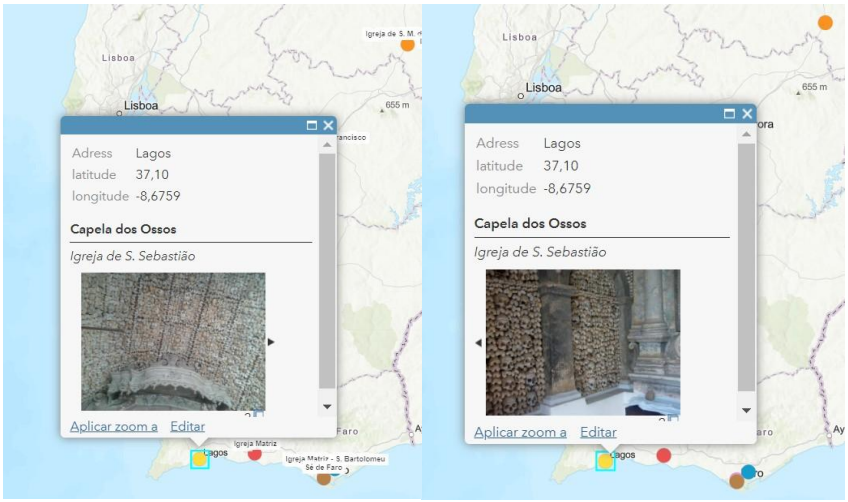
For more detailed information on tourist elements related to the chapels of bones, the ArcGIS/ESRI application can be used alternatively.

Below is the same dark tourism itinerary, according to that application.

5.2.1 Lagos – S. Sebastião Church

The chapel that appears in figure 4 is the Lagos chapel of bones.

Figure 4 - Chapel of Bones of S. Sebastião Church, Lagos, Algarve



Source: Own systematization

Why was the chapel of bones created? According to the research field and to the in-depth interview to the vicar it is not known. It is known that it was used to bury the dead around the churches, mainly poor people, and the remodeling of the cemetery was the result of the excessive number of post-earthquake burials which would lead to the building of the chapel.

Until 2014 no one visited the space, much less on purpose, so one cannot talk about the phenomenon of Dark Tourism. Even now who does it is just because it is displayed on city tours or by the hotel where the tourist is staying. From 2014 until today the total number of visits has reached 1000 visitors. However, figure 4 helps locating this chapel showing also what the tourist can find there.

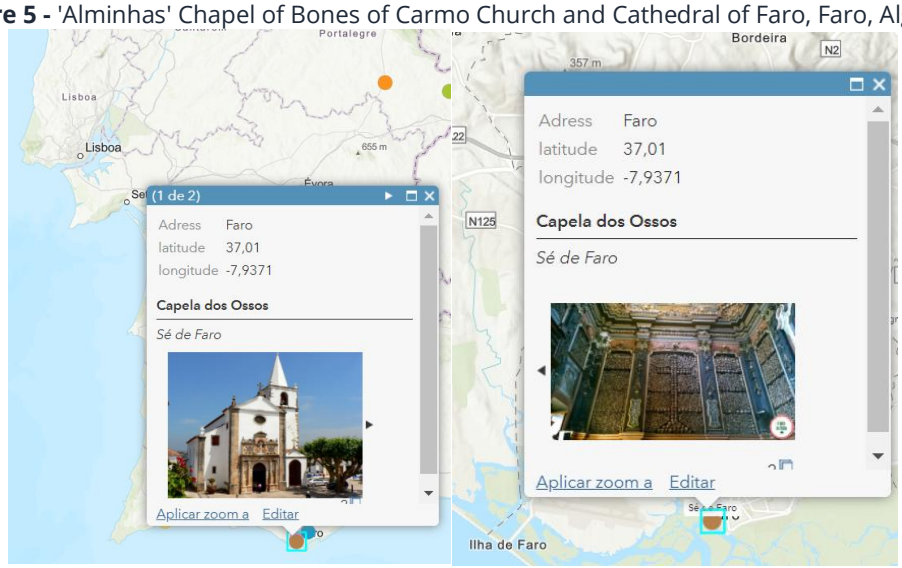
5.2.2 Faro - Nossa Senhora do Carmo Church and Faro Cathedral Cloister

The Church of Nossa Senhora do Carmo was built in 1816 by members of the Order of Carmelites (Veloso, 2003). In the same space there are two chapels of the bones. One bigger and one smaller. The smallest one resembles some ordinary little almonds and is out in the open. The other chapel is larger and is in a room. One gets the impression of this work being dedicated to the Souls by the suggestion in a sign: "To consider here that this state will arrive".

Until 2017 no visitor numbers were recorded. Since then, the number of foreign tourists has been increasing. Thus, while in 2017 they made up a total of 53,022 tourists, in 2018 the number grew to 62,390. Of all visitors only 5% were portuguese. It was also observed that nationalities varied according to the tour packages to Algarve, that is, if in 2017 English, Nordic and Nipponese predominated; In 2018 the predominance was French, English, Italian and Japanese.

During the research, it was clear from interviews that there is no Dark Tourism phenomenon here. In fact, the tourist visits are done to the Cathedral but since they are there it is compulsory to visit its Chapel of Bones . Also, the number of entrance tickets were not given, but the investigators were informed that this is one of the most visited places by tourists in Faro and as an alternative to beach tourism. Besides this, figure 5 shows the possible dark tourist offered there.

Figure 5 - 'Alminhas' Chapel of Bones of Carmo Church and Cathedral of Faro, Faro, Algarve



Source: Own systematization

5.2.3 Pechão (Olhão) - S Bartolomeu de Pechão Church

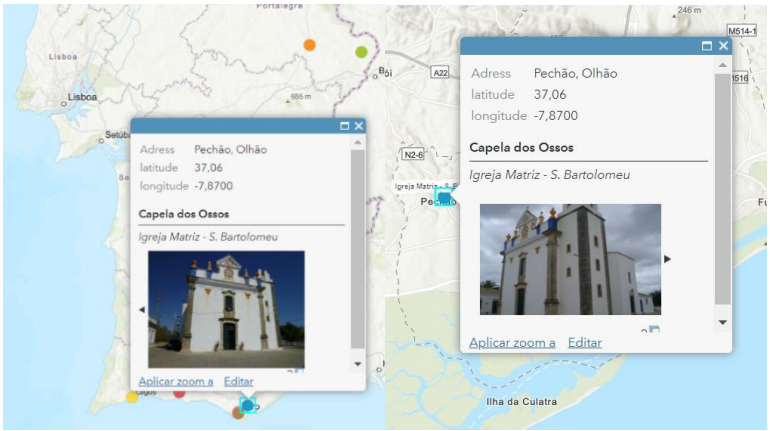
As in the Algarve chapels described above, the construction of Pechão's is due to the 1755 earthquake. According to Guerreiro (1988), in 1482 there was already the chapel of S. Bartolomeu that belonged to the Cathedral of Silves. When in 1457 the bishop becomes in Faro this parish belongs to this city. Later Faro separates from Olhão and then Pexão (as it was said) belongs to Olhão.

In 1851 the so-called old cemetery was built, which awaited the works of the new. The bones used in the construction of Pechão's bone chapel came from the old cemetery. The new cemetery was to be completed in 1854-55.

In the fieldwork, it was observed that although the main church and the Parish Council are close, there is no caretaker for the Bones Chapel.

The tourist on the beaches of Olhão visits it, but as it is located in the open there is no record of the number of visitors. In figure 6 what the tourist can see there is displayed, as well as the respective location

Figure 6 - Chapel Bones of Pechão, Olhão, Algarve



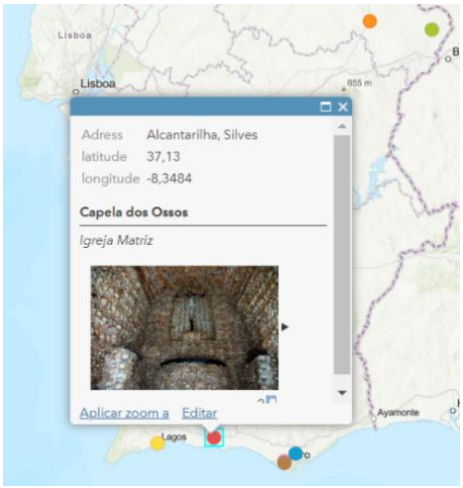
Source: Own systematization

5.2.4 Alcantarilha (Silves)- Nossa Senhora da Conceição Church

The Chapel of Bones of Alcantarilha is attached to the Church of Nossa Senhora da Conceição. There is no record of tourists who pass by the place to meet it. The parish priest responsible placed a box for offerings with alms request for the conservation of space.

As for the reasons for the construction of the space is very similar to that observed in the other chapels of Algarve, that is, it was necessary to build a new church and, for that, remove the bones from the cemetery. It also has no earthquake connection since it dates from sec. XVI (Reis, 2003). Once more in figure 7 is the potential of dark tourism exemplified.

Figure 7 - Chapel Bones Alcantarilha, Silves, Algarve



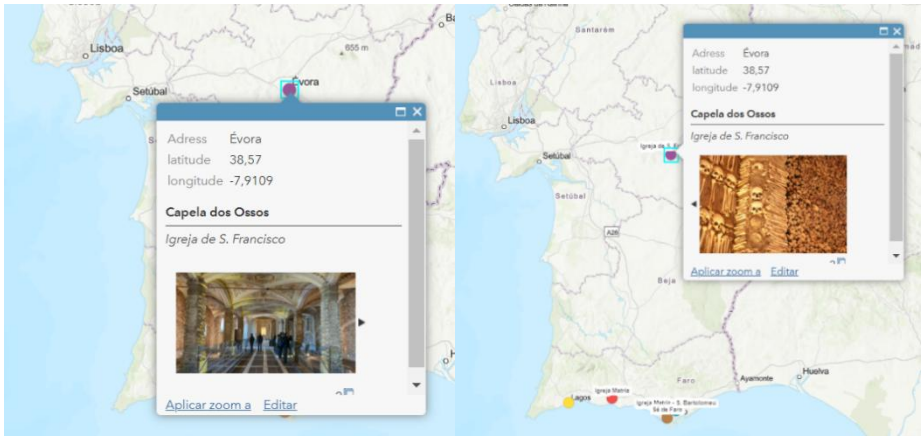
Source: Own systematization

5.2.5 Évora- Church and Monestary of S. Francisco

One of the best known and oldest chapel of bones is located in the Franciscan convent of Évora, with a 13th century church (Veloso, 1993). According to Pereira (1998) this chapel was ordered to be built by the convent religious to "incite the living to remember the dead and to multiply the disillusionment with the view of our mortalities".

The Fabrica (name of the company that manages the convent complex) charges entrance tickets. However, it does not record the number of tourists visiting the Chapel. The figures they have were not provided since they are calculated on the basis of the number of touristic books produced and translated into several languages (including English, French, German and Spanish). However, this monument is the most visited in Évora. In figure 8 an overview of the place and its tourist offer is given, through the applications Google Maps and ArcGIS/ESRI.

Figure 8 - Chapel Bones Évora, Évora, Alentejo



Source: Own systematization

5.2.6 Campo Maior- Nossa Senhora da Expectação Church

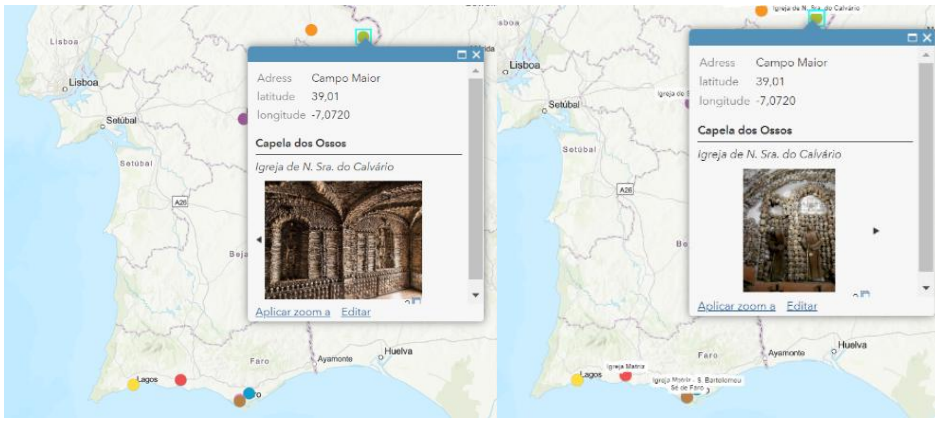
Continuing in the Alentejo, next to the Church of Nossa Senhora da Expectação is the Chapel of the Souls of Campo Maior.

At the origin of this chapel is the explosion in 1732 of a gunpowder storeroom that decimated 2/3 of the village population (Veloso,1993). Devotion to this place still occurs today, not merely touristy.

There is no record of the number of visitors, but the profile of the tourist is known. Thus, they are mostly Spanish (who are between 20 and 30 years old and come in groups); English (aged 60-70); German and French.

In the fieldwork it was observed the existence, in Campo Maior, of a typology of tourism, which can be also a potentiator of Dark Tourism: The Religious Tourism. Figure 9 shows the connection between the artistic, religious, and possible Dark Tourism offer.

Figure 9 - Chapel Bones Campo Maior, Portalegre, Alentejo



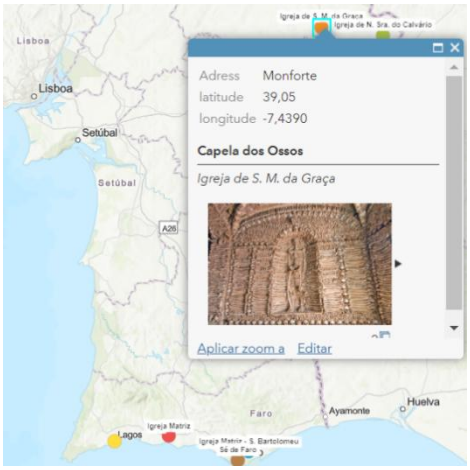
Source: Own systematization

5.2.7 Monforte - Santa Maria da Graça Church

Relatively close to Campo Maior is the Church of Santa Maria da Graça (mother church of Monforte) and the Chapel of Bones of that county.

Recently this space has been sought by tourists who, in 2018, reached a number equal to 5137 (Posto de Turismo de Monforte, 2019). In figure 10 is presented the chapel of Monforte and its prominence in Dark Tourism.

Figure 10 - Chapel Bones Évora and Monforte, Alentejo



Source: Own systematization

In summary, when creating an ArcGIS (ESRI) output for dark tourists interested in Portuguese chapels of bones, the information should aim to provide historical context, geographical details, navigation guidance, and additional insights that enhance the visitor experience. The model developed so far only included geographical information, besides missing a satellite imagery. As well this, should be included the historical context and historical images depicting the chapels and their evolution. Also route planning, landmarks, visitor guidelines, virtual tours, references and further reading should be considered.

Guidance on respectful behavior and etiquette when visiting these sites, emphasizing the sensitivity and historical significance of the chapels.

The goal is to create an informative and engaging output that not only guides tourists to these sites but also educates them about the historical and cultural context, fostering a deeper appreciation and understanding of the Portuguese chapels of bones.

6. Conclusion

The work now presented came to emphasize that in the post-pandemic period, Tourism will survive, but no longer with the forms or some of the modalities that were known. Likewise, technologies that were accepted as a major factor in the future will enter the scene sooner, becoming part of the daily lives of the various stakeholders of Tourism. Thus, anyone who cannot visit the sites either due to lack of financial or time availability or public health problems will not fail to obtain the necessary information about them. In the way, this target tourists will be considered. The use of the ArcGIS / ESRI software was the strategy, with the proposed application configuration to demonstrate, in a proven way, the possibility of transition between the past and the future, an aspect also considered throughout this investigation. The intentionality was to observe the reactions of the dark tourists / chapels of bones visitors, and their motivations. In case they need a summarized information, the application google maps will be sufficient. For detailed information ArcGIS/ESRI will be the application followed.

The study also sought to understand how familiar people were with these sites, particularly their role, history and the evolution of devotion and worship, and to examine the information provided to visitors by official bodies or site managers. Finally, it aimed to assess the sites' potential for dark tourism. The potential was shown. However, the capability to motivate

dark tourists to visit it is another. Considering this, new touristic markets will open and the supply side of Dark Tourism will develop.

The death that was used in the Baroque period as a means of appealing to religious frequency, reappears in this phase of reflection imposed by the war waged against the pandemic COVID-19. Also, during 2022 a conflict between Ukraine and Russia begins and in 2023 another conflict between Israel and Hamas restarted. Again, the question of death is raised, not knowing which artistic, religious forms, among others, will originate future Dark and Macabre tourist movements. It is felt, however, that Dark Tourism tends to assert itself. In this sense, it is thought to have demonstrated that when everything passes, new forms of tourism with reduced frequency will emerge. Among them stands out the virtual Dark Tourism and, when it is, "everything will be fine".

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