#133

WANDERING, OBSERVING AND MAPPING.

Understanding the "geography of accessibility" in the cultural landscape of sintra

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ABSTRACT

This paper discusses the strategies adopted at the Park of Monserrate, a UNESCO World Heritage Site forming part of the Cultural Landscape of Sintra, in order to facilitate accessibility for a wide range of people of all ages with extended mobility needs, without affecting the site's heritage values. More specifically, it explores the role of the space syntax descriptive model as a decision-making tool and assesses its contribution to the identification of priorities that support the implementation of accessibility interventions and lead to less biased and more informative alternatives in the context of cultural landscapes.

The decision-making process involves identifying and prioritising problems and strategies in order to prevent unacceptable damage to heritage, selecting appropriate actions for the implementation of such measures and assessing whether the desired results are achieved. Consideration is given to the design of a three-layer prototype mapping profile to structure information and to provide a spatial framework within which accessibility conditions can be compared and monitored. The aim is to provide a simple way of exploring accessibility constraints, prioritising areas of intervention and communicating with key stakeholders.

The first mapping profile provides a general picture of the existing accessibility conditions within the park by identifying opportunities and constraints, while the second profile explores the significance levels of points of interest within the park, in order to understand which ones constitute priorities in the attraction of visitors. The third mapping profile makes use of space syntax techniques to obtain a more comprehensive analysis of the park's spatial properties, including the expected spatial behaviour of visitors. These mapping profiles are combined to produce an integrated approach, capable of identifying ideal circuits that lead the visitor to the main points of interest, as well as those paths that must be given priority in the implementation phase. Wandering, observing and mapping made it possible to understand and represent the different paths of the park and to define priorities for the formation of an access plan to be

applied to the Cultural Landscape of Sintra under the scope of the "Parques de Sintra Welcome Better" project.

The paper is divided into three parts. The first one addresses the challenges facing accessibility to heritage sites. Key aspects are reviewed in order to increase understanding of how both conservation and accessibility requirements can be assessed in a balanced and sustained manner. The next part describes the "Parques de Sintra Welcome Better" project, emphasising how it has improved physical accessibility conditions. The final part focuses on the case study of the Park of Monserrate. The site and its specific features are described and the procedures used to develop the mapping profile are explained, paying attention to the use of space syntax techniques. It is concluded that such techniques provide both a supporting rationale for making informed, defensible decisions and an analytical process for selecting appropriate accessibility actions. Space syntax does this by stimulating critical thinking and an in-depth discussion of a range of strategies that can help to reduce the range of uncertainty.

KEYWORDS

Cultural landscape; accessibility; space syntax; decision-making tool

1. INTRODUCTION

Access to culture is recognised as an individual right (UN General Assembly, 1948) and should not be limited by a lack of accessibility to physical spaces, information or communication. Accordingly, in considering that everyone has the right of access to cultural sites, the European Commission has prioritised the inclusion of a wide range of people in all stages of life, with extended accessibility needs including people with disabilities accompanied by friends or family; families with young children; people with temporary or longstanding health problems; pregnant women, elderly people and overweight people, and has introduced various plans of action that enable such people to gain access to cultural heritage sites, as well as to knowledge and leisure.

Improving accessibility to cultural heritage sites offers both direct and indirect benefits to the whole community. Besides sending out the message that an engagement with culture, and in particular with the cultural heritage, is highly valued, it helps to conduct a more efficient allocation of resources in the heritage sector, while also promoting equal opportunities in the broadest sense, with positive impacts on community well-being, the sense of place, and therefore social sustainability (Council of Europe, 2005).

But to what extent is it possible to find a balance between a restrictive view about the protection and preservation of cultural heritage sites and the need for free access for all types of visitors, knowing that most historical sites were not built for people with special needs?

Professionals dealing with heritage sites are being increasingly challenged to fulfil a dual, and seemingly conflicting, mission: to protect and sustain natural and cultural heritage for future generations, while simultaneously providing high-quality and enjoyable experiences to all visitors, under conditions of autonomy, safety and non-discrimination.

International cultural heritage charters and guideline documents have been published since the end of the nineteenth century with the main purpose of safeguarding heritage values in their natural and cultural settings and in their social context (ICOMOS, 1964; 1994, 1999). Over the course of the last two decades, the concept of "adaptive reuse", which includes interventions made to the built heritage in order to adapt it to new conditions or functional and technical requirements, such as accessibility, has gained greater prominence under the scope of these documents, with the need being recognised to respond to an ever-changing social and economic context (ICOMOS 1999, 2008).

A considerable number of general design guidelines governing physical accessibility to heritage sites have been produced under the scope of these documents. Their aim is to establish criteria

to ensure that accessibility improvements will not affect heritage values. In this sense, they tend to concentrate on the technical difficulties that are generated by working on heritage sites, being, in general, complaint-based, rather than proactive.

Although it is not always possible to adapt a site according to the recommendations and technical standards suggested by heritage charters and guidelines, this does not mean that it is impossible to improve physical accessibility.

The tendency to give design guidelines a performance-based approach should facilitate their application, while also taking into consideration the constraints imposed by preservation and conservation work, as well as the "geography of accessibility" and the consequences of territorial and mobility-related needs. Rather than adhering to rigid rules, a paradigm shift recognises that, while a complete set of accessible design solutions will not be possible for all heritage sites, it might be possible to respond to specific site features and contexts by defining a range of methodological and decision-making procedures that can be used to identify priorities, as well as defining strategies and technical solutions on a customised basis. This is a complex process that calls for unconventional responses. The challenge is to enhance accessibility through an adaptive project, thus encouraging creative responses not only from designers, but also from the cultural heritage sector, while, at the same time, reaching a compromise in the application of both cultural heritage guidelines and codes.

Thus, it is argued that accessibility improvements are only justified when cultural, technical and economic-based criteria operate together in a balanced fashion. It would be pointless to improve physical accessibility if the intervention did not take into account the need for greater progress in terms of access to culture. Accessibility solutions must enable heritage sites to cater for both present and future needs. It is at this stage that 'accessibility', in its cultural/architectural sense, can really be implemented.

This paper provides an overview of the "Parques de Sintra Welcome Better" project. The project was implemented in Portugal in order to improve accessibility to Parques de Sintra, an area that was inscribed in the UNESCO World Heritage List in 1995, under the Cultural Landscape category. The purpose is to discuss the decision-making framework used in the course of the design process in order to identify and break down physical barriers to accessibility and thereby to facilitate the mobility of people with special needs without affecting the site's heritage values. This decision-making process has involved identifying and prioritising problems and strategies to prevent unacceptable damage in terms of heritage values, selecting appropriate actions for implementation, and assessing whether the desired results are achieved.

2. "PARQUES DE SINTRA WELCOME BETTER" PROJECT

Parques de Sintra is a major tourist destination in the Lisbon region, receiving more than 2 million visitors in 2016, and showing a consistent year-on-year increase. In particular, it presents a diversity of built and natural heritage, some of which is of great relevance in the area of Portuguese romantic architecture and landscape design. With a large variety of sites, each with its own individual features, the provision of accessibility does not lend itself to a standardised approach or solution and, as mentioned before, is potentially in conflict with the imperatives of preservation and conservation.

According to Portuguese legislation, Listed Heritage Sites are considered to have exceptional conditions in terms of accessibility compliance. Physical transformations are not required if this implies damage to the site. Nevertheless, when a site is unable to fully comply with the national accessibility code, this does not mean that partial compliance may be disregarded. On the contrary, efforts must be made to ensure better accesses for as wide a range of visitors as possible. Moreover, it is necessary to assess the consequences of the lack of total compliance in terms of legal responsibilities and consequently to judge the effects of using various parts of the site. Limitations of use are an integral part of this process.

The "Parques de Sintra Welcome Better" project was launched in 2013 with the main objective of removing barriers to access by intervening in three specific areas: buildings and infrastructures;

services; information and communication. The project was first tested in the form of a pilot phase implemented in the Park of Monserrate, and this was later replicated at the other two major sites of tourist attraction, namely the Park and Palace of Pena and the Moorish Castle.

In order to allow physical transformations to be carried out without affecting heritage values, a specific two-stage methodology was adopted.

The first stage – the General Diagnosis – sought to establish a platform to organise, record and deliver information about the existing accessibility constraints associated with Inclusive Design principles, about the site's compliance with normative measures and about the level of historical importance and significance of elements inside the park. This comprised a macro-analysis of the whole site and was developed through data triangulation, taking into account the following features: i) a preliminary accessibility assessment of the whole area of the Park of Monserrate (the accessibility audit), designed to identify the main constraints; ii) the identification of the points of interest and the main 'conservation barriers'; and iii) a syntactic analysis of the global system of Monserrate's footpaths.

Data triangulation was used as a tool for making decisions beyond those of just regulatory compliance. The goal was to identify the decisions that needed to be taken, namely major improvements and the priorities for possible changes, as well as the remedial actions that were necessary to remove obstructions, alter them, avoid them, or provide reasonable alternative solutions.

The second stage (the implementation plan) is a more action-focused document, developing

Figure 1 - Monserrate was inspired by the painter William Stockdale and the master gardener Francis Burt, but above all by the romantic spirit of Francis Cook (1817-1901), a wealthy English textile industrialist, who purchased the Monserrate estate in 1856. Built on the top of the hill, the ornately balustraded terrace around the palace has views over the park and the ocean in the distance. Image of Monserrate, 1828; Credits: PSML

the key actions at a greater level of detail and in a structured manner. It included the provision of: (1) safe, convenient and understandable access routes and walking trail routes, paying particular care and attention to changes in level, surface materials, drainage, protective guards,

lighting and signage; (2) motorised vehicles and equipment designed to improve the mobility of visitors when, for conservation and preservation reasons, it is impossible to make any physical transformations or when general accessible aids like wheelchairs cannot be used; (3) physical and virtual models and the equipment necessary to provide visitors with a greater awareness and understanding about those places that they cannot physically experience; (4) an outdoor garden plan and general information in large print to identify plants, explain different areas of interest and recommend walking trail routes to be followed by visitors with special needs, as well as to indicate areas with steep slopes and to provide other information about the site's different features.

This stage therefore concentrated on defining access interventions and solutions and on monitoring and evaluation. Design interventions were outlined and detailed, as well as the targets and timeframes for carrying out works according to the priorities identified. Monitoring involved systematic tracking of the ways in which improvements affect visitors. Field observations, interviews and self-administered questionnaires were conducted in order to examine how visitors perceived the question of access and the barriers to the various features of the sites, and how they assessed the different solutions. This evaluation procedure measures whether progress is being made towards achieving key targets and objectives, while also identifying issues that require further attention.

3. PARK OF MONSERRATE

Monserrate is located four kilometres from Sintra's historic centre and thirty kilometres from Lisbon. The site covers an area of about 32 hectares and comprises a park and a palace. Most parts of the site have a hilly topography, which is gently to moderately rolling. Steep slopes of more than 6% are common, and nearly flat tableland is quite rare. The highest gradients are about 17-18% and represent a major barrier to mobility.

Monserrate is representative of nineteenth-century eclecticism, and has often been described in various travel journals. Together with the Palace of Pena, it is recognised as one of the most important examples of Romantic architecture in Portugal. Lord Byron is said to have visited the palace and its grounds, and was inspired to write here.

Based upon the English landscape garden model, Monserrate differs from the baroque gardens that were favoured in Portugal at that time, being considered one of the most important English landscape gardens beyond the shores of the British Isles (Luckhurst, 2009). It is a park-like setting, characterised by sweeping vistas across rolling lawns, distant groves of trees, natural ponds and lakes, some discreetly placed Greek and Roman "ruins", and a sense of pastoral peacefulness following the presence of carefully considered views of "natural curiosities". Different scenic effects are offered along the paths that lead visitors through the park, with the sudden appearance of age-old araucarias and palm-trees, and tree ferns from Australia and New Zealand, as well as agaves and yuccas recreating a corner of Mexico.

One of the most distinctive features of Monserrate is its complex network of paths and vistas, allowing visitors to choreograph their own experience of the park according to their particular interests and needs. Upon entering the park, visitors are presented with a few visual clues about which path to take and where the palace lies. The first part of the park is a shady forest garden planted on a steep slope. A system of winding paths leads visitors down the side of the hill, steadily revealing views over the canopies of the trees and shrubs below, with the interplay of natural and formal elements being evident throughout. As visitors make their way through the park, the palace remains a central and eye-catching visual feature, repeatedly emerging from multiple perspectives along the steeply sloped, densely vegetated, circuitous paths. The major barriers to accessibility are high slopes and physical obstacles such as steps.

3.1 GENERAL DIAGNOSIS

The general diagnosis represented the start of a critical phase in the process of improving accessibility. Consequently it should be seen as a flexible group of decisions and actions

implemented with the aim of achieving key targets and objectives. It contemplated the design of a three-layer prototype mapping profile to structure information and to provide a spatial framework within which accessibility conditions could be compared and monitored.

The aim is to provide a simple way of exploring accessibility constraints, prioritising areas of intervention and communicating with key stakeholders.

The first mapping profile was intended to provide a general picture of existing accessibility conditions within the park by identifying opportunities and constraints.

Paths were identified and assessed according to their walking routes, including their arrival and departure points, their size and the type of barriers that they presented.

The identification of these barriers with different colours allowed for an immediate understanding of the predominant ones. Green dots correspond to high slopes or pavements in need of repair and/or conservation, while blue dots identify physical barriers such as the presence of steps or narrow passages, which usually cannot be overcome. Red dots identify the absence of resting points or accessible toilets.

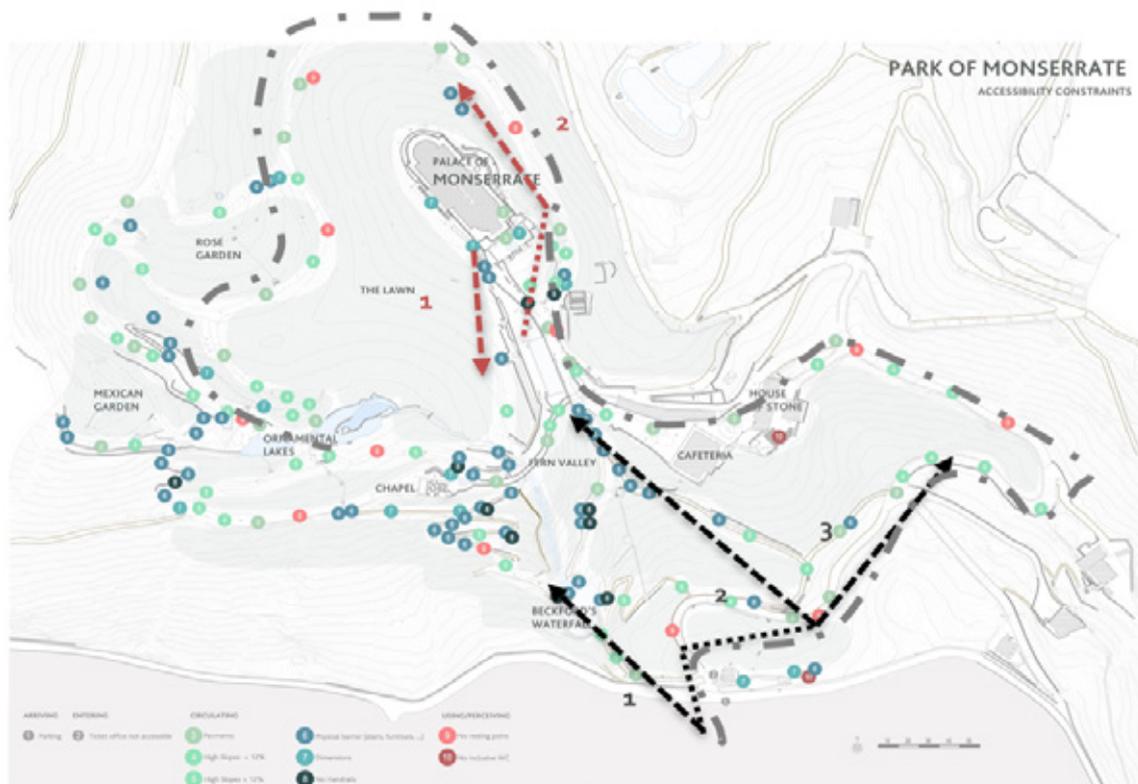The spatial distribution of all these barriers and impediments enables us to categorise paths in

Figure 2 - Mapping profile of accessibility constraints in Monserrate

terms of their accessibility and to understand their potential for improvement.

The analysis highlighted the existence of three main paths starting from the entrance point (identified 1 to 3, in black, in the previous map) which do not lead visitors directly to the main points of interest and facilities.

Path 1 leads directly to Beckford's waterfall and offers privileged access to the Fern Valley, the Chapel and the ornamental lakes. It has several flights of steps, which are extremely narrow and have handrails (marked with dots in different shades of blue), constituting an inaccessible path

with constraints that cannot be overcome at the present moment;

Path 2 offers a more direct access to the Palace and the service area, although the presence of steps along the way, at a spot where physical transformations are not possible, makes this path inaccessible. Furthermore, it is not a priority path at the present moment;

Path 3 constitutes a priority path to the Palace. It is marked only with green and red dots, since it does not include any steps and has suitable dimensions.

From the Palace to the main gardens, two paths are evident, identified with 1 and 2, in orange. Path 1 has a series of steps along the way. Path 2 has steep slopes, as well as degraded pavements in some sections.

The combination of Path 3 (in black) and Path 1 (in orange) constitutes a priority path to be targeted with access improvements (grey line), since it represents the most suitable route to be followed by visitors, connecting the entrance to the gardens, and is the path that makes it possible to reach most destinations without any significant barriers.

The second mapping profile explored the significance levels of points of interest within the park, in order to indicate which ones constitute priorities in the attraction of visitors: 1) Main points of historic interest – the Palace of Monserrate, the lawn in front of the Palace, the Rose Garden, the Mexican Garden, and the Fern Valley; 2) Secondary points of historic interest – the
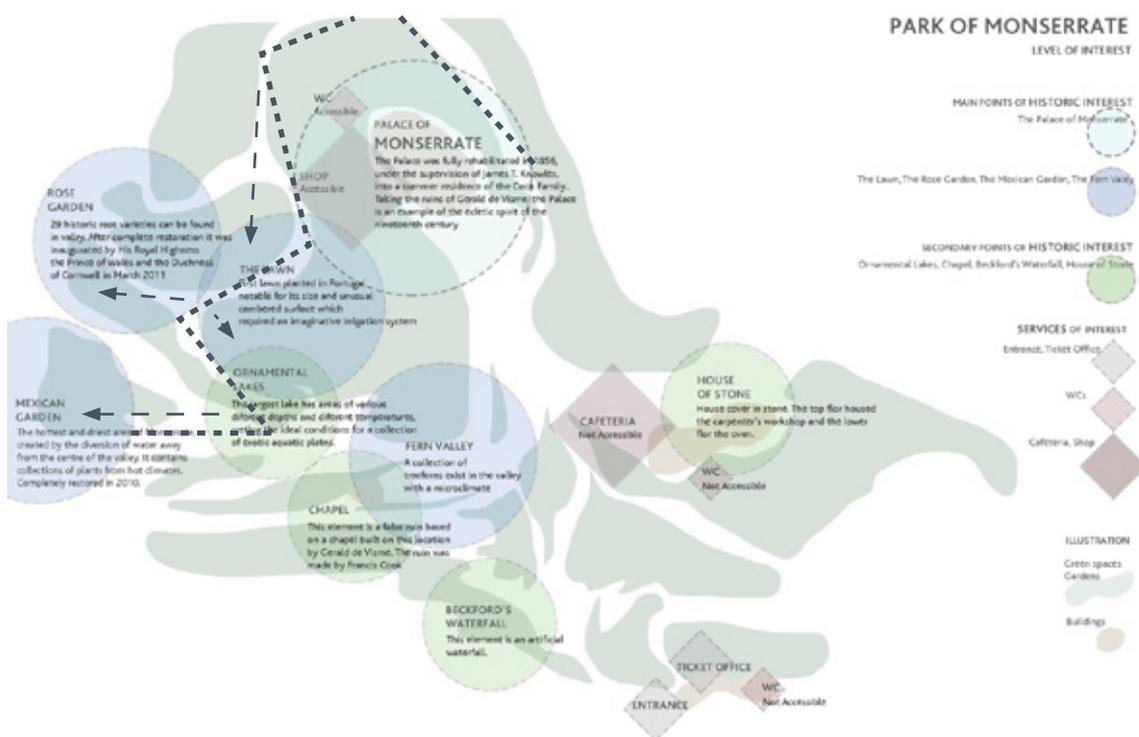

Figure 3 - Main points of historic, aesthetic and cultural interest. The Rose Garden, the Mexican Garden and the Fern Valley have exotic botanical elements from all around the world. The lawn was the first example of a planted lawn in Portugal

ornamental lakes, the Chapel, Beckford's Waterfall, and the Boulder House; 3) main facilities for visitors – entrance and ticket office, the toilets, the cafeteria, and the shop.

The Rose Garden, the Mexican Garden and the lawn are accessible via the same path (black

line). All of them can be reached from the Palace. The ornamental lakes, a secondary point of historic interest, are also accessible via the same system of paths. The potential of this path is highlighted, as it connects five points of particular interest.
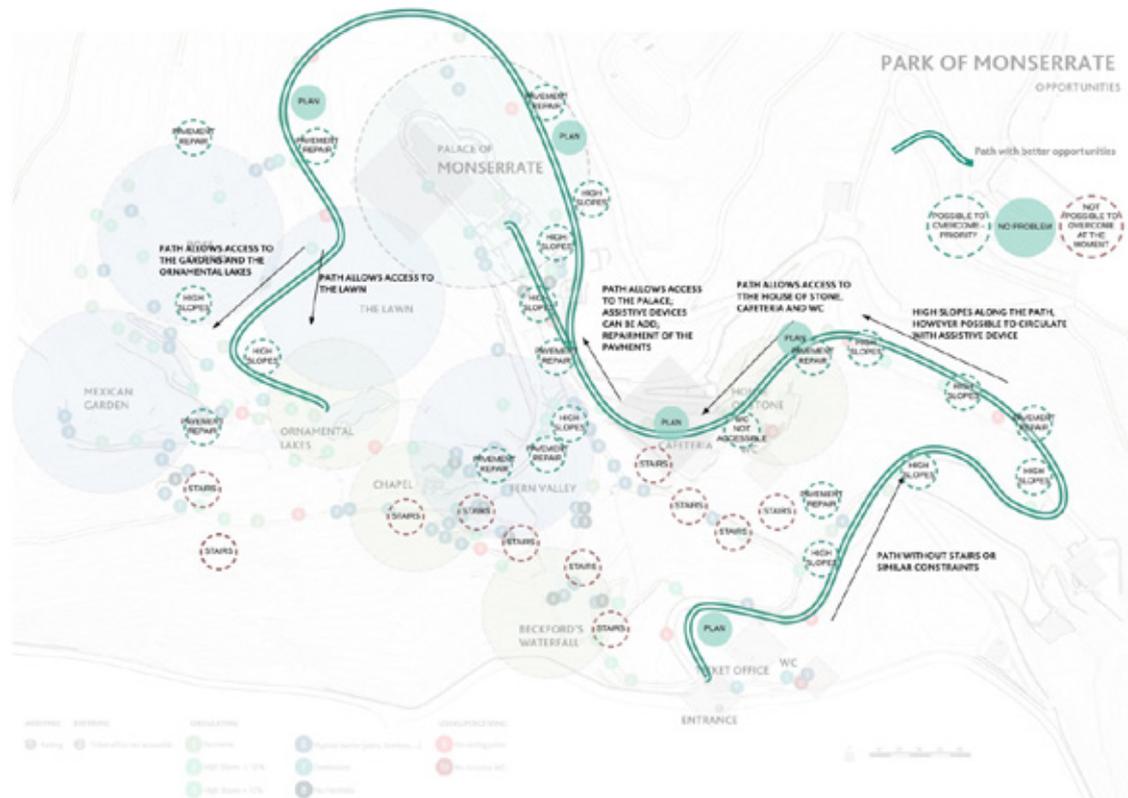

Figure 4 - Preliminary path that constitute a priority to the implementation of better access conditions

These two mapping profiles were combined to form an integrated approach, which makes it possible to identify ideal circuits taking visitors to the main points of interest, including those paths which should be given priority in the implementation phase.

A preliminary assessment of the priority paths is identified in Figure 4. The green path includes some barriers that can be overcome with assistive devices or slight physical transformations, such as repairs and/or conservation works. It connects six points of historic interest (the Boulder House, the Palace of Monserrate, the Lawn, the Rose Garden, the Mexican Garden and the Ornamental Lakes), as well as the Cafeteria, the Shop and the toilets.

As was mentioned previously, Monserrate is inscribed as a cultural landscape in the UNESCO Listed Heritage Sites with a particular set of physical characteristics and a high level of cultural significance, which must be preserved. To obtain a more comprehensive analysis of the spatial properties of the park, including the changing vistas experienced by visitors, as well as their expected spatial behaviour, a third mapping profile was introduced as part of the decision-making tool, making use of space syntax descriptive techniques. The possibility of differentiating the paths according to their capacity for leading visitors to main points of interest also justified the use of space syntax techniques.

A syntactic description of Monserrate was made using axial mapping techniques – axial maps and segment maps – showing the paths within the park and their internal relationship. The park is considered as a system, because of its morphological configuration, which is fully encircled by walls. As such, despite the occurrence of an edge effect, the map still constitutes a fair representation of the reality of the park.

The axial description considered the overall circulation system and four variables, namely integration, normalised angular integration, choice and normalised angular choice. The integration analysis made it possible to measure the ease of access from other paths in Monserrate's overall system, as well as to understand whether improvements are being made to a path that has the potential to be a major destination for visitors to the park. The choice analysis made it possible to assess the likelihood of a path being followed by visitors making their way around the park, as well as its importance in their decision-making about movement. The choice of path identifies the focal points of the system. If there are two or more options for accessing a point of interest, the choice value reveals which one will most likely be used for this purpose. The normalised variables make it easier to compare the configurations of different paths at different locations inside the park, as well as to compare Monserrate with other sites run by Parques de Sintra in a subsequent phase.

Axial and segment maps were drawn using QGIS software (QGIS Development Team, 2016) and analysed with Space Syntax Toolkit (Gil, 2015) over a layer of cartography, considering both formal and informal paths. For this analysis, all constraints and barriers were included, since the information obtained from the syntactic analysis was compared and cross-checked with other data sources, namely those illustrating the existing constraints to access and those referring to the places with greater levels of interest for visitors, being preferred for their historic or cultural values, or for the functions and services that they offer.

The Monserrate syntactic model shows that the highest integration values correspond to the paths leading to the Palace, which, with the highest value of 0.5685, represents the core of the system, as can be seen in the following figure. These paths converge together in front of the balustraded terrace around the palace and then lead to the northern entrance to the park. It is also significant to note that the closed entrances are not directly linked to these paths. The integration results suggest that the middle of the park is the most integrated area, which means that the middle part is more topologically accessible in comparison to other parts, and that they are therefore easier to access from other parts of the garden. Around the middle area of the park, there are various "natural curiosities" to be discovered. The paths with lower integration
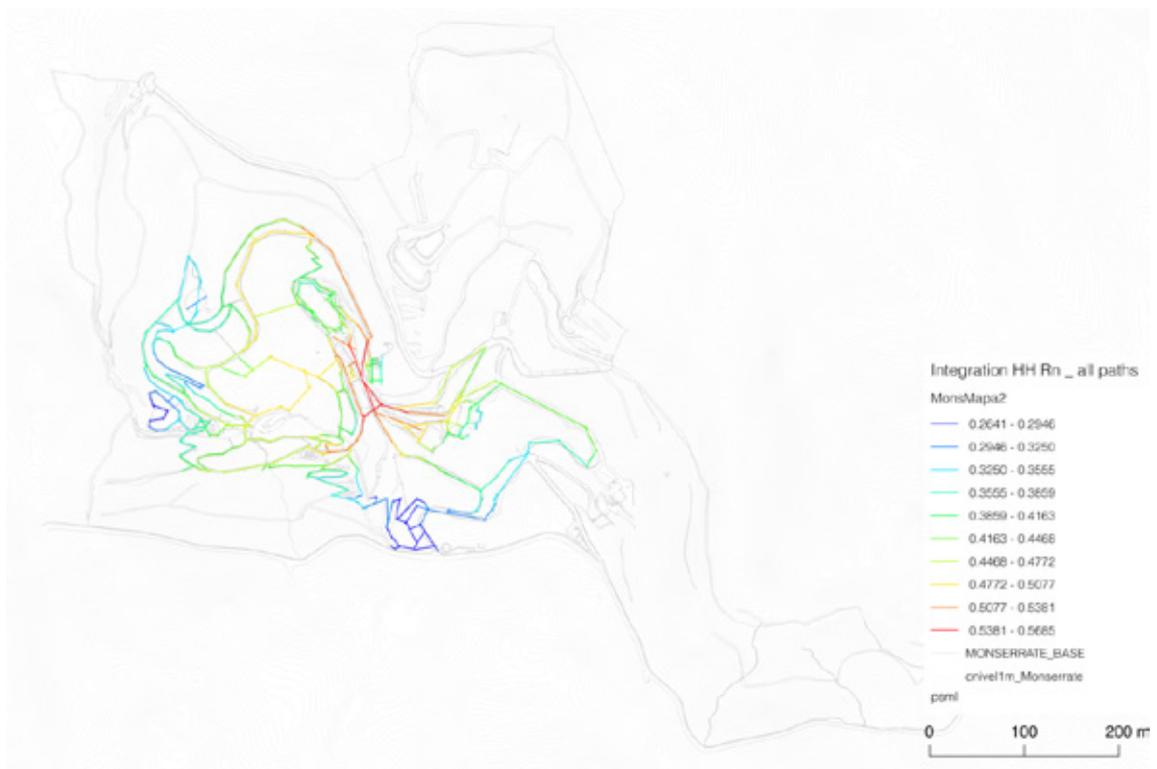

Figure 5 - Integration values for Monserrate

values include the entrance and the area close to the Mexican Garden with values of 0.2641 and 0.2946 respectively. While their sinuous configuration requires successive changes in direction, they enhance the visitors' experience of the park with the desired "sense of discovery".

Moreover, the integration analysis shows a direct relationship between visibility conditions and integration values. The occurrences with greatest visual impact are close to, or embedded in, the more integrated paths. These are incorporated into the main circulation routes, in contrast to those paths with lower integration values and lower visibility. Among the main circulation spaces, both edges – the main entrance and the Mexican Garden – appear as relatively segregated spaces, since they are not visible from the adjacent areas. The segregation of the main entrance takes on particular importance here since the results obtained are consistent with the clear difficulty in returning to the entrance after finishing the visit to the palace and park. This reflects the implications of an enclosed park surrounded by walls, which produces a clear break in the physical and visual continuity of many paths.

For a better understanding of the potential of those paths with the highest integration values, there is a need to cross-check the data thus obtained with those relating to accessibility

Figure 6 - Cross-check data from Access Constraints analysis and Integration values

constraints. These data are shown in the following figure, which reveals another opportunity (identified with a circle in Figure 6) offered by the path leading to the Chapel. This path combines high integration values with accessibility barriers that can potentially be overcome (high slopes and a pavement requiring repair work).

As far as the choice analysis is concerned, the results highlight the importance of the paths leading to the palace and those encircling it on the eastern side. The analysis (Figure 07) indicates that there is clearly one main path identified by connecting the high-choice intersections. This path runs from the north-west to the south-east of the park. The result suggests that this is the main path that visitors are likely to follow. The main attractions are accessible from this path. Furthermore the palace stands at the end of this path, providing an important point of reference to draw visitors along the path.

Additionally the syntactic analysis shows a relatively low intelligibility, suggesting that, in
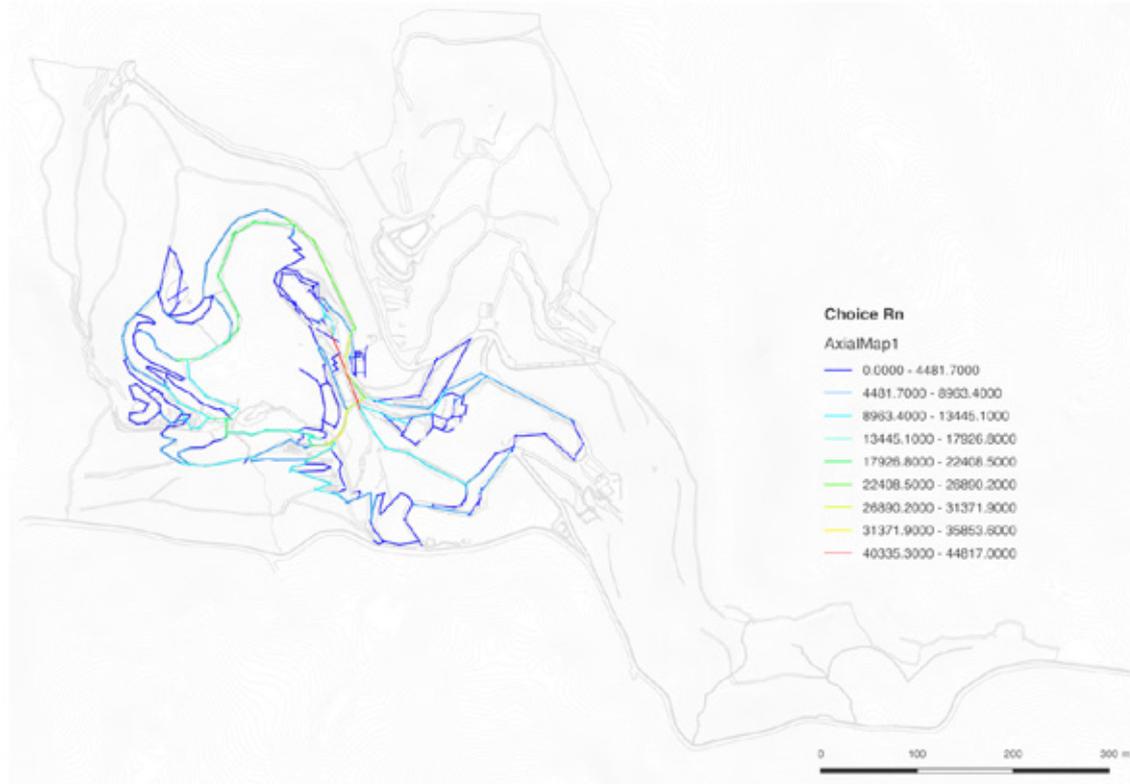
Figure 7 - Choice values

Monserrate, visitors find it difficult to understand the space as a whole. However, at a more local level, the network of high-choice positions suggests that the garden is more intelligible as a collection of small-scale interconnected subsystems. It might be assumed that practical navigation (mental map reading) within the park would occur at a local scale rather than in relation to the whole system. This supports the underlying principle for the design of the English landscape garden model where the main attractions and the carefully considered views of "natural curiosities" are "hidden from sight" so as to offer visitors a "surprise". These findings may also be interpreted as indicating that the organisation of this park-like setting is more easily understood in terms of intersections rather than pathways.

The normalised variables – angular choice (NACH) and angular integration (NAIN) – measured through the analysis of the segment map, were expected to show more refined data for organic structures such as Monserrate (Hillier, 2012; Medeiros et al, 2007) Consequently, they provide better information for comparison purposes, which is more useful for creating a successful decision-making tool.

The potential of the path leading to the chapel is reinforced by the NAIN analysis.

When considering the normalised angular choice, the following analysis was used to clarify the analysis of the choice through the normalisation of its angular measure, presenting a more refined analysis.

According to Hillier et al (2012) the maximum NACH value for small systems is normally around 1.4, sometimes reaching values of 1.5 and 1.6. The results emphasised in the next map show a greater diversification of values. The higher values include the already mentioned areas leading to, and encircling, the palace. However, the maximum NACH value obtained is 1.3771, which is lower than the reference values, but which can be justified by the size of the map.

After comparing the two layers of the mapping profile, it was possible to conclude which paths offered real potential for implementing accessibility interventions and which paths were not a priority.
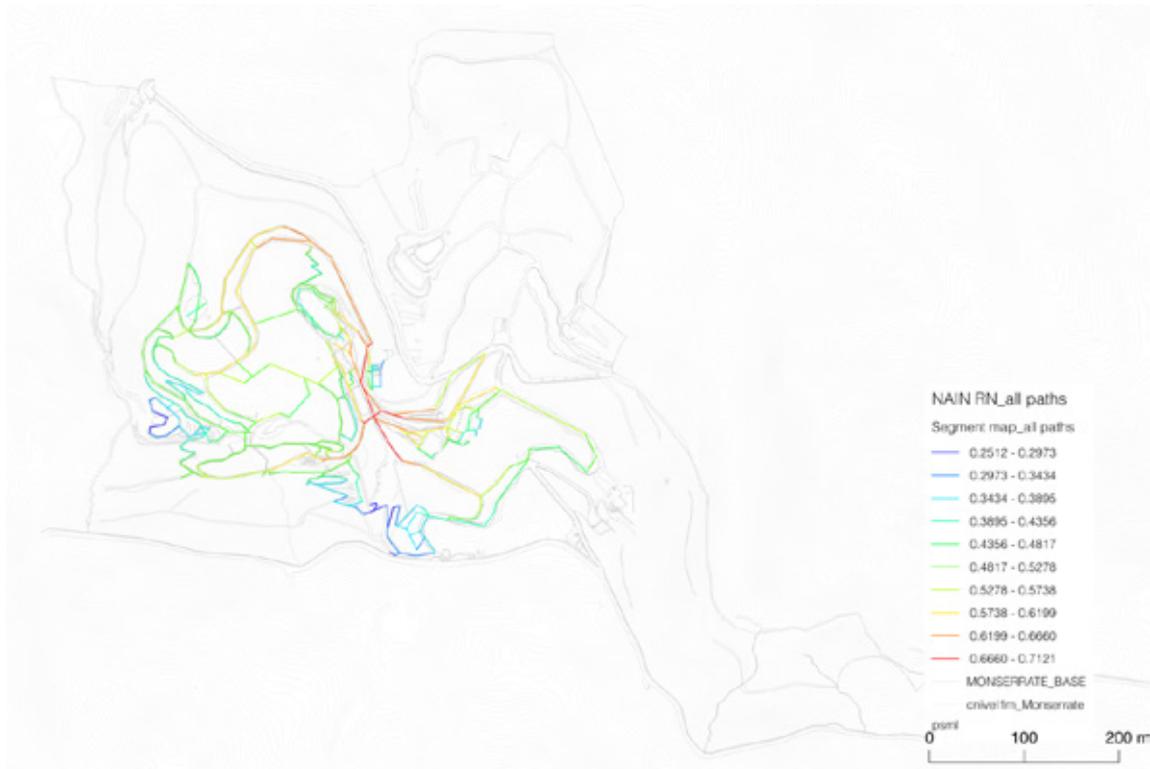
Figure 8 - Normalized angular integration values

Path 1, which presents high values of normalised angular choice, is likely to have a high flow of pedestrians. However, due to the fact that it contains a series of physical barriers (such as steps), it is not considered a priority path for possible improvements;

The central node, towards which most paths converge, presents the highest values of integration and choice, in both axial and segment map analysis. It is an integral part of the path defined as a priority (Figure 04) because it presents better opportunities for improvement;

The route to the Rose Garden also presents high values of normalised angular choice, also forming part of the priority path;

The path leading to the chapel and the Ornamental Lakes shows great potential, both in terms of its NACH and NAIN values. However, due to the existence of flights of steps, it should only be considered as a potential priority as far as the chapel itself, after which it becomes inaccessible.

Space syntax techniques and the analysis of integration, choice and NACH and NAIN variables made it possible to identify other paths which may constitute priorities for intervention, within the general diagnosis. As shown in Figure 10, after cross-checking the normalised angular variables with the physical barriers, crucial information was gained, which underlined the paths that should be integrated into the implementation phase of the "Parques de Sintra Welcome Better" project. Data triangulation was used to identify priorities when considering the adaptation of paths within the Park of Monserrate. In defining the strategy of implementation for the "Parques de Sintra Welcome Better" project, the diagnostic phase made it possible to identify the needs of access and conservation and the expected impact of the improvements.
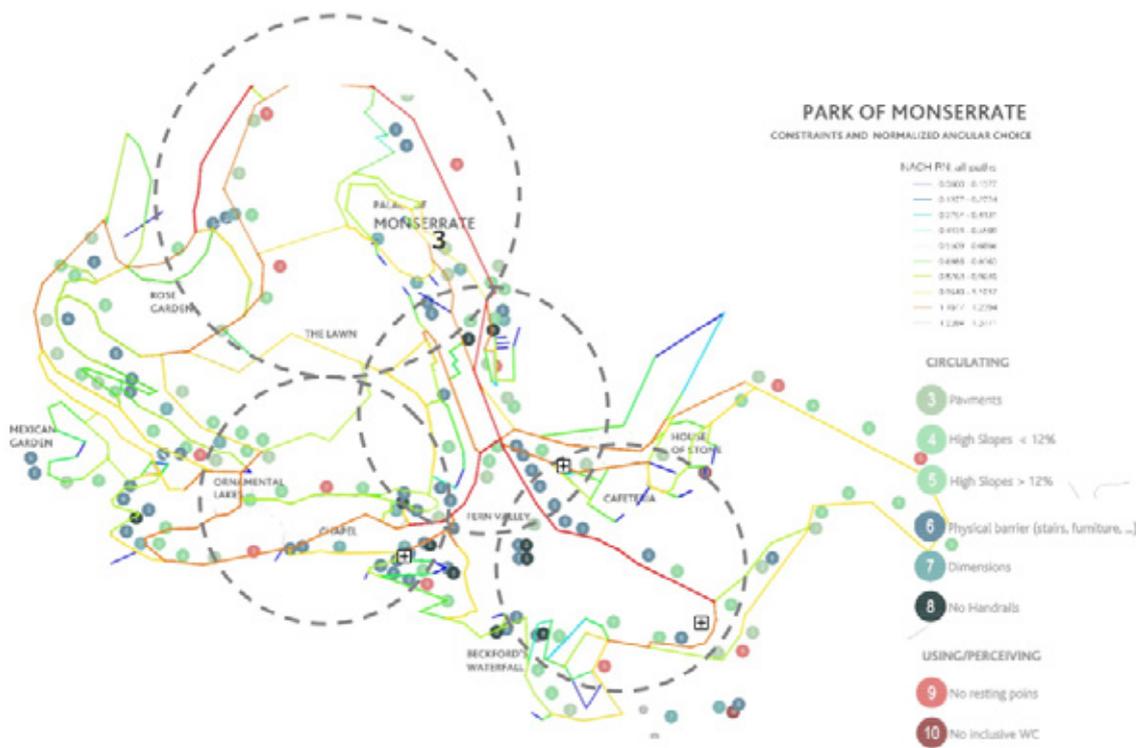
Figure 9 - Cross-Check data from Access Constraints analysis and normalized angular choice

4. CONCLUSIONS - INCLUDING SPACE SYNTAX IN DECISION-MAKING TOOLS AND THE GEOGRAPHY OF ACCESSIBILITY

Accessibility interventions at cultural landscape sites are often viewed as experiments involving value judgments, and the Monserrate case study is no exception. Heritage experts and decision-makers are left with the difficulty of deciding how much accessibility is appropriate, what kinds of actions are acceptable, and how visitor use is to be managed. The ability to predict the consequences of these actions and in particular their negative impacts on the heritage site is limited because there is a great deal of uncertainty about how visitors interact with natural and cultural resources. Thus, the choice of appropriate decision-making tools is critical.

This paper outlines a decision-making tool based on a three-layer mapping profile that helps to assess the geography of accessibility in cultural landscapes, while also identifying and interpreting problems related to accessibility constraints and the possible options for solving them.

The geography of accessibility in the particular context of cultural landscapes is typically assessed through the use of qualitative surveys and perspectives focusing on historical records, individual experiences, narratives and interpretations. Providing a non-arbitrary descriptive tool combined with qualitative assessment procedures to be followed over the course of the design process offers a tangible resource (mapping profile) that can be incorporated and used formally or informally in the design of the access plan. Moreover, it makes it possible to take advantage of local knowledge of the project site, fostering a greater understanding of project challenges and opportunities and thus guaranteeing the coherence of actions.

Assuming that the spatial layout of Monserrate influences visitors' experiences (Hillier, 1994), space syntax tools were used to interpret the park's spatial properties and the visitors' intuitive engagement with it (Hillier & Vaughan, 2007). This made it possible to recognise and categorise priorities that support the integration of accessibility strategies and actions, i.e. to provide: i) a supporting rationale for making informed, defensible decisions; and ii) an analytical process for
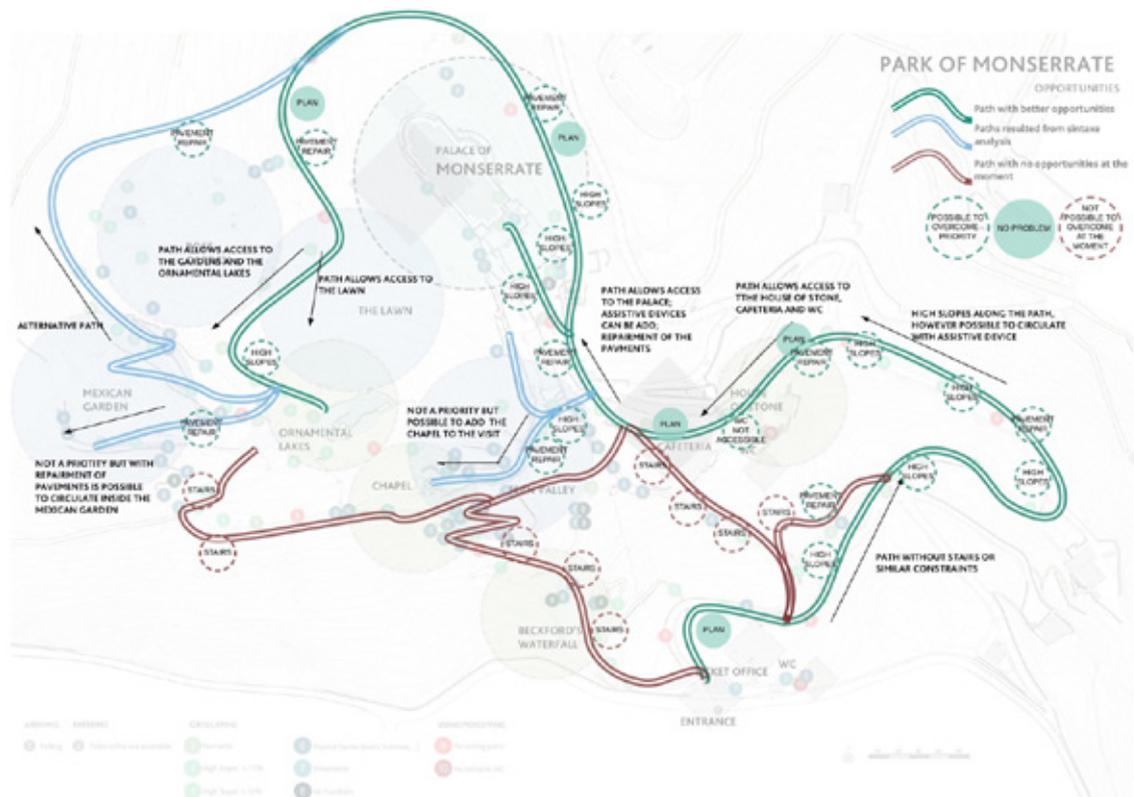
Figure 10 - Green paths correspond to priority actions; red paths correspond to paths not considered as priorities, either because they do not lead visitors to the main points of interest or because of access constraints; blue paths correspond to paths that were identified after the space syntax analysis had been carried out and which should be included in the implementation phase.

selecting appropriate accessibility actions. It does this by stimulating critical thinking and an in-depth discussion of a range of strategies that can help to reduce uncertainty. Moreover, space syntax offers interpretable quantitative results, and visually appealing maps, which facilitate communication between stakeholders and decision-makers.

Although the results of this research are necessarily limited, as only one single case is examined, this framework is now being applied to a larger sample, which will help to develop a more robust set of results.

REFERENCES

Buhalis, D., Michopoulou, E., Eichhorn, V. and Miller, G. (2005), Accessibility market and stakeholder analysis – one stop-shop for accessible tourism in Europe (OSSATE). Guildford: University of Surrey.

Council of Europe (1975), European Charter of the Architectural Heritage. Strasbourg: The Council of Europe.

Council of Europe (2005), The Framework Convention on the Value of Cultural Heritage for Society (Faro, Convention, 2005), Faro, 27.X.2005. Strasbourg: Council of Europe Treaty Series.

European Commission (2002), Improving information on accessible tourism for disabled people. Luxembourg: Office for Official Publications of the European Communities.

Hillier B. and Vaughan L. (2007), "The city as one thing". Progress in Planning, 67(3): 205-230.

ICOMOS (1964), International Charter for the Conservation and Restoration of Monuments and Sites (the Venice Charter), 2nd International Congress of Architects and Technicians of Historic Monuments, Venice.

ICOMOS (1999), The Burra Charter. The Australia ICOMOS Charter for Places of Cultural Significance. Melbourne: Australia.

ICOMOS (2000), The Charter of Krakow – Principles for Conservation and Restoration of Built Heritage. Krakow: Bureau Krakow 2000

ICOMOS (2003), Principles for the analysis, conservation and structural restoration of Architectural Heritage. Zimbabwe.

ICOMOS (2007), Charter for the Interpretation and Presentation of Cultural Heritage Sites (ENAME Charter). Final Draft, Quebec.

ICOMOS (2014), Florence Declaration on Heritage and Landscape as Human Values. 3rd UNESCO World Forum on Culture and Cultural Industries – "Culture, Creativity and Sustaining Development, Research, Innovation and Opportunities". Florence.

Pegg, S. and Stumbo, N. (2008), "Creating opportunities and ensuring access to desirable heritage and cultural tourist services and leisure experiences", in Prideaux, B., Timothy, D. J. and Chon, K. (eds.), Cultural and Heritage Tourism in Asia and the Pacific (pp. 250-256). New York, USA: Routledge.

UN General Assembly, Universal Declaration of Human Rights, 10 December 1948, 217 A (III), available at: http://www.refworld.org/docid/3ae6b3712c.html [accessed on 7 December 2015].

UNESCO (2013), UNESCO Global Report: Opening New Avenues for Empowerment – ICTs to Access Information and Knowledge for Persons with Disabilities. Paris.

Yates, K. (2007), "Understanding the experiences of mobility-disabled tourists". International Journal of Tourism Policy, 1 (2): 153-166.