On the defence of patrimony: enhancing the value of fortified cities and their landscapes by creating a transborder smart tourism destination

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Abstract

Cultural patrimony plays a primordial role in catalysing a rural world immersed in a bitter struggle to survive. Depopulation and a lack of incentives are just two of the most severe problems in this regard. La Raya, as the study area on the Spanish-Portuguese border is known, offers a clear case of this situation. Setting out from the transborder area between the western region of the province of Salamanca (Spain) and the eastern part of Beira (Portugal), an experimental laboratory was created to elaborate and implement specific solutions to the challenges threatening a space marked by certain particularities. The longstanding need to defend this zone now centres on a series of fortified cities whose historical and biocultural patrimony requires novel ideas to enhance their value and conservation efforts. To a great degree, achieving this goal entails integrating the elements and resources of their landscapes and including them in a process in which citizen participation is reflected in the territory's destiny. Combining these aspects has spurred the development of the proposal presented herein, one that addresses several key challenges: normalising the reality of two nations; enhancing the value of intangible patrimony as an additional component; conserving, above all, unpopulated spaces; and developing inclusive initiatives that respect the landscapes of the main population nuclei. The project culminates with the elaboration of geotechnological tools and solutions that offer valuable experiences while simultaneously capturing data on the most important aspects for residents and visitors. This arduous process is conducted by a multidisciplinary team linked to diverse local agents.

Keywords: border, tourism, culture, territory, patrimony, geotechnologies

1. Introduction

The territory's cultural inheritance and landscape resources constitute primordial assets for catalysing the rural world in the face of the demographic challenges it is currently immersed in. Depopulation, the ageing of territories, the lack of socioeconomic attractions, and issues of accessibility are just a few of the most visible, pressing problems that society as a whole, the political class, and researchers in diverse fields are striving to solve or, at least, to downplay the consequences they bring.

> The Demographic Challenge is a complex idea that encompasses numerous dimensions of the population [and] refers to the structure of the pyramid (by sex, age...), localisation (rural areas, cities, unpopulated zones, territorially dispersed areas...) [and] living conditions (difficult access to services, low-income levels...) *Ministerio para la Transición Ecológica y el Reto Demográfico.*

The Spanish-Portuguese border offers a paradigmatic case because all of these problems are rather unique there due to the geostrategic position the space occupies. La Raya, as is well known, plays the role of a dividing line – in some respects more imaginary than real– that residents on both sides of the border have been traversing for centuries. In the 20th century, the European Union began to support the creation of a common space by suppressing interior borders (Calderón, 2015), a goal that in some rubrics of everyday life is still distant from reality; for example, issues involving the mobility of public transport, to mention one case related to the topic explored in this paper. It is important to note that we are dealing with a peripheral area where external and internal mobility is an especially important element, and the dispersed nature of equipment and services is another. In the study area, the capillarity of the transportation network and the autonomy and flexibility provided by private vehicles are reflected in insufficient public transport services and the generalised use of automobiles by both residents and visitors. The result is a model of unsustainable mobility marked by high external environmental and climatic costs. This key feature reveals the difficulties in generating tourism itineraries that connect numerous but widely dispersed resources. The complexity of these challenges increases when efforts centre on transforming territories located in two countries into one sole space.

1.1. Towards the transformation of the border landscape into a smart tourist destination (STD): creating an experimental laboratory

In recent decades, tourism has played a transcendental role in society because it acts simultaneously –from social, cultural, and economic perspectives– as both an instrument and a phenomenon of globalisation. In 2019 in Spain (pre-pandemic), tourism represented 12.4% (154,737 million Euros) of the GDP and generated 12.7% of all employment (2,680,000 jobs). Figures for that year show that 83.5 million tourists visited the country. The main guidelines for tourism stress creating and consolidating vanguard tourism infrastructure that is highly focused on urban areas, but those principles are also perfectly adaptable to the rural world. This paper focuses on the transversality of tourism activity and the need to establish a tourism strategy as the basis for the economic catalysation of the territory under discussion (Baidal, J. A. et al., 2019).

The Spanish-Portuguese border is a large space with significant elements of union despite a certain heterogeneity in some areas that serves to increase the attractiveness and tourism potential that currently exists (Hernández-Ramírez, J. 2017). The main point of cohesion is the legacy of a past in which relations between Spain and Portugal were characterised by moments of intense conflictiveness that led to the militarization of the area (Lemos, 2020) and a process that has left behind a series of defensive elements among which the imposing figures of several fortified cities stand out. The remains of that hostile past stand in a territory where pastureland is the second-largest component, followed by other, more clearly delimited, landscape typologies. This area constitutes an enormous treasure that is being enhanced by diverse but largely isolated initiatives, a place still searching for a guiding thread. In this sense, the project proposed in this paper advocates converting this space into a "smart tourism destination" (STD). To support the project, an experimental laboratory has been set up, and a concrete space has been chosen for a pilot study. The plan is to begin work there and expand the scope to include the entire border area. From the approximately 1250 km² that delimited the proposed study area, we selected the space between Ciudad Rodrigo (Salamanca) and the Guarda (Beira) district as the pilot zone. Work there is already underway.
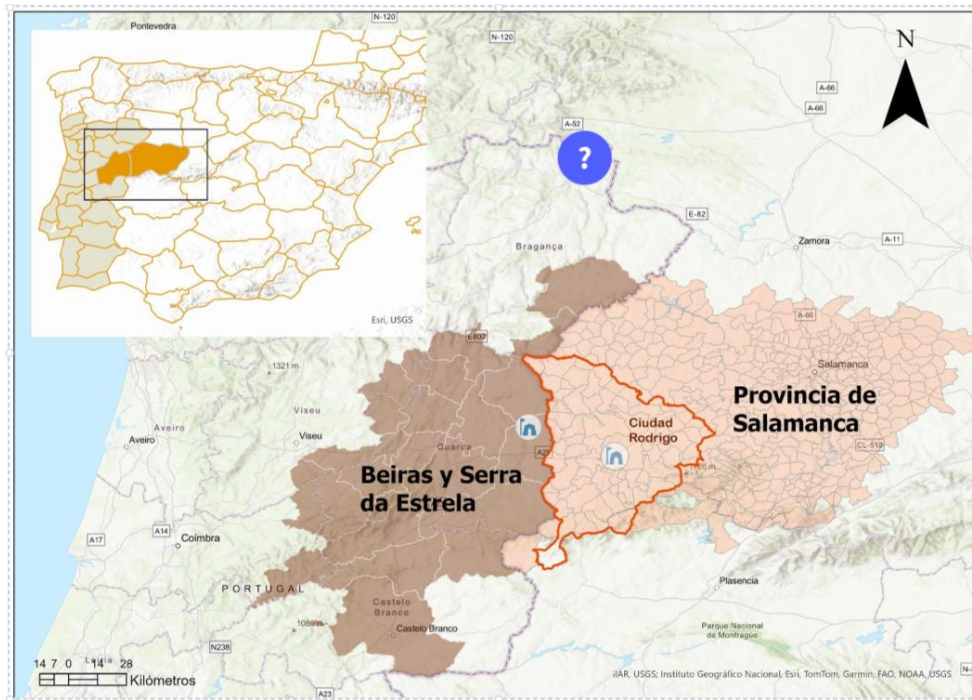
Figure 1. The area of Ciudad Rodrigo (Salamanca) and the district of Guarda (Beira). Source: García, L. (2024)

Ciudad Rodrigo will serve as the epicentre of the laboratory, a choice determined by the strong impulse currently directed towards catalysing tourism in that region and ongoing efforts to foster ties to Portugal, specifically the Andalusian locality of Almeida. This led to the birth of FORTLAB (www.fortlab.es). This proposal seeks to create a forum for the exchange of innovative ideas that include technology in the form of an open, participative community that includes researchers, local agents and citizens themselves from both sides of the border. This summary encompasses the principles and integral focus that the DTI methodology represents.

1.2. Objectives and Methodology

Under the umbrella of the methodology derived from STD, the main goal that this project strives to achieve is to unite research on issues related to socioeconomic aspects, like the study and analysis of cultural and intangible patrimony, with local development and a search for new options of catalysation, with tourism as the principal referent. The basic tools employed are technologies, as we explore how they can best be introduced into smart tourism due to their capacity to handle spatial results. Our research sets out from and finds its methodological reference in geography. As a result, the concepts of territory and people are the protagonists and support columns of an approach that also considers the evolution that the study area has shown throughout its historical evolution. Any variable that reflects this changing reality, the perception and valorisation that have emerged and, of course, the legacy of earlier stages transformed into a rich, varied patrimony will be referred to as a univocal position in the territory. On this basis, a large geospatial database is under construction to allow researchers to learn more about the demographic processes in this transborder zone and to analyse and establish policies designed to respond to problems as complex as the demographic challenges mentioned at the outset.

The fundamental requirement of this data model consists of integrating qualitative and quantitative data that are not circumscribed to the present but rely pre-eminently on information elaborated in earlier periods to contrast the area's past demographic tendencies with the present and trace the evolution of the activities that have formed the economic base of this transborder territory; that is, the elements that make up the cultural and landscape patrimony and that constitute the tourism potential.

In this context, the historical sources and data not only explain demographic tendencies over long periods but also provide key references to the peculiarities of socioeconomic life in the study area, including aspects like flows of commerce, merchandise, and people, and the sociocultural linkages and features of economic integration that have

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developed in these lands up to now. Other substantial aspects are the perspectives and knowledge of their territories that residents and local actors possess today. To document those perspectives, we have organised discussion workshops. To record people's collective knowledge and wealth of information, we have held training courses and workshops that allowed us to establish data-gathering procedures using geotechnological tools. All the data collected will be integrated into the geospatial database described below.

1.3. The role of geospatial databases and other geotechnologies

Implementing the ideas and principles proposed requires a specific series of tools to produce a concrete product. This is one of the novel contributions of our proposal: using geotechnologies, understood as a set of instruments, methodologies, and other components that are fundamental for handling geodata, given that the totality of the variables we work with fall into this group, distinguished by relating each element to univocal coordinates in the territory. Any project developed in this field will have three basic components.

The central protagonist is a geospatial database that is the driving force behind the entire system. Exploiting this database is carried out more extensively through the use of geographic information systems (GIS), which facilitate the application of various techniques of spatial analysis that enormously enrich the information gathered and stored. Finally, diverse instruments are required to assign values to the results. Here, geoportals provide a good example, but one that can be supported by other options, such as mobile applications. The latter is extremely useful for the normalised alimentation of the database by expert users or researchers, especially when operated under the logic of so-called citizen science, that is, open spaces that allow distinct users to contribute to nourishing the databases.
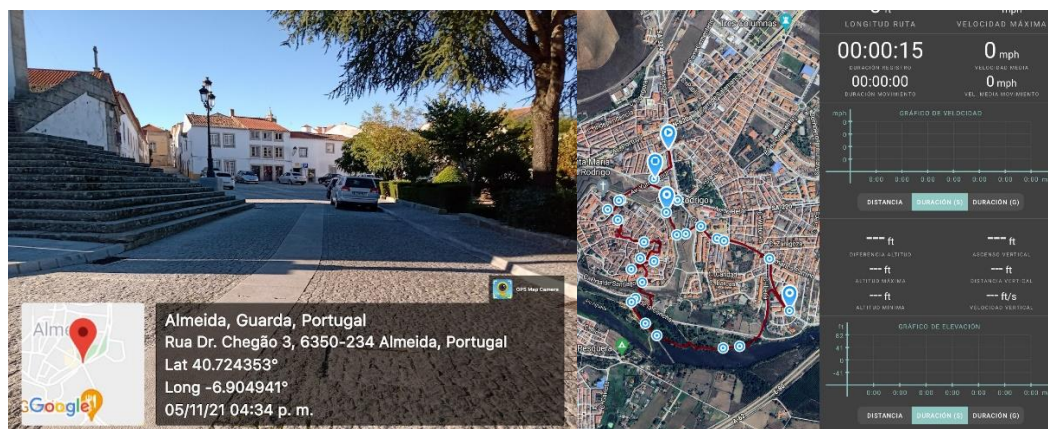
Figure 2. Data-gathering using mobile applications Source: Alberto, A. (2023)

Returning to the issue of the geospatial database, in the era of "Big Data", relational databases still show a great capacity for creating interconnections among diverse sources of information that, in our case, take territory as their guiding axis. Hence, we chose this model to develop our prototype, keeping in mind that the future will require scalability and transformation to other models that incorporate non-structured sources of information, including social networks (García Juan et al., 2019).

Together with the usual techniques and methodologies associated with the discipline of geography, tourism as a means of giving value to this legacy uses many other options, most significantly, virtual reality, a necessary step to remain at the vanguard and offer tourists experiences that lead them to understand the context, while at the same time creating virtual environments like digital twins that foster advances in the research program (Chías, 2023).

2. Result: FORTLAB, an integral information system for managing a smart territory

As indicated above, one notable achievement of this project is designing a relational model that facilitates storing, among other key elements, the potential resources in the study area. To this end, we have worked to construct an information system articulated through a series of subsystems that make it possible to store heterogeneous information organised in three broad thematic blocks: population, tourism, and mobility/accessibility. We added potential resources from the study area (Figure 3). The main challenge in developing this design was normalising the data from the two countries. Although much of the work has been conducted under the umbrella of the European directive, INSPIRE, some projects do not show continuity on one side of the border or the other.
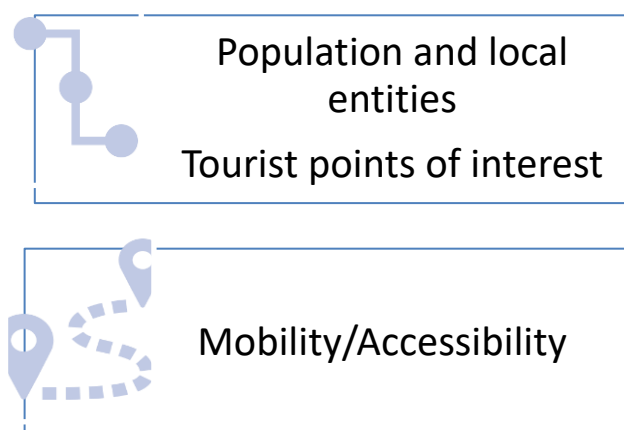
Population and local entities

Tourist points of interest

Mobility/Accessibility

Figura 3. Thematic blocks of geographic information storage.

This issue has proven to be a significant handicap in the data analysis phase. On the theme of population, the model has integrated data from the 18th century to today, a long series that facilitates knowing and understanding the phenomenon of depopulation and its associated tendencies. The project includes data for studies of population structure and distribution. Normalising the information on this issue from the two sides of the La Raya has entailed fewer difficulties, and the challenges that have arisen have had to do mainly with the unit of analysis. Because the two nations have distinct administrative structures, normalising the data using NUTS does not generate a framework that allows us to accurately approximate reality.

The topic of mobility in the analyses of tourism and population movements has been approached through the experimental study by the Ministry of Transport and Sustainable Mobility (MITMA for its initials in Spanish) based on mobile phones and Big Data. This important work allowed us to identify the most frequented sites, visitors' tendencies, and features of their stays. The main problem is that we do not have comparable data with the same level of detail for the Portuguese side.

Finally, tourism constitutes another important block for which we have geolocalised tourism offices and other sites that provide information. We have also identified several campaigns conceived to foment tourism and included statistical data from the tourism office in Ciudad Rodrigo (Salamanca).

This work results in a large database with a wealth of information, which will be exploited using two broad instruments, one concerned with management and the other with enhancing the value of local resources. To this end, we have worked to construct an articulated information system comprising a series of subsystems. The block on management covers the principles of the DTI methodology, which establishes strategies based on sustainability and governance by offering public entities, associations, and local action groups useful tools for developing innovative proposals. Increasing the value of resources in tourism settings is being carried out through the design of an app that will transform the results of research into a specific product. These initiatives include modules that address major challenges, such as conservation. To accomplish this, by the principles of citizen science, users receive a novel experience and monitor and report on changes in the region's material inheritance.
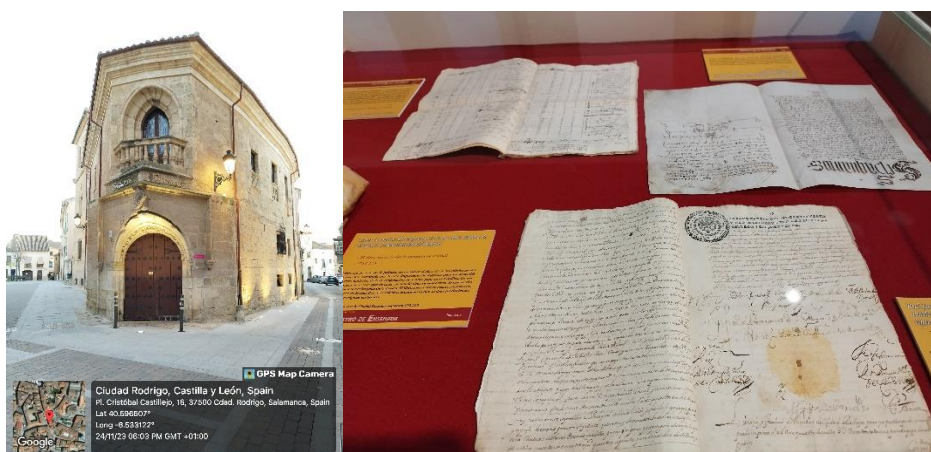
Figure 4. Historical patrimony and documentary sources. Source: Alberto, A. (2023).

Once all these elements are duly represented in a cartographic database, a digital representation of the potential of the study area will be generated as a key support tool not only for local institutions and associations that wish to develop plans to preserve and catalyse the historical legacy of these spaces but also to incite recognition of the territory by its inhabitants. This facilitates incorporating it into commercial endeavours and economic activities outside the tourism sector. Moreover, thanks to these advances, an ample database could be used to elaborate on and propose numerous tourism routes and plans. While working on its design, we focused on (i) developing alternatives to existing products and (ii) connecting spaces on both sides of the border and then those spaces to other zones in this unique space.

Other aspects considered simultaneously include population and demographic tendencies, factors of a socio-organizational character, and cultural practices along the border that can affect the viability of alternative activities.

2.1 Data entry

The data model was created so that it can be nourished by parties with diverse profiles and in distinct work environments. This will permit incorporating elements created through work in cabinets or laboratories and activities conducted directly in the field. Regarding who can enter data, the model emphasises the value of contributions from the field above of citizen science. To this end, the forms designed allow any interested person to register. Of course, this process must be simple, user-friendly, and easy to access. Based on these requirements, we tested various technological options involving free and proprietary software, all of which had communication channels to the Internet since they are based on products deployed in a geospatial server.

Figure 5. Forms and data recording. Source: García, L. (2024).

Concretely, two instruments were applied. The first was designed to record tourism assets, patrimony, and other resources with tourism potential while also highlighting points of interest that exist in the Comarca de Ciudad Rodrigo and the Portuguese part of La Raya (Distrito de Guarda) in three broad groups: cultural, natural, and mixed. The second goal was to register complementary services and collaboratively generate information on established businesses. The results of the two surveys will be integrated into a large database that will serve as key support for elaborating various routes and plans for the study area.

2.2. Formation and transference of knowledge to local agents

A significant part of the achieved objectives has been to design a series of training plans that allow the various local agents to both collaborate and establish new ideas. A starting point has been to establish communication with the officials of the municipality of Ciudad Rodrigo, particularly with the *Consejalía de Turismo*, in order to understand the programs and actions that they are undertaking so the project aligns with local actions. Another component is formed by associations, companies providing tourist services, and local economic development initiatives, aiming to gather different perspectives on the issues, proposals, and solutions directly from various local agents. This is where the project contributes elements of training and geotechnological tools.

Figure 6. Capacitation workshops and discussion panels involving local agents**.** Source: Alberto, A. (2023).

It could be said that knowledge of a territory carries, implicitly, a consensus with its actors and authors; that is, with all the people who live there, who are economically productive, and who participate in management. In this area, our team organised, on the one hand, presentations of the project with its objectives and scope, together with roundtable discussions and workshops involving various actors. On the other, we worked to construct the territorial database and gather field data in a collaborative way, which required providing basic methodological criteria and reaching agreement on knowledge and the application of the study instruments (the forms described in the Methodology and the technological applications of mobile devices). This was the focus of the formative process, which was of an open character as we worked with local agents, municipal officials, and the broader public.

3. Conclusions and future lines of research

In light of existing conditions, which lead us to affirm that the rural world is facing nothing less than an emergency about its future, the Spanish-Portuguese border area presents unique features that make it especially vulnerable, including its status as a peripheral space in the reality of both nations. Tourism, which is emerging as the tool most often employed to catalyse areas of this kind, has been the object of methodological developments that seek to ensure it is utilised sustainably concerning both local communities and the environment where it is instigated. These are some principles we found in the smart tourism destination approach. One goal of the FORTLAB project is to create an experimental laboratory dedicated to cementing the bases for converting the area around La Raya into an STD. In the pilot project between Guarda (Portugal) and Ciudad Rodrigo (Salamanca), we strive to construct the infrastructure required to begin tourist operations. The proposal presented herein is designed to obtain a holistic knowledge of this space, beginning with elaborating an inventory of potential resources. It is also

necessary to develop a deep familiarity with the local population, the territory itself, and its potentialities before promoting concrete measures. Methodologically, we have tested various options, all linked to the field of geotechnologies. The results of this initial approach underscore the importance of working in tandem with local entities and agents, in fact, the entire population. In short, we have experimented with uniting research with citizen science as the only way to attain sustainable results acceptable to local populations while solving real problems. Moreover, we introduced a new perspective by designing an STD that establishes territory as the backbone. Of course, we understand that in attempting to enhance the value of an inheritance dispersed over a rural area, we run the risk of placing those very materials in danger. Our attempts to solve this dilemma strive to return the focus of attention to the citizenry. Thus, to ensure adequate implementation of the project, we have elaborated several initiatives for capacitation that share the goal of understanding the enormous potential of the patrimonial resources that exist in a space that has not yet triggered much interest among residents.

4. References

Calderón Vázquez, F. J. (2015). Repasando la frontera hispano-portuguesa: Conflicto, interacción y cooperación transfronteriza. *Estudios fronterizos, 16*(31), 65-89. https://dialnet.unirioja.es/servlet/articulo?codigo=5196254.

Lemos, A. A. R. (2020). Movilidad, interacciones y espacios de oportunidad entre Castilla y Portugal en la Edad Moderna. *Biblos, 6,* 219-223. https://impactum-journals.uc.pt/biblos/article/view/6_12.

Hernández-Ramírez, J. (2017). Turismo en la frontera: patrimonialización y cooperación transfronteriza en una periferia de la Unión Europea. Etnográfica. *Revista do Centro em Rede de Investigação em Antropologia, 21*(2)), 385-409. https://www.redalyc.org/pdf/3723/372352195008.pdf.

Baidal, J. A. I., & Rebollo, J. F. V. (2019). Planificación turística en España. De los paradigmas tradicionales a los nuevos enfoques: planificación turística inteligente. *Boletín de la Asociación de Geógrafos Españoles, 82,* 7.

http://dx.doi.org/10.21138/bage.2765

Feierherd, G. E., González, F., Viera, L., Romano, L., Delía, L. N., Huertas, F., & Depetris, B. O. (2019). Realidad virtual y aumentada, big data y dispositivos móviles: aplicaciones en turismo. In *XXI Workshop de Investigadores en Ciencias de la Computación* (WICC 2019, Universidad Nacional de San Juan).

Juan, L. G., & Rodríguez, A. V. (2019). SIG y bases de datos. Oportunidades y retos en la transición de los sistemas tradicionales al Big Data= GIS and databases. Opportunities and Challenges in the Transition from Traditional Systems to Big Data. *Espacio Tiempo y Forma. Serie VI, Geografía, 12,* 135-158. https://www.proquest.com/docview/2405312546

Mascioni, M., Cusick, A., Kroeger-Campodonico, C., Kohler, L. E., Cajiao, D., Dixon, B., ... & Vernet, M. (2023). FjordPhyto: la experiencia de un proyecto de ciencia ciudadana en la Antártida que involucra turistas y microalgas. In *III Congreso Argentino de Ciencia Abierta y Ciudadana (CiaCiAr)*(La Plata, modalidad virtual, 1 al 3 de diciembre de 2021).