Shirley Cefai

The I-Access project has developed innovative solutions in the historic city centres of Palermo and Valletta to improve physical and intellectual accessibility of cultural heritage, which is also a catalyst of community integration and development for the two countries, who share a number of common challenges.

Thanks to the cross-border exchange of experiences, the inter-disciplinary project parnership, including both municipal adminsitrations as well as the Soprintendenza of the Sicily Region, has developed and tested new methodologies and approaches to improve accessibility and interpretation of cultural heritage in the two historic centres, and to define Best Practice guidelines that may be adapted to other contexts, to contribute to the quality of life, the enjoyment of cultural heritage, and to the sustainable economic development of historic cities.

Il progetto I-Access ha sviluppato soluzioni innovative nei centri storici delle città di Palermo e La Valletta per il miglioramento dell'accessibilità culturale e fisica del patrimonio culturale, volano di integrazione e sviluppo per le società dei due Paesi, chiamati ad affrontare sfide comuni.

Il progetto interdisciplinare grazie allo scambio di competenze transfrontaliere, al Partenariato delle due Municipalità e della Soprintendenza della Regione Sicilia, ha definito nuove linee metodologiche, sviluppato nuovi modelli, sperimentato nuovi metodi di intervento per migliorare l'accessibilità e la valorizzazione del patrimonio nei due centri storici, e per delineare Buone Pratiche da replicare in altri contesti, al fine di incidere sulla qualità della vita, sulla fruizione del patrimonio, sullo sviluppo economico e sostenibile delle città e dei territori.
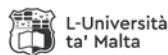
Guidelines for accessibility in the historic city of Valletta

Edizioni Caracol

Shirley Cefai

Guidelines for accessibility in the historic city of Valletta

I-ACCESS

Interreg V-A Italia-Malta Programme (2014-2020), Axis I - Enhance the activities of innovation and research to improve the quality of life and the utilization of the cultural heritage. I-Access Project: Implementing the accessibility to urban historic centres' use and knowledge. Lead investigator: Prof. Renata Prescia, Department of Architecture, University of Palermo (DDG 259/SV DRP del 31.5.18).

Programma Interreg V-A Italia-Malta (2014-20), asse I - Aumentare l'attività di innovazione e ricerca per il miglioramento della qualità della vita e della fruizione del patrimonio culturale, progetto I-Access. Implementing the accessibility to urban historic center's use and knowledge, responsabile scientifico Prof. Renata Prescia, Dipartimento di Architettura, Università di Palermo, (DDG 259/SV DRP del 31.5.18).

*The box includes the volumes/*Il cofanetto contiene i volumi:
1. Il progetto I-Access. Patrimonio culturale e accessibilià, Renata Prescia
2. Linee guida per un protocollo all'accessibilità della città storica di Palermo, Zaira Barone, Cinzia Ferrara
*3. Guidelines for accessibility in the historic city of Vallett*a, Shirley Cefai

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- Comune di La Valletta, Malta
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Immense progress has been witnessed across Europe in recent decades to address the challenges of disability and the inequalities that it creates, through legislation, policy and infrastructure. In Malta too, the sterling work of the National Commission for Persons with Disability (KNPD), and more recently, the Commission for the Rights of Persons with Disability (CRPD), has transformed this sector, so that today it is unthinkable for a new building not to be universally accessible. Historic city centres, however, still present a wide spectrum of challenges to residents and visitors with different needs. The present guidelines, which explore some of these issues in the context of the World Heritage City of Valletta, are therefore a very welcome contribution.

The Interreg Italia-Malta I-ACCESS project has over the past three years brought together several partners in Palermo and Malta, including the University of Malta's Department of Conservation and Built Heritage, which I head. These guidelines on the case of Valletta resulted from this collaboration. My colleague Dr Shirley Cefai, who was responsible for the compilation and drafting of the guidelines, has brought to bear her extensive experience as a conservation architect on the specific challenges presented by Valletta.

During the lifetime of this project, the world has gone through significant changes, driven by the Covid-19 pandemic, some of which will be more permanent than others. Many of these changes are directly relevant to the problems addressed by the I-ACCESS project. The ability to travel and explore historic cities, which we had always taken for granted, was at times denied to all of us. For that reason, we may now appreciate its importance more than ever before. The experience of the past two years has also underlined the usefulness of digital and online tools in cultural heritage interpretation. Digital tools have the potential to empower individuals to explore city centres more independently, in ways that are more resilient to the disruptions brought about by health considerations. The pandemic has also increased the appreciation of the value of open-air experiences, such as the ones which our historic city centres can offer. This point brings us back to the present guidelines. The right to enjoy our historic centres, without any discrimination based on disability, is more pressing than ever before, as is our responsibility to commit to safeguarding that right in ways that are sustainable and consistent with the values of the historic environment.

The tools and guidelines that have been developed during the course of the project are now being shared with the wider public. No less importantly, the debates and public meetings that we have had, in presence and online, have brought into focus and raised awareness of many needs and challenges in the accessibility of the built heritage of

our historic city centres. The achievements registered by the I-ACCESS project can only be considered as pilot studies and pilot projects, which I augur will be followed by wider and longer term initiatives in both cities, and perhaps even in other historic city centres that share the same problems. I congratulate all the project partners on the work that has been achieved, and augur that the following guidelines will be widely read to further inform and galvanise more action on the ground, to achieve more equitable enjoyment of historic city centres.

JoAnn Cassar
Head, Department of Conservation and Built Heritage
Deputy Dean, Faculty for the Built Environment

Il progetto I-Access nasce dalla precisa volontà di sperimentare un nuovo modello di approccio, utilizzando l'accessibilità come chiave interpretativa e progettuale innovativa per gli interventi nei centri storici, così come oggi si presentano a partire dai nuovi scenari sociali e culturali configuratisi a seguito della seconda guerra mondiale, e poi strutturati in seguito alla ricostruzione post-bellica e al progressivo riconoscimento internazionale quale patrimonio culturale dell'umanità siglato per l'intero centro storico di La Valletta nel 1980 e per l'itinerario arabo-normanno per la città di Palermo nel 2015. Tali riconoscimenti diventano un rinnovato punto di partenza per mantenere e valorizzare, progettandone un'adeguata salvaguardia e gestione, i centri storici, da considerare quale parte integrante di una politica di sviluppo economico e sociale, di una pianificazione urbanistica congruente e come risorsa costitutiva dell'ecosistema urbano (Principi di La Valletta, ICOMOS 2011)[1].

Il centro storico è inteso come coacervo di valori materiali e immateriali che contribuiscono entrambi ad esprimere i caratteri di ognuno di essi, nel rispetto dello "spirito dei luoghi" (ICOMOS, Quebec, 2008) o dei "significati" secondo la più recente versione della Carta di Burra (ICOMOS 1979, 2013) che è stata assunta come principale riferimento per le Linee-Guida proposte dal partner La Valletta .

In un quadro che è dinamico, e non può essere altrimenti, il "Centro Storico", poi divenuto "Città Storica" (Carta di Washington, ICOMOS 1987), si è oggi evoluto in "Paesaggio Urbano Storico" (HUL) come «il risultato di una stratificazione storica di valori e attributi culturali e naturali, che si estende oltre la nozione di "centro storico" o "insieme " per includere il contesto urbano più ampio e il suo contesto geografico»[2].

Tale nuova accezione ha determinato un nuovo approccio i cui principi sono: la consapevolezza del legame tra fattori naturali e culturali nella conservazione dell'ambiente costruito; le nuove sfide poste dai rapidi cambiamenti sociali ed economici; e la necessità di garantire un futuro sostenibile per la conservazione del patrimonio.

Per quanto riguarda, in ultimo, il contesto normativo in Italia da tempo è previsto che le città debbano dotarsi del Piano per l'eliminazione delle barriere architettoniche (PEBA), norma purtroppo ancora abbastanza elusa[3], mentre per il patrimonio culturale sono previste, già fin dal 2008, le Linee-Guida per i luoghi di interesse culturale, poi rinnovate con la Circolare 2018 (MIBACT)[4].

A Malta sono vigenti Linee Guida di progettazione "Access for all" (2002; 2015) che si riferiscono all'intera città, mentre per le questioni relative a contesti storici, il riferimento sono le norme inglesi *Easy Access to Historic Buildings*[5].

Sulla base di queste norme il progetto I-Access ha elaborato le presenti Linee-Guida per un Protocollo per l'accessibilità maggiormente mirato agli spazi di relazione tra monumenti e tessuto urbano e, in particolare, sugli itinerari individuati nelle due città storiche.

La scelta del termine "protocollo" ha voluto esprimere la volontà di costituire un percorso metodologico di fasi che possano assicurare l'inverarsi di tutte le competenze necessarie, nella consapevolezza che solo un processo progettuale di qualità debba essere messo in atto al variare dei casi di studio – città storiche – e al variare delle comunità di riferimento. Uno strumento agile, quindi intelligente, flessibile ad aggiornamenti continui e non un sistema obbligato da copiare acriticamente[6], per avviare o raggiungere una accessibilità condivisa la cui qualità sarà però raggiunta nelle scelte progettuali conseguenti, nell'uso dei materiali, della scrittura adatta, nella capacità di integrarsi con l'architettura esistente.

Considerare l'accessibilità all'interno del progetto di architettura significa includere nel consueto iter progettuale tutti quegli accorgimenti che rendano possibile la fruibilità di uno spazio a tutte le categorie di utenti, ed evitare che essa diventi soltanto un doveroso adeguamento normativo. L'accessibilità fisica diviene pertanto un requisito che riguarda l'ambiente costruito per intero proponendosi quale utile baluardo a processi di marginalizzazione ed esclusione.

Occuparsi di accessibilità, anche sensoriale e cognitiva, significa avere la capacità di comunicare il sapere ad un pubblico sempre più ampio ed eterogeneo, utilizzando il supporto delle *ICT*[7]: ciò alimenta la "accessibilità culturale" forse ancor più importante di quella fisica.

I documenti elaborati hanno caratteristiche diverse perché diversi sono i casi stessi: una storia millenaria quella di Palermo, una storia che parte dal 1565 l'altra; una orografia piana l'una, un'orografia caratterizzata da forti pendenze l'altra; l'esistenza, nel caso di La Valletta di un riconoscimento Unesco dal 1980. Esso è stato attribuito sulla base di due criteri: la riconoscibilità di un piano urbano di fondazione nel tardo Rinascimento, e la identificazione della storia urbana con la storia dell'Ordine dei Cavalieri di S. Giovanni di Gerusalemme. Questo ha comportato, nel caso del Protocollo di La Valletta ad interrogarsi maggiormente con l'accessibilità culturale, piuttosto che con quella fisica, a strutturare maggiormente le informazioni, rinvenibili sul sito, e soprattutto a seguire una applicazione sulla "Dichiarazione di Significato" affermata nella già citata Carta di Burra.

Nel caso di Palermo si è sviluppata invece maggiormente un'accessibilità fisica come si evidenzia nelle Mappe elaborate con un'attenta lettura di ogni segno/elemento urbano (pavimentazioni, arredi, elementi vegetali, suoni) e nella progettazione e realizzazione di sistemi di accesso a due chiese e di dieci mappe tattili, in lingua Braille, quale ulteriore elemento di servizio ai monumenti e ai fruitori.

L'attuazione del progetto I-Access aspira a rappresentare un'applicazione pratica di una metodica per favorire l'accessibilità, sia culturale che fisica, proponendosi come progetto-pilota nelle realtà dei centri storici di Palermo e de La Valletta.

La metodica si incardina sulla fase iniziale della Conoscenza che ha indotto a strutturare un Itinerario, *o Heritage walking,* percorso tangibile di un legame culturale intangibile che associa architetture e spazi aperti, patrimonio culturale e vita della collettività lo-

cale, alla quale si aggiunge quella dei visitatori/turisti . La scelta degli itinerari, scaturita dopo attente indagini, ci impegna, quale seconda fase, alla risoluzione delle problematiche legate all'accessibilità, sia culturale che fisica, del patrimonio culturale presente. Con il miglioramento degli itinerari individuati, in termini di accessibilità, potrà aumentare la conoscenza e la coscienza del proprio patrimonio, e si risponderà ad una richiesta di giustizia sociale. Infatti, tutti i cittadini devono potere godere e dunque conoscere e fruire il patrimonio, nella sua complessità e ricchezza, senza disparità.

Naturalmente il miglioramento della percorribilità degli itinerari può avvenire con precisi progetti d'architettura, sui quali entrambi i partner (Unipa e Unimalta) si sono impegnati anche nella loro attività didattica, come documentato nel volume stesso. I temi sono complessi, da affrontare caso per caso e, naturalmente, non sempre sono completamente risolvibili, come risulta chiaramente dal caso di La Valletta.

Interrogarsi collegialmente sulla fruizione per una "utenza allargata", cioè per quante più persone, è stata comunque un'utile occasione per comprendere e condividere il patrimonio, innescando al contempo processi di solerte cura per giungere così ad una autentica educazione, conservazione e valorizzazione, per la nostra generazione, e per quelle che ci seguiranno.

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Dipartimento di Architettura
Università degli Studi di Palermo

Note

[1] Principi per la salvaguardia e la gestione delle città e delle aree urbane storiche (www.icomos.org).

[2] Raccomandazione Unesco sul paesaggio urbano storico (www.historicurbanlandscape.com).

[3] Cfr. quali utili quadri di sintesi Z. BARONE, *Accessibilità e fruibilità dei centri storici: un'opportunità per il restauro*, in *Tutela, pratica, codici e norme*, a cura di A. Aveta, E. Sorbo, Normative, sez. 5.1. di S.F. Musso e M. Pretelli (coordinamento) *Restauro: conoscenza, progetto, cantiere, gestione*, atti II Convegno SIRA, Roma 2020, pp. 733-743 e *Accessibility in architectural heritage. Approaches and experiences between technology and restoration. L'accessibilità nel patrimonio architettonico. Approcci ed esperienze tra tecnologia e restauro*, a cura di M.L. Germanà, R. Prescia, ed. Anteferma, Conegliano (Treviso), 2021.

[4] www.musei.beniculturali.it/wp-content/uploads/2015/11/Linee-guida. (consultato 11.10.21).

[5] Ed. Ann Sawyer (2015), Historicengland.org.uk/images-books/publications/easy-access-to-historic-buildings (consultato 11.10.21).

[6] G. CARBONARA, *Avvicinamento al restauro*, Napoli 1997, p. 461.

[7] Processing of digital 3-D models, ing. D.co Lauriola (Del. 6.6.1).

Guidelines for accessibility in the historic city of Valletta

I

1. Guidelines for accessibility in the historic city of Valletta

Shirley Cefai
Department of Conservation and Built Heritage, Faculty for the Built Environment
University of Malta

Abstract
These guidelines propose a methodology to allow accessibility in historic centres whilst preserving its characteristics and cultural values. Historic centres, in particular Valletta, were not constructed to provide accessibility for all. Many such centres comprise characteristics like steep streets and entire streets of stairs. These document proposes two different itineraries within Valletta; one which is accessible for all and a second route which would need assistance.

Protocollo per l'accessibilità degli itinerari nel centro storico di La Valletta
Questo protocollo propone una metodologia per consentire l'accessibilità nei centri storici preservando le caratteristiche e i valori culturali. I centri storici, in particolare la Valletta, non sono stati costruiti per fornire l'accessibilità per tutti. Molti di questi centri comprendono caratteristiche come strade ripide e intere strade di scale. Questo testo propone due diversi itinerari all'interno di La Valletta; uno accessibile a tutti e un secondo percorso che avrebbe bisogno di assistenza.

Keywords/*Parole chiave*:
Accessibility, disabilities, statement of significance, values, Valletta.
Accessibilità, disabilità, affermazione di significato, valori, Valletta.

The need for a strategy for accessibility in historic settings

Historic settings comprise historic centres as well as historic buildings. Accessibility for all or universal design came in force in Europe in the second half of the 20th century. The 'Access For All' Design Guidelines which were adopted in Malta in 2002 were aimed at providing accessibility for all in all building types. As the Guidelines had this general purpose, they made no distinction between building which were being newly erected, buildings which did not have any historic, aesthetic or other heritage value, and those historic structures and urban spaces which were of heritage value.

The focus of the present document, therefore, is the specific challenges posed by historic built environments. More specifically, this document focuses on obstacles and challenges of an architectural nature. Other obstructions and issues, for instance those tied to user activities such as vehicles parked on walkways or tables and chairs in public areas, are recognised as significant challenges, but are outside the present scope.

When dealing with historic settings, one needs a clear strategy as to how to move forward so as to be in a better position to protect the historic fabric. Historic settings are sensitive and due to the fact that one deals with existing fabric, in many instances it may not possible to provide accessibility for all without impinging negatively on the historic fabric, historic context or the experience of the historic space. This is way a strategy to guide an intervention for accessibility to historic settings is necessary.

The importance of preserving the character of a historic centre like Valletta whilst providing accessibility for all

The preservation of the character of historic settings is important as it is the 'property' of all society and its appreciation and enjoyment must be available to everybody. Heritage buildings and urban areas were not originally built with the intention of accessibility for all. There is consequently a perception that historic settings tend to be difficult to access. This may be true and is particularly the case in Valletta where one of the characteristics of many of the streets is that they have steep slopes [fig. 1], flights of steps [fig. 2], or both [fig. 3]. These prove to be difficult to negotiate and form part of the intrinsic characteristics of Valletta.

Good quality accessibility will enable the enjoyment of historic settings and contribute to keeping these centres alive. It is also worth noting

1. Valletta. Bakery Street. One of the steeper streets of the city connects the high ground around Saint John's Cavalier with the low-lying Manderaggio area.

2. Valletta. Saint Lucia Street. Several streets around the periphery of Valletta are made entirely of flights of steps accessible only to pedestrians.

3. Valletta. Lower Republic Street. Stepped sidewalks for pedestrians flank the steeply-sloping street.

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that good accessibility will not only benefit the disabled but other sectors of society if only for a limited period of their life, for example as they grow older and start experiencing limitations to their movements. However it must always be understood that although accessibility is paramount for society as a whole, this should not be achieved at the expense of the value of the past. Heritage and historic settings represent and embody significant reference points for the memories and identities of societies, which are important to preserve.

Accessibility is not only about physical accessibility but any form of accessibility. This could include access for impairments other than those affecting mobility. These could be aided by proper design and understanding the cues other impairments require. Besides impairments, accessibility must also encompass intellectual accessibility to knowledge and interpretation of such sites. Hence in the case of Valletta it is important to allow access, on all levels so as to help society understand and absorb the history and value of Valletta. In this way the true characteristics of, Valletta's streets and topography will be understood and known to all.

Background History of Valletta

Valletta was built soon after the Great Siege of 1565. The peninsula which is now known as Valletta was known as Mount Sciberras. During the early years of the Order of Saint John in Malta, it was quickly realised that Mount Sciberras, the highest land in the Grand Harbour, offered a threat to the Knights of St John from an invading force as it overlooked the fortified cities of Birgu and Isla. The first concept schemes for a new city on the peninsula were drawn up, but could not be realised before the Ottoman siege of 1565, when the strategic advantage that the peninsula offered the enemy became painfully evident. After the Great Siege, Grand Master de Valette urged the building of Valletta before any of their enemies might wage war once more.

The city of Valletta was envisaged to be built over a short span of time, following the latest theories of urban planning that were in vogue in the second half of the sixteenth century. Like many of the new cities that were being founded by Spain in the New World, the urban solution that was adopted for Valletta was the gridiron plan. This solution was favoured because it facilitated the rapid redeployment of troops from one part of the city to another in case of siege. Such a layout is ideal if the land is flat. In the case of Valletta where the topography consisted of many steep hills [fig. 4], the end result is streets of a high gradient or streets that are entirely constructed with steps or where

4. Valletta. East Street and Victoria Gate. A network of steps, slopes and walkways negotiates the dramatic changes in level between the city centre and the harbour.

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the pavement of the street is stepped. This was done to relieve the otherwise very steep roads and pavements.

The steep topography does not encourage accessibility for all. The stepped streets, stepped pavements and steep hills though are an intrinsic part of the experience one has in Valletta while walking through the streets [fig. 5, fig. 6]. Hence modifying or removing such characteristic features may solve physical accessibility but would hinder the intellectual accessibility of the historic character and values of Valletta.

The need for planning, consultation together with conservation principles to create a sensitive design
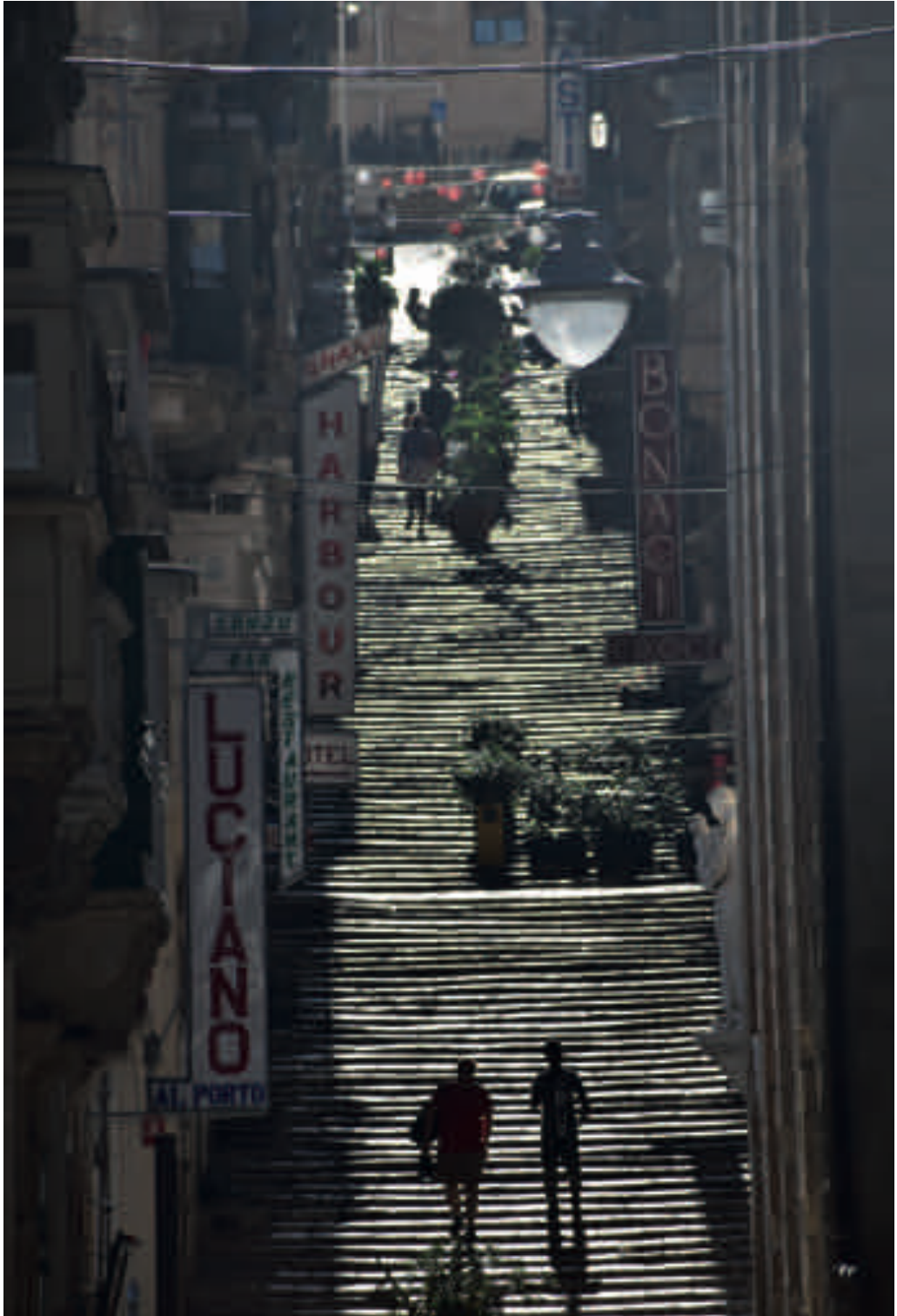
Knowledge about the past and its significance to our history is forever on the increase, and this brings about new expectations. Generally speaking, societies recognise that understanding their past gives them a sense of belonging and enhances their sense of identity. It enriches their individual members on a personal level, as well as enriching the society as a whole. Due to this, the ownership of heritage sites is of collective interest to society as a whole. Furthermore, in the case of World Heritage Sites like Valletta, the government of the State Party has a duty towards the global community to protect and preserve it.

As stated above, as a general rule the more heritage sites are made accessible, the more alive they are and hence the better chance of preserving them. If the interventions to improve accessibility are done in a sensitive manner, they may help ensure that their significance and value will also be more widely appreciated and kept alive.

It is a well-known fact that in order to keep historic settings alive they need to be used. This implies that they need to be developed and yet they should be preserved. The way reuse and preservation come together is through integrated conservation. Integrated conservation combines the principles of conservation together with the principles of planning and development. In the case of historic centres like Valletta, if development is the only factor taken into consideration, one would run the risk that the true significance and value of the historic centre would not be adequately protected even though it may be kept alive. One must aim not only to keep the historic centre alive, but also to protect its characteristics and values.

The development process requires certain parameters to be adhered to, and should examine whether the proposed development will help supply society with a beneficial use. From a conservation point of view, if a new use for the urban area of the architectural fabric is required, the conservation process should examine whether the new use will

5. Valletta. St. Ursula Street. Several streets are made up of flights of hardstone steps, a defining characteristic of the city.

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impinge negatively on the historic fabric and whether the significance and character of the said fabric will be lost or jeopardized.

Historic centres or buildings were not designed with the intent to allow accessibility for all. Though accessibility for all, or 'universal design' as it is now termed, is possible to design for in a new project, when faced with an existing context or heritage building, the context is very different, and places important constraints on how one may intervene on such heritage sites. Interventions designed to provide accessibility for all, in particular physical accessibility, may impinge on the significance of the urban setting and/or the building's fabric.

Over the years it has become apparent that with the right design philosophy and the correct values in place most physical barriers in both the urban context and the architectural fabric may be overcome without impinging on the historic value and significance of heritage. This has also been aided with the development of technology that allows more possible ways of achieving a sensitive design. Sensitive design implies that the historic values are also taken into consideration in the design process [fig. 7].

The main characteristics of historic buildings/landscapes are the issues that generally impinge on accessibility

A central issue with design for access for all is how to overcome barriers to physical mobility. This implies that adjustments to access points are designed in such a way to allow access to disabled people without obliging them to experience any significant inconvenience.

As stated by Historic England in Easy Access to Historic Buildings[1] issues with access generally fall into two broad categories:

- external physical elements of the building and its setting, including landscape features, kerbs, exterior surfaces, paving, parking areas, building entrances and exits as well as emergency escape route;
- any feature arising from the design or construction of a building itself, including architectural details (such as plinths, column bases, staircases, ironwork and door openings), fixtures, fittings, furnishings, furniture, equipment and other materials" (Historic England).

Considerations about access should start from outside the building, that is from the urban context. Once the external issues are addressed, access within the building should be investigated. As noted above, the external physical features could be various. In the case of Valletta, the biggest issue is the gradient of the streets as well as the innumerable situations were steps replace entire streets or

6. Valletta. Good Friday procession in St Ursula Street. Stepped streets have shaped public rituals and traditions, and are an integral component of the life and character of the city.

7. Valletta. St John's Co-cathedral, Republic Street. This intelligently designed and carefully integrated ramp takes full advantage of the long facade outside the side entrance, to create a very gentle gradient, with a flat resting platform midway along it.

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pavements to negotiate the steep gradients. This solution works for people able to walk up or down steps, but not for individuals with accessibility issues who could also include parents pushing a push-chair, people with a temporary impairment, or individuals with an impairment other than one directly affecting mobility. A further issue that compounds the problem in Valletta is that road and pavement surfaces often present surfaces that have been polished by pro-longed use and are therefore smooth and slippery, especially in wet conditions [fig. 8].

It is worth noting that some of these challenges may have a long history, and that in some cases, solutions may have been developed in the past, using traditional materials and techniques. One example of this is the cutting of grooves in hardstone tiles that had been polished by long years of use. The cutting of such grooves could also

8. Valletta. St. John Street. Hardstone surfaces polished by prolonged use can become slippery, especially in wet conditions.

9. Valletta. Mikiel Anton Vassalli Street. The hardstone paving is patterned with grooves that divide each slab into small squares about 5cm across. This traditional solution helps to make the paving less slippery.

be aesthetically pleasing, as well as achieving the practical purpose of making surfaces less slippery for pedestrians [fig. 9].

The entrance to most historic buildings is likely to present obstacles in the form of an architectural feature like a threshold or a flight of steps which will jeopardize access to individuals with mobility issues. Further obstacle within the historic building, as stated above, could come in many forms and features. This does not mean that access cannot or will not be provided, but providing it must be carried out in such a way that the significant aspects of such features are not lost.

If the features are crucial for the significance and character of the historic building, the features should not be altered or hidden from view. This implies that any solution that is designed to provide access for all should not hide, remove or alter the features which are crucial for the significance of the historic building, in any way that their value and significance is altered or lost.

In the case of Valletta, the steep gradients and stepped streets and pavement form an integral part of the city's character and significance. The need for these steep gradients is inseparable from the circumstances in which the city was laid out, following a grid-iron plan laid over the steep natural contours of the terrain. The well-documented urgency to complete the defences and move into the city meant there was very little opportunity to level the terrain, Hence when deciding the new use for a historic building, which is crucial to keep the building alive, must also consider whether individuals with impairment issues will be able to reach the building. If the building can be reached by all, the next step is that the building itself would be accessible for all whilst being given a use that is compatible with the building (Burra Charter Art 7.2)[2]. Being compatible to the building would imply that the use is also be compatible with the obstacles within the building that form part of its character and significance. The obstacles themselves may be the features which give significance and value to the heritage setting and the heritage building and hence need to be protected for society as a whole [fig. 10].

A three-step approach

The three-step approach towards the preservation of a historic setting outlined below is based on the Statement of Significance. The Charters that are set up by ICOMOS of course will always be an important aspect to be applied and considered. In particular the Burra Charter 2013, and

Guidelines for accessibility in the historic city of Valletta

10. Valletta. St. Catherine's Church and Monastery, Republic Street. The handsome baroque hardstone steps present a serious obstacle for physical access, but they are an integral element of the composition of the facade.

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the 'Burra Charter process' laid out in the same document are especially relevant here. In particular, the Burra Charter provides helpful guidelines to identify significance.

The Statement of Significance is an important and necessary tool to allow informed decisions regarding the preservation of a heritage site. It will help to identify three crucial aspects of a heritage site – namely the 'what', the 'why' and the 'how'. This helps to understand the place and provides the building blocks for a conservation management plan and the creation of policies for the heritage site.

The question 'what' is the site requires an investigation and documentation of the history of the heritage site. The second question, 'why' does the site matter, requires the identification of the values of the site. Finally, the last part of the statement of significance answers the question 'how'. This is where the character-defining elements are identified as those features which exhibit the values described earlier in the 'why'. This process is considered in greater detail below.

Review the Statement of Significance to identify the character-defining features in historic centres like Valletta

Hence in the case of Valletta, the first step towards managing and preserving the urban city as well as the heritage buildings of significant value is to create the Statement of Significance. This should lead to a management plan that would also inform and facilitate decisions regarding accessibility, both on an urban level as well as for individual buildings of significance within Valletta.

When writing up a Statement of Significance for a site like Valletta, it is important to note that Valletta was inscribed on the UNESCO World Heritage List (WHL) in 1980. This was done as it was considered to fulfil two out of the now ten criteria a site needs to possess so as to be inscribed. The criteria which Valletta was linked with are *criterion i* and *criterion vi*:

Criterion i: to represent a masterpiece of human creative genius;

Criterion vi: to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria)[3];

In the case of Valletta, the fulfilment of these criteria was described as follows:

Criterion (i): The city is pre-eminently an ideal creation of the late Renais-

sance with its uniform urban plan, inspired by neo-platonic principles, its fortified and bastioned walls modelled around the natural site and the voluntary implantation of great monuments in well-chosen locations;

Criterion (vi): The city is irrevocably affiliated with the history of the military and charitable Order of the Knights of St John of Jerusalem, which founded the city in 1566 and maintained it throughout two and a half centuries. Valletta is thus associated with the history of one of the greatest military and moral forces of modern Europe'[4].

These criteria are important to justify the reasons for Valletta to be on the World Heritage List, together with the statement of the Outstanding Universal Value (OUV). However, they do not specify or guide how the preservation of Valletta is to be managed. They only go as far as giving an indication what should be preserved and why, and even this may not be exhaustive so as to be in a position to present guidelines as to how a preservation management program for Valletta is to be set up.

The statement of OUV also states the integrity and authenticity of Valletta has been retained even though Valletta has undergone a number of changes over the centuries and suffered an appreciable amount of damage during World War II.

Though all the above as stated by UNESCO is definitely a contribution towards recognizing the worth of Valletta, a Statement of Significance provides a more practical working document with which one can identify the methodology of intervention. The Statement of Significance is a document is meant to be a working document and is divided into three main sections:

SECTION 1: WHAT?
This section includes the history of the historic site/building under investigation. The history must be concise and highlight the important periods and phases in the development of the said site/building.

SECTION 2: WHY?
This section includes the values that should be attributed to the historic site/building. It should also include intangible heritage that the said site/building may possess.

SECTION 3: HOW?
This section identifies the character-defining elements, which could be particular features, of the historic site/building in question.

Assessing Valletta's existing and required level of accessibility
Valletta is a fortified city built by the Knights of St John in the 16th century. Over the centuries the access into Valletta changed from the horse-drawn cart and carriage or Kaless, which were the main modes of wheeled transport up to the middle of the 19th century, to motor driven vehicles which were introduced to Malta in 1904. As transport developed, the access to Valletta 'improved' in that entrance gates were widened to cater for two-way traffic, (for example San Giorgio Gate which is now known as the City Gate of Valletta, Marina Gate which is now known as Victoria Gate and so on). New roads where constructed to ease vehicular access into Valletta (for example Duke of York Avenue, now known as Girolomo Cassar street, was built in the 1930s, while the opening of Barriera Wharf in the 1980s allowed circular access around Valletta).[5]

Vehicular access has been improved on a number of levels. One can now drive around the ring road of Valletta for example; entrance gates have been widened or demolished over the centuries to allow easier access for the motor vehicle and so on. With respect to pedestrian movement, however, not much has been done in the way of accessibility for all. Some of the main roads have been pedestrianized yet the street surface does not aid pedestrians with mobility issues as it is not adequate. In some instances it is the choice of material, for example travertine that tends to be very slippery in wet or damp weather, or a surface resembling a cobbled surface or is not laid in a way to avoid discrepancies between the joints. Some newly paved areas have also introduced new problems of visual accessibility. The use of the same bright hardstone materials in paved areas that include a step make it very difficult for the visually impaired to see such a step [fig. 11]. Measures to facilitate access for the blind or visually impaired, such as tactile flooring, remain extremely limited and fragmentary.

Valletta's topography, as explained above, is dependent on steep streets as well as stepped streets. This characteristic of Valletta's urban fabric is a distinctive feature that gives Valletta a particular character. It has given Valletta a distinct mix of different typologies of roads, as noted by no less than Lord Byron in his humorously satirical poem 'Farewell to Malta':

Adieu, ye joys of La Valette!
Adieu, sirocco, sun, and sweat!
Adieu, thou palace rarely enter'd!
Adieu, ye mansions where I've ventured!

Adieu, ye cursed streets of stairs!
(How surely he who mounts you swears!)...[6]

Accessibility is required in the steep streets or stepped streets and pavements to allow access to individuals with mobility impairment to the important monuments in Valletta. When providing accessibility to such monuments, one must keep in mind a number of factors. One factor is that if the heritage building in question is in a location that is not accessible for all, then one should not mitigate or intervene on the fabric of the building in order to allow accessibility for all, if it results in a loss of character and important features in the urban fabric and would still not achieve its aim of allowing individuals with mobility issues to enter the heritage building.
It is important also to keep in mind that when providing accessibility

11. Valletta. Former Opera House, Republic Street. The brightness of the stone paving makes it difficult for a person with a visual impairment to discern the step between the kerb and the road.

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for individuals with mobility impairment, it is highly probable that many other individuals will benefit from such accessibility at some point in their lives.

Evaluate accessibility options within a preservation context
Within a preservation context, one must be careful to evaluate the priority that is given to either the level of accessibility or the level of intervention on the historic fabric. It is always ideal to have accessibility for all and to apply the concept of universal design. However in the case of historic fabric one must also weigh what would be lost if any characteristic features of the building or urban fabric will need to be sacrificed.

Historic settings generally will have physical barriers that need to be taken into consideration. Efforts to overcome such barriers may run the risk of losing some values intrinsic to the fabric as some features need to be compromised in some way. Any intervention on heritage will imply that a decision has been taken to consciously remember that element of the heritage or to forget that element of heritage. Once a physical barrier which is historic is impinged on, its significance and the understanding of it may be jeopardized for future generations.

The creation of accessibility for all to a heritage site needs to be considered with a view to balance the value of the heritage itself and the importance for all to have access to the building. Heritage belongs to society as a whole and when we intervene on heritage we are expected to take decisions that serve the interests of all members of society to our best capability.

It has to be understood that in many cases, it is the peculiarity of a feature within a building or urban context that gives that scenario its intrinsic value and significance. A narrow doorway, steep stairs or a narrow passage may be features or physical barriers that contribute to the value and significance to a site. For example, people who suffer from claustrophobia will not enter underground heritage. Are we to widen the spaces in such underground sites or create skylights to make them less claustrophobic? Wouldn't trying to avoid claustrophobia remove the main characteristic of such underground heritage spaces?

The reasonable conclusion is that there is no hard and fast rule but one must use reason and evaluate carefully each situation on its own merit.

Guidelines for accessibility in the historic city of Valletta

Basic principles and criteria to create a methodology for the provision of access in Historic centers

As stated above, the basic principle to provide access to historic centres is to first and foremost understand what the fabric is that one is to intervene on, after which one can identify why we need to protect the fabric, and finally how to intervene.

As Historic England proposes, there are four options for how we can intervene on physical barriers to allow access for all[7].

These are:

- Remove the feature that is creating the physical barrier
- Carry out alterations to the feature creating the physical barrier
- Provide a solution to avoid the physical barrier.
- If none of the above options are possible, try to provide theservice in an alternative way.

Removal of feature
The removal of a feature is a drastic intervention and before carrying out such an intervention, one must be sure that the feature in question is not crucial to the value of the heritage site or is giving important information about the history, use and perhaps development of the heritage site. It must be understood that the removal is permanent, whilst for example the reuse of a structure may be a short-term situation – it may change in the future and hence the feature would have been lost to no avail. An example of this is the elimination of raised kerbs and sidewalks during repaving projects. In several instances in Valletta, such interventions were soon followed by the installation of bollards to separate pedestrians form vehicular traffic [fig. 12]. While the elimination of the raised kerbs and sidewalks removed one obstacle, it also created a new, and perhaps more serious, problem.

Such a decision also needs to balance what the gain is if the physical barrier is removed, against the loss if it is not removed. The frequency of use must also be taken into consideration. If the anticipated use is not frequent, the limited gain in improving accessibility needs to be weighed against the permanent loss of the feature. Reasonable justification must be given for the removal of the feature.

Alteration to the feature
This solution is a more ethically correct solution than removing the feature completely. Reducing the physical effect of the barrier could be a

12. Valletta. St Christopher Street. Repaving projects that eliminated kerbs and raised sidewalks created the need for new measures to protect pedestrians from car traffic.

13. Valletta. Mikiel Anton Vassalli Street. Handrails installed in stepped streets are a good example of a practical measure to improve accessibility while respecting the values and characteristics of the streetscape.
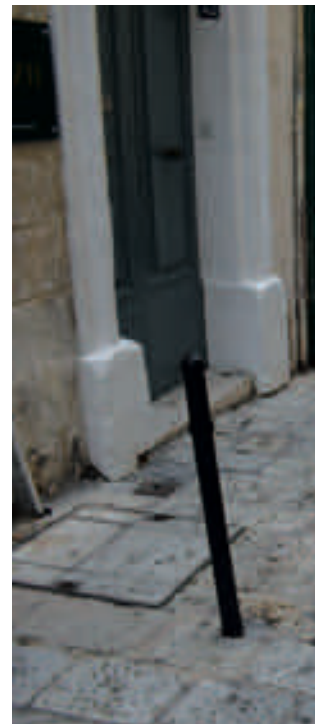
better solution than removing a feature as the latter could impinge negatively on the significance or value of the heritage site. A simple example of such an intervention is the insertion of a handrail in a stepped street, which is immensely helpful to people who have some difficulties with mobility but are able to walk. Such an intervention is almost entirely reversible, and has a low permanent impact [fig. 13].

Avoid the physical barrier
Solutions to avoid the physical barrier and hence retaining the barrier would be the optimum solution, as the significance of the heritage site is less likely to be impinged on if at all. If the physical barrier is for example the entrance to a historic building with a stepped entrance threshold, the preferred solution could be one involving the management of the building and re-organizing circulation within the building. So the solution could be using a side entrance which can become the main access entrance, to also respect the principles of universal, non-discriminatory design.

Alternative solution
If none of the above solutions are possible or acceptable, an alter-

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—
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native solution should be considered. This could take the form of shifting uses which are on the upper floors to the ground floor so as to avoid stairs as a physical barrier. If the service the building is providing could be provided electronically, in print, or on other media – for example if the building is a museum or housing an exhibition, and there is no solution to provide physical accessibility, intellectual accessibility can be provided virtually.

The best solution would always be to adopt a reasonable adjustment to the historic fabric. Historic England suggests the following procedure to be followed which not only respects the historic fabric of a heritage site but also includes the community that has mobility problems:

- Planning in advance for the requirements of disabled people and reviewing the reasonable adjustments in place
- Conducting access audits on premises
- Asking disabled customers for their views on reasonable adjustments
- Consulting local and national disability groups
- Drawing disabled people's attention to relevant reasonable adjustments so they know they can use the service
- Properly maintaining auxiliary aids and having contingency plans in place in case of the failure of the auxiliary aid
- Training employees to appreciate how to respond to requests for reasonable adjustment
- Encouraging employees to develop additional serving skills for disabled people (for example, communicating with hearing-impaired people)
- Ensuring that employees are aware of the duty to make reasonable adjustments and understand how to communicate with disabled customers so that such adjustments can be identified and made[8].

Flexibility in design to cater for different disabilities
Disabilities come in different forms. Though the discussion above has mainly mentioned physical mobility, it is important when considering accessibility for all that all needs are targeted. A disability may be an impairment – an impairment of one of the senses – hearing or seeing. Such needs will need to be addressed in a different way to physical disability. Some disabilities may be aided without many alterations to the historic fabric and others may require similar aids. The following basic steps are essential to ensure this wider range of needs is kept in view:

IDENTIFY THE SIMILARITIES OF IMPAIRMENTS

Identify the different disabilities that need to be catered for and identify the similarities between the disabilities. In this way when resolving or catering for a particular disability, more than one disability will be catered for.

MATERIALITY

The materiality of the different interventions carried out, for example in the flooring, will determine which mobility impairments will be catered for. The different surface finish and colour may aid accessibility for some or hinder others.

SIGNAGE

Signage is an imperative feature to guide all through a space. The design of the signage must be taken into consideration; the size of lettering, the colours used, etc may hinder or aid accessibility.

KNOWLEDGE ABOUT THE HERITAGE SITE

The information regarding the heritage site in question must be understood and the value such information possess. Depending of the value attributed to such information, a decision will need to be taken as to how to interpret it to the different possible audiences. For example, an application may aid accessibility on different levels; it may provide accessibility to individuals with an auditory impairment whilst making the information more accessible to all with different levels of knowledge. An application will also give the user the choice to decide the level of knowledge he/she would wish to explore.

CRITICAL ELEMENTS OF ACCESSIBLE ROUTES

If adjustments to the physical fabric are required, then one has to make sure that the guidelines for accessibility for all are followed. In Malta the CRPD has standards that need to be adhered to. This includes minimum specifications, for example for door and path widths, floor surfaces etc. The following five basic steps are essential along all accessible routes.

PROVIDE THE REQUIRED WIDTHS FOR ACCESS

Paths would need to follow the required clear distances as stipulated by the CRPD. Every access point requires an established width so as to allow access to individuals with different impairments or needs.

Guidelines for accessibility in the historic city of Valletta

SLOPES OR ENTRANCE STEPS

In the case of slopes an allowable gradient is 1:12 (8%). In the built environment this may be achieved as long as the characteristics of the urban space is not jeopardised. For example in the case of Valletta, even if it were possible to achieve a 1:12 gradient with the removal of stepped pavements or roads, it would not be acceptable. This is due to the fact that stepped streets, as noted earlier in this document, are a crucial feature for Valletta. Similarly, In the case of landscape which are naturally uniformly steep, only certain areas may be made accessible. This is due to the fact that to impose an acceptable gradient may mean to impinge on the significance of the site. A possible solution could be to create vantage viewing points for those with certain impairments. The solutions for entrance steps could be in the form of ramps, or wheelchair lifts. In some cases, the entrance will need to be modified by either creating a new entrance or modifying the existing doors. In carrying out such interventions one has to be careful not to impinge on the significance and the important values of the heritage site in question.

SURFACE TEXTURE OF PATHS

The surface texture of paths would create problems for a number of individuals if it is too rough or too smooth or has certain reliefs in its design [fig. 14]. Even the joints could create a hindrance. Even the pavement pattern may be of discomfort for some individuals with particular impairment. Another concern would be the widths of walking paths. On the other hand the importance of a pavement should not be dismissed. For an individual with visual impairment, the pavement is actually a vital tool for measurement and navigation. It allows him/her to distinguish the start and the end of a building block; to understand the distance from the building; basically it is fundamental for that person to have a sense of place and a sense of orientation.

FEATURES

Certain features are an integral part of the significance of the heritage site, like for example the topography, the vegetation, the circulation of the heritage site, the typology of the structure, certain furnishings which are inherent to the site as well as certain objects.

STEPS

Steps create a natural barrier in historic settings. Flights of steps are

14. Valletta. Upper Barrakka Gardens. Panels in the paving pattern use a decorative pebble effect. Their very rough surface is not ideal for individuals with difficulties with mobility.

15. Valletta. Auberge d'Italie, Merchant Street. Façade and main entrance portal.

commonly found in in historic streets, as in the past there was little concern with catering for individuals with any impairments. Stepped streets also give an urban space a very distinct character, most famously in the Piazza di Spagna in Rome, which is a witness to how in the specific social milieu of baroque Rome, the steeply undulating topography was exploited to create a theatrical space that created new opportunities for public display and social interaction in an urban space. Although less spectacular examples, the stepped streets of Valletta are no less integral to the character and values of the city. Even though a stepped street is not easy to access, one cannot eliminate it as that would impinge directly on a significant characteristic of the urban space.

Flights of steps do not only have the practical purpose of connecting spaces at different levels, but may also have a social function as well as a psychological one. A flight of steps in front of a building immediately raises the building onto a podium. One may observe this through a comparison between Auberge d'Italie in Merchant Street, Valletta [fig. 15] and Auberge de Castille in Castille Square, Valletta [fig. 16]. The latter has a monumental flight of steps that sets off the

Auberge for a grand entrance. Auberge d'Italie has a monumental doorway that is however almost level with the street, resulting in a more modest effect. The solution to improve accessibility of Auberge de Castille is not to attempt to eliminate or alter the monumental flight of steps, because this would impinge negatively on a significant feature of the Auberge. The solution in this case may rather be to avoid the steps entirely and to offer another, universally accessible entrance.

A further challenge posed by monumental entrances with flights of steps is that, apart from themselves causing an obstacle to accessibility into the building, they may also create an obstruction that interrupts pedestrian pavements and walkways [fig. 17].

Proposals for a strategy for accessibility for Valletta

The different possible itineraries to provide accessibility in Valletta
Valletta poses serious challenges to accessibility for all throughout many of the city's streets. Some parts of the city allow a person using

16. Valletta. Auberge de Castille. Façade and main entrance portal.

17. Valletta. Maison Demandols, South Street. The monumental portal of several buildings in Valletta completely obstructs the pavement for pedestrians.

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a wheelchair to explore the streets unaided, while the topography does not allow this in some of the steeper streets of the city. A person pushing a pushchair will also experience difficulties. The gradient in some instances may even be difficult even for senior citizens with limited mobility. In order to address these challenges, an important principle that was a point of departure for the following proposal was that not all parts of Valletta are or can be equally accessible.

A second important principle was the need for continuity and consistency of the experience. A chain is only as strong as its weakest link, so a single obstacle may be enough to ruin the experience of a route which is otherwise perfectly accessible. This leads to the third principle, which is a central tenet of the I-ACCESS project. This is that by providing information on the different levels of accessibility of cultural heritage assets in the streetscape of a historic centre, one can help empower individuals with different needs to overcome disabling obstacles. The availability of information on the position of such obstacles, such as steep street gradients, is especially useful to persons less familiar with the city, such as visitors from other countries. Following these three principles, during the course of the I-ACCESS

project two itineraries were developed, with different levels of accessibility.

ROUTE 1

A study of the gradients of all the city's streets was commissioned by the Valletta Local Council [fig. 18]. Analysis of these gradients allowed the identification of an itinerary that included some of the most interesting and notable cultural heritage assets of the city, while also allowing the requirements of universal accessibility to be met [fig. 19].

ROUTE 2

In light of the wealth of lesser-known cultural heritage resources in the streets of the city which do not meet the criteria for universal accessibility, a second itinerary was also developed in these areas [fig. 20]. In this case, apart from the physical obstacles, an important disabling factor was the very limited accessibility of information. This obstacle can be overcome by providing information on some of the lesser known aspects and characteristic of the city. The information which is now available through the project's website, researched and compiled by Ms Ruby Jean Cutajar, a Research Support Officer for the project, and Mr Mevrick Spiteri, an independent researcher, helps achieve this and also allows a partial improvement in the degree of accessibility to persons who are still prevented from physically exploring this second route along its entirety.

Interventions required along the above-mentioned routes in Valletta
One of the challenging points along Route 1 is presented by Pjazza Jean de Vallette [fig. 21]. Although the space is strictly speaking universally accessible, the uneven gradients dictated by the topography of the ground create inconsistencies in their level of physical accessibility. A person unfamiliar with this environment may not realise that there are even some steps dividing these open space where the gradients are steepest.

As a result of a design proposal put forward for the design of a more accessible entrance to Valletta from Castille Place, students reading the academic year 2020/21 for their Masters in Architecture and Conservation put forward proposals as to how this could be carried out.

The below image, [fig. 22] shows one of these proposals by Mr Francesco Farrugia. In his proposal, Mr Farrugia proposes a longer route for those that using a wheelchair or having difficulties with physical mobility. He

18. Valletta. Street gradient map commissioned by Valletta Local Council, prepared by i4architecture.

19. Valletta. Route 1 follows streets where the slopes and surfaces permit universal access.

In the next pages:

20. Valletta. Route 2 explores more peripheral areas where slopes do not permit universal access, and focusses on improving intellectual accessibility.

21. Valletta. Pjazza Jean de Vallette. The irregular slopes and contours across this wide open space may be inconvenient to traverse when using a wheelchair.

22. Valletta. Pjazza Jean de Vallette. View of proposed path with correct gradient for wheelchair users developed by Mr Francesco Farrugia as part of his design module in Masters of Architecture and Conservation (Master's of Architecture and Conservation design project, Year 1, academic year 2020/2021).

UNIVERSAL ACCESS TRAIL

Guidelines for accessibility in the historic city of Valletta

Route 2

Route 1
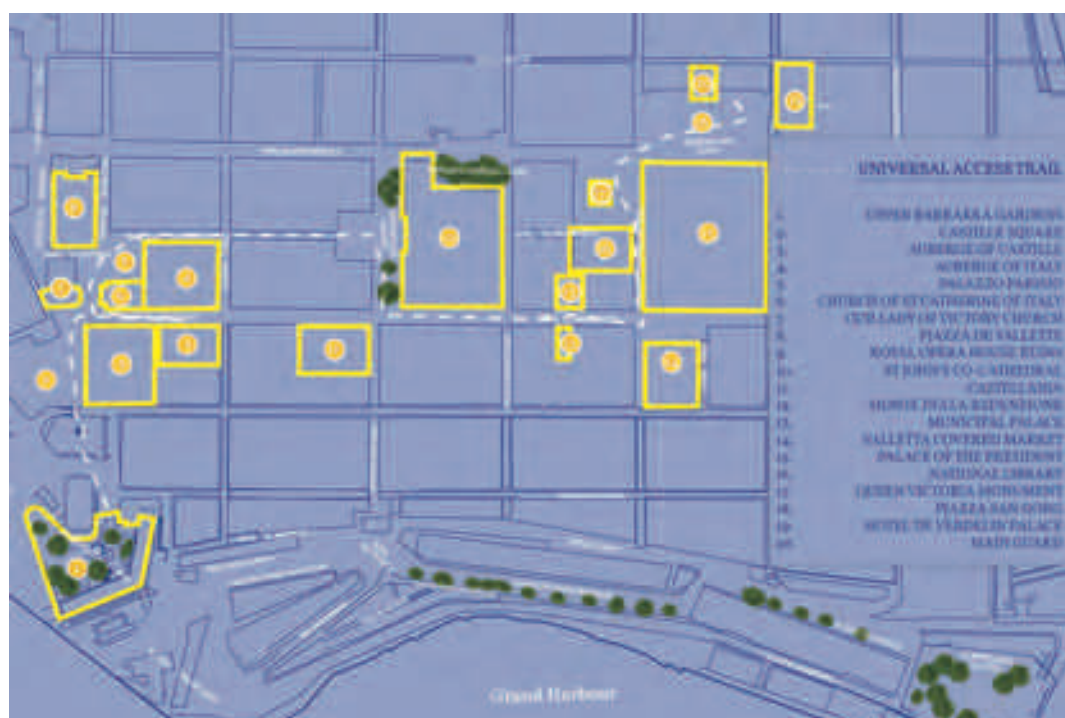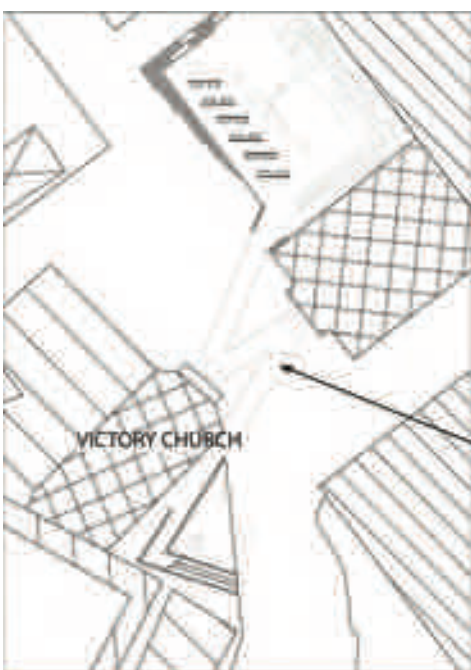
VICTORY CHURCH

PROPOSED
ZIG-ZAG PATH

succeeded in doing this by creating a 'zig-`zag' route that could be integrated into the modern paving design between Victory Church and the Church of Saint Catherine of Italy. In this way he achieved a gradient in the road that an individual in a wheelchair could navigate independently.

History and List of Laws in Malta dealing with accessibility

On 3 November 1987 the 'Kummissioni Persuni Handikappati' was set up. Previous to this, individuals experiencing any impairment had no legal rights or protection. This meant that even at work or on a daily basis they were not protected by law. On 10 February 2000 Kummissjoni Nazzjonali Persuni b'Dizabilita (KNPD) was officially set up in accordance with Act No. 1 of 2000, the Equal Opportunities (Persons with Disability) Act (Chapter 413, Laws of Malta). This law led to the creation of the first guidelines in 2000 that dealt with accessibility for all in Malta. A second edition was published in 2006, followed by a third edition published in 2011. These guidelines deal with accessibility for all in the built environment generally, without however any consideration for the specific requirements of historic settings or historic buildings.
These design guidelines have also been supplemented with guidelines regarding:

- Streets for All 2020 https://www.crpd.org.mt/wp content/uploads/ 2020/11/streets-for-all.pdf
- Guidelines for Hotels http://www.knpd.org/pubs/pdf/Guidelines %20Hotels%202010.pdf
- Test of Reasonableness Board application form http://www.knpd. org/legislation/accessforall.html
- KNPD vetting checklist http://www.knpd.org/legislation/accessforall. html, http://www.knpd.org/pubs/pdf/KNPD%20VETTING% 20CHEC KLIST.pdf

It is interesting to note that CRPD takes into consideration the issue of reasonableness and it also provides a checklist for individuals applying for accessibility to guide them into what is required. Besides the general design guidelines for accessibility for all they have also provided specific guidelines for streets and for hotels though there are no guidelines as yet that deal with a historic setting.
The first Equal Opportunities (Persons with Disabilities) Act of 2000 has also been amended in the Legal Notice 426 of 2007; and Acts II and

XXIV of 2012, Act XXIV of 2016, Act XXIX of 2019, and Act LIX of 2021. This indicates a preparedness within the Maltese government to continue to develop and improve services for individuals with disabilities, hence the importance to also consider how heritage sites fit into this framework.

Glossary: Types of disabilities

The source of the following definitions is Disabled World[9].

VISION: Inability to see objects, perceive light or colour, correctly judge distances, or access information in visual media – print, images or video.

MOBILITY: Difficulty to use hands, feet, arms or legs. Typically, these could be symptoms of tremors, muscle slowness, loss of fine motor control or paralysis.

AUDITORY: Partial or total inability to perceive sounds and access audio-based information.

NEUROLOGICAL: Restricted sensory perceptions, mental processes or motor functions – symptoms being – paralysis, tremors, memory loss and cognitive malfunctions. Epilepsy, Alzheimer's, muscular dystrophy etc

COGNITIVE: Loss of memory, reduced attention span, restricted intellectual development, underdeveloped maturity and judgement or limited problem-solving and logic skills. Eg forgetfulness, extreme emotional changes, intellectual underdevelopment, and inappropriate decisions.

PSYCHOLOGICAL: Impaired intellectual processes, decision rationale, emotional maturity or perception reality. Eg. Extreme emotional states or sudden outbursts. Inability to comprehend information, mental disconnection from immediate circumstances or violent acts towards self or others.

Notes
[1] HISTORIC ENGLAND, 2015.
[2] AUSTRALIA ICOMOS, 2013.
[3] UNESCO, 2021.
[4] ICOMOS, 1980
[5] https://www.vassallogroupmalta.com/, 2021.
[6] BYRON, 1811.
[7] HISTORIC ENGLAND, 2015.
[8] HISTORIC ENGLAND, 2015.
[9] DISABLED WORLD, 2021.

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2. Storytelling and intellectual accessibility in a historic city: the case of Valletta

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Abstract
The story of a historic city may be told in many different ways. This paper focuses on a number of key themes that may help develop more engaging narratives. These are namely geology and topography, urban form, change over time, and the human fabric that gives life to the city.

Storytelling e accessibilità intellettuale in una città storica: il caso di La Valletta
La storia di una città storica può essere raccontata in diversi modi. Questo contributo si concentra su una serie di temi chiave che possono aiutare a sviluppare narrazioni più coinvolgenti. Si tratta della geologia e della topografia, della forma urbana, del mutamento nel tempo e del tessuto umano che dà vita alla città.

Keywords/*Parole chiave*:
Storytelling, public engagement, historic cities, topography, stratigraphy.
Storytelling, coinvolgimento pubblico, città storiche, topografia, stratigrafia.

Introduction

The I-Access project has created the opportunity to explore, evaluate and rethink some key components that make up the qualities of a historic city, and how it is encountered, understood, and experienced by different audiences in the general public. While the project has focussed on two specific historic city centres, namely the Vucciria district of Palermo, and Malta's capital city of Valletta, many lessons that have been learnt are of wider relevance. This short contribution will first provide a brief narrative of some key factors that have shaped and defined Valletta, before moving on to a discussion of how story-telling may serve as an important medium for the engagement of wider audiences in the appreciation and enjoyment of historic city centres, with specific reference to Valletta.

Geology & topography

Historic cities are rooted in their geographic setting. The choice of their location is often heavily influenced by topographic considerations, which in turn are shaped by the geological setting. Many of the great historic capital cities of Europe straddle major rivers and waterways. Although in many cases these waterways are nowadays less important for transport than they were in the past, these cities continue to thrive in the same locations. In this sense, to understand the nature of the city we are immediately required to become historians and archaeologists, as only by understanding past systems and priorities can we begin to understand why cities are located where they are, and why their form has evolved the way it has. In this sense, cities are a material record of their past. Whilst the past is very different to the present, cities may continue to display enduring characteristics that are the result of that extinct past. Their very existence is like a fossil record of other ways of being and of inhabiting and exploiting a landscape, which would otherwise be lost in time.

The cities of Palermo and Valletta are no exception, and like many great Mediterranean historic cities, have been profoundly shaped by strategic considerations of defence and maritime connectivity. Valletta is a particularly legible and eloquent document demonstrating sixteenth century military strategy. The city was conceived as an idea even before the arrival of the Knights of Saint John in Malta in 1530[1]. The successful defence of Malta in the Ottoman siege of 1565 created
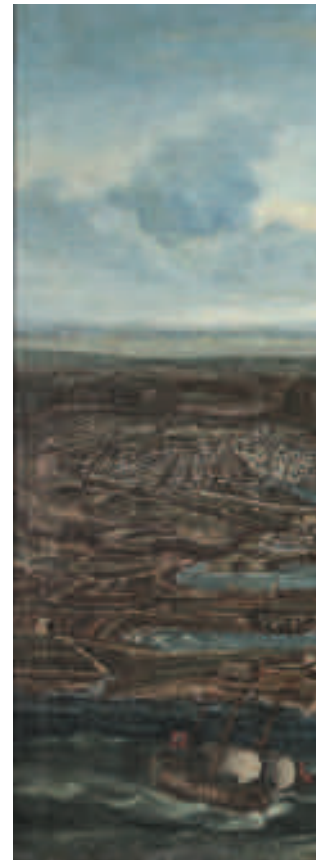
the right conditions for this vision to be realised, and for the city to be built as a single project. Standing on a long narrow ridge between two deep natural harbours, the city is an archetype of sixteenth century military design, taking advantage of the topography to create an impregnable fortress built to resist artillery attack. The city also commands two of the finest harbours in the Mediterranean, which were invaluable assets for the seafaring activity of the Knights of Saint John [fig. 1].

The geological structure played an important role in shaping these decisions, and the way in which their execution was realised. The geological formations that make up the ridge on which Valletta was built have also played a very significant role. The ridge is largely made up of the soft and workable Lower Globigerina Limestone, facilitating the cutting of deep ditches and sheer bastions around the perimeter of the city, and providing a ready source of building material for the extensive building programme undertaken in the late sixteenth century.


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The much harder Lower Coralline Limestone outcrops along much of the present shoreline of Valletta, creating a foreshore that is more resistant to coastal erosion. The different properties of different geological materials were also exploited for functional [fig. 2] as well as decorative [fig. 3] purposes.

The very shape of the Grand Harbour originated in two major fault systems, one trending approximately SW to NE, which is responsible for the origin of the valley that in turn became the main channel of the harbour, and the other trending SE to NW, which helped determine the orientation of the subsidiary valleys in the harbour[2]. Following the rises in sea level witnessed since the Last Glacial Maximum, these drowned valleys became the parallel channels known as Kalkara Creek, Dockyard Creek and French Creek, separated by narrow peninsulas that provided ideal locations for the fortified towns of Vittoriosa and Senglea. Following the siege of 1565, the same formula was realised on a grander scale, when the long and linear ridge known as Mount Sciberras, forming a peninsula between the Grand Harbour and Marsamxett Harbour, was chosen for the new city.

2. Valletta, St Christopher Street. Lava flagstones were imported from the Etna region for the paving of many of the city's streets.

3. Valletta, Spinola Palace, Republic Street. Alternating bands of coralline limestone and globigerina limestone used for decorative effect on the main doorway.

4. Valletta rises steeply from the shores of the Grand Harbour.

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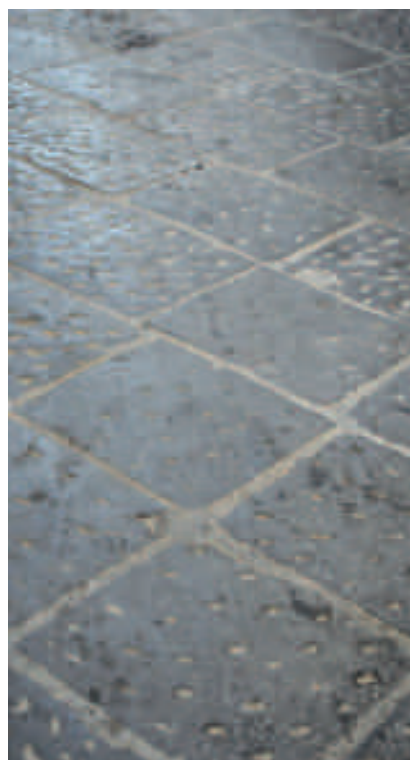
Urban form

As a result of the steep topography of Mount Sciberras, the streets of the city rise dramatically above the surrounding harbours [fig. 4]. Steep slopes and stepped streets became a defining characteristic of the city, and in turn pose significant challenges for universal and inclusive access nowadays. The grid-iron plan proposed by Pope Pius V's military engineer, Francesco Laparelli, was adopted and rapidly executed. As a result, the streets of the city are perfectly straight on plan, but undulate steeply so as to negotiate the hilly terrain of the peninsula. During the planning of the city, it was decided to depart from the model of earlier cities where the Knights of Saint John had made their home, and not to have a separate 'collachio' district gathering all the buildings housing the institutions of the Knights.[3] Instead, the various auberges or convents housing Knights of the different nationalities are spread around the city, usually near the sector of the city's walls that they were responsible for defending in case of siege. The principal religious orders of the day were soon building their own convents and

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Storytelling and intellectual accessibility in a historic city: the case of Valletta

monasteries across the city. Wealthy individual knights set up their own private palaces. A defining characteristic of the urban fabric of the city is that it was never designed to have quarters reserved for more palatial residences, and others for more modest housing. Instead, the typical Valletta street presented a heterogenous mix of grand palaces, modest mezzanine dwellings, and ground floor *botteghe* where shopkeepers and craftsmen plied their trade [fig. 5].

The ring of fortifications that encircled the city was treated as a high priority, amid concerns that there could soon be a fresh Ottoman attack. The position of the land front, where the city was separated from the rest of the island, was carefully chosen to exploit the highest point of the ridge, to give the defenders' artillery the advantage in a siege. At the tip of the peninsula, Fort Saint Elmo continued to guard the entrances to both harbours, and was now incorporated into the defensive ring around the city.

The city walls not only separated the city from the rest of Malta, but also from the sea and the foreshore. A gateway on each side of the city provided controlled access to the harbours. The shorelines were Malta's gateway to the outside world, and became intensively exploited spaces for commerce, quarantine, storage, and movement across the harbours. In the centuries that followed, these activities continued to be intensified, thronging the shorelines and the streets that led to them with bustling human activity.

5. Valletta's streetscape presents a heterogeneous mix of grand palaces, modest mezzanines, and tradesmen's shops, standing side by side.

6. Valletta, buildings from (left to right) the 17th, 18th and 19th century stand side by side in Merchant Street.

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Evolution and stratigraphy

From the moment the first stone of Valletta was laid in 1566, the city has never stopped evolving. The first generation of buildings was rapidly erected during the last three decades of the sixteenth century to house the Knights of Saint John and all their institutions, other religious orders, and a long list of merchants and tradesmen whose services were needed in the new city. Within decades, several buildings were demolished and replaced by taller buildings that allowed a higher density. As a result, the legacy of the Knights of Saint John is a rich mix of architectural styles spanning over two hundred years, from the more severe buildings of the late sixteenth century to the opulent baroque that took the city by storm from the mid-seventeenth century, to the neo-classical mood that started becoming fashionable in the closing years of the eighteenth century [fig. 6].

This evolution continued to unfold during the British period. Gateways were enlarged to accommodate two-way traffic in the mid-nineteenth century. An Anglican cathedral, a modern covered market and an opera house were built to meet the expectations of a modern capital city [fig. 7]. By the late Victorian period, multi-storey apartment blocks became a favoured way of creating more housing units in Valletta, while also meeting modern expectations of sanitation and comfort. Areas near the bastions surrounding the city, which had been reserved

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exclusively for the use of artillery, such as Saint Barbara's Bastion, were taken over to accommodate more housing, as the city's population continued to grow. Schools were largely accommodated in existing palaces, with the exception of a handsome but short-lived school built near Saint Elmo in the inter-war period, only to be destroyed in the Second World War.

The Second World War took a terrible toll on the inhabitants and buildings of Valletta, which was at the epicentre of what one war correspondent described as 'the most bombed place on Earth'. Many major monuments and countless houses were destroyed or damaged. In some cases, they were never rebuilt. The post-war reconstruction of Valletta and the rest of the harbour region required a herculean effort, where housing and essential infrastructure was inevitably the priority[4]. Numerous historic buildings which had suffered only partial damage were reconstructed. Others which had been largely destroyed were replaced by modern buildings. The reconstruction programme was also seized upon as an opportunity for slum clearance. The entire Manderaggio district, for instance, was levelled and replaced by modern housing.

In spite of the widespread destruction brought about by the war and the rebuilding programme that came in its wake, the urban fabric of Valletta has retained an overall coherence due to a number of factors. First, the original grid-iron plan continued to be respected throughout most interventions in the city's history, with some exceptions such as the post-war creation of piazzas where none before existed. The per-

7. Valletta's covered market was built in the mid-19th century using a cast-iron structure to support the timber roof.

8. Valletta's post-war reconstruction generally respected the massing and volume of earlier buildings, and the city's roofscape.

9. Valletta, palace of the President. The Royal Standard added in the early 19th century, surmounting the late 16th-century walls of Neptune's Courtyard.

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sistent use of Globigerina Limestone across time was another common factor giving some visual unity to buildings from across over four centuries of changing styles. In most cases, the heights of new buildings were of a scale not too different from those of earlier periods, mitigating the impact on the city's roofscape [fig. 8].

One result of this long history of evolution is that many buildings display a multi-period development, which is often even evident in the external elevations of the building. The stratigraphy of many of these buildings is so clearly legible that, with some guidance from a trained specialist, even a novice may begin to recognise and 'read' the main phases in the building's evolution [fig. 9].

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The human fabric

The evolution of the built fabric considered above reflects the changing demands and aspirations of the social fabric of the city. This social fabric has undergone titanic transformations during the lifetime of the city. At the time of its foundation, Maltese society was still arguably medieval in many aspects of its structure. By the early twentieth century, it had been catapulted into post-industrial modernity, with Valletta and the Grand Harbour at the epicentre of this transformation. In the process, a veritable kaleidoscope of very different social relations, worldviews and human protagonists came and went. Many of these past ways of seeing the world, and the vast majority of the individuals who thronged the streets of Valletta, are today largely forgotten. Only the material evidence of the city, when investigated through archaeology and read in the light of archival records, may conjure up these lost worldviews and forgotten lives. To quote one example, it is easy to forget that throughout the period that the Knights of Saint John ruled Malta, slavery was not only an accepted but even a widespread practice, where no well-to-do household was considered complete unless it included slaves as servants.[5] The vast slave prison block in Valletta, where slaves were required to spend the night-time hours as a security measure, was the most poignant reminder of this, until it was destroyed in the Second World War and replaced by modern housing [Fig. 10]. This is just one example of suppressed or forgotten histories; prostitution is another example, which only recently has started receiving much closer attention by historians studying Valletta.[6]

10. Valletta, a modern housing block has replaced the slaves' prison, helping to erase the memory of the ubiquity of slavery in Valletta till the end of the 18th century.

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**Discussion: Story-telling and intellectual accessibility
in a historic city**

The narratives of Valletta sketched out above provide nothing more than the roughest of outlines, painted in broad strokes, with many gaps and serious omissions. It may suffice for the present purpose, however, which is to provide a few examples of how narratives of a city may depart from conventional mainstream history, to explore modes of story-telling that have the potential to entice the wider public to engage with historic urban places in new ways, and to render the somewhat intimidating body of academic knowledge that has been amassed about Valletta more intellectually accessible to wider audiences.

The material connection presented by the geological materials provides one thread, where the familiar materials in our daily experience may be contextualised and understood afresh. Recalling the key factors that informed the decisions that shaped the city is another useful thread. Being reminded that the present form of the city was one which needed to be conceived, then doggedly pursued to realisation, is a valuable exercise in defamiliarisation, which allows us to see the all-too-familiar urban landscape in a new light.

The decipherment of stratigraphy over time is also a powerful didactic tool. From our experience with students we have also learnt that this is also a skill that may be quickly learnt. Observations of stratigraphy carefully interpreted and shared by a specialist with a novice will eventually enable and equip that novice to recognise and decipher those same characteristics in another building, and more often than not, to make intelligent educated guesses about the stratigraphic evolution of that building.

Perhaps the most compelling aspect of public engagement through story-telling is the narrating of human stories. This allow us to empathise with forgotten lives lived out decades and centuries ago, and for some moments at least, to catch a glimpse of their very different ways of experiencing the city, and of understanding the world.

The threads outlined in this short paper have sketched out some of the ideas and insights that we have found most compelling in our own experiences of discovering the city over the years. We hope we have been able to share these thoughts with much wider audiences through the interpretation tools that the IACCESS project has delivered, and to entice them to continue to explore and discover aspects of Valletta that will even go beyond these narratives.

Notes

[1] DE GIORGIO, 1985, p. 35.
[2] ILLIES, 1981, p. 159.
[3] DE GIORGIO, 1985, p. 128.
[4] CHAPMAN, 2005.
[5] WETTINGER, 2002.
[6] MUSCAT, 2013.

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3. Accessibility on the web: planning and conformance

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Abstract
In order give everyone the chance to access, enjoy, create and share contents on the web, it is necessary to design "interoperable" interaction systems, i.e., always reliable both in different contexts of use and in the presence of different input modes. For this purpose, UX/UI designers need to acquire specific skills in the field of web standards and in writing HTML, CSS, and Javascript languages, which are fundamental for the design of accessible web components.

Web accessibility: design and compliance
Per dare la possibilità a tutti di accedere, usufruire, creare e condividere contenuti nel web bisogna progettare sistemi di interazione "interoperabili" cioè sempre affidabili sia in diversi contesti d'uso sia in presenza di diverse modalità di input. A tale scopo l'UX/UI designer deve acquisire competenze specifiche nell'ambito dei web standard e nella scrittura dei linguaggi HTML, CSS e Javascript fondamentali per la progettazione di componenti web accessibili.

Keywords/*Parole chiave*:
Accessibility, interoperability, WCAG, WAI-ARIA, Web Vitals, front-end development.
Accessibilità, Interoperabilità, WCAG, WAI-ARIA, Web Vitals, sviluppo front-end.

Inclusive design is focussed on the needs of persons who may have a disability that is permanent, temporary, situational, or even one that is changing over time, in other words, all of us[1].

In fact when we consider the wide range of ability and disability, it may be noted that to design exclusively for the so-called "able" is counterproductive, because the experience that is offered is more stressful and less useful for all, and not at all inclusive for others[2].

To give everyone the opportunity to access, use, create and share web content we need to design "interoperable" interaction systems, that work reliably across various user applications and across different modalities of data input[3].

Such an accessible system may come closest to offering an equivalent experience to all, that even while changing according to the specific conditions in which it is being used, continues to function without compromising the quality of its content.

This content, therefore, is not tied to a single medium of representation (WCAG 1.0, 2016) but can, according to the situation, make coherent use of shared and integrated interfaces, which may be controlled by the user, offering alternatives and choices, while prioritising content and including functions that add value to the experience[4].

Since 1999, the Web Accessibility Initiative (WAI) working group has provided guidelines for web accessibility, known as the Web Content Accessibility Guidelines (WCAG), founded on four guiding principles: Perceivable, Operable, Understandable, and Robust (POUR).

Every guideline is accompanied by criteria to assess its successful application, and three levels of conformance: A (minimum), AA and AAA (maximum). Furthermore, every guideline and success criterion is accompanied by a series of techniques, divided into two categories: 'Sufficient Techniques' required to satisfy the criterion, and additional 'Advisory Techniques' (WCAG2.0, 2008).

It is clear that systematic application of the WCAG is not a guarantee of success. The guidelines themselves note that "even content that conforms at the highest level (AAA) will not be accessible to individuals with all types, degrees, or combinations of disability, particularly in the cognitive language and learning areas" (WCAG2.0, 2008). We may however deduce the efficacy of the tools provided through their direct use, above all by persons with different needs. Our experience as users with a screen reader will be notably different to that of a group of blind users, and the way the tools are used will be drastically different to ours, and will even vary widely within the group[5].

There are nevertheless some key practical aspects for the creation of accessible web content that the Google development group has divided into the three key themes of "focus", "semantics" and "style". Using keyboard input we may focus on elements of the HTML document (tag) and receive feedback on the activity we are engaged in, and on our position within the document. Just by using the TAB button, for example, we may shift our focus from one tag to another, to explore the document contents in a coherent and logical order (tab order). To continue with the same example, a well-structured tab order is fundamental to provide a pleasant experience to users with mobility impairments.

In a user interface that uses the screen reader, every visual element should be redundant: the document content and its functionality are fully described in oral form. In this case, the tag does not only have the purpose of marking a portion of content within the page (to determine its position or format), but also has a semantic value, describing its significance to the developer and to the supporting technology being used, in this case the screen reader (W3C).

Thanks to specific semantic tags, it is therefore possible to divide a document into sections and to establish a hierarchy of significance, function, and priority between activities.

Furthermore, to address any semantic gaps and to improve accessibility where needed, W3C has produced a set of indicators (WAI-ARIA) that define a series of additional HTML attributes to define "roles", "properties" and "states" of individual elements.

The theme of "style", on the other hand, addresses the issues concerning the layout of elements of the interface, and their accessibility.

CSS (Cascading Style Sheets) is the language used to define the visual properties of HTML tags such as size, colour or position. Correctly applied, these basic properties may resolve complex challenges of accessibility.

On a mobile device, for example, it is necessary to ensure that interactive elements such as buttons or links are large enough, and have enough space around them, to be easy to press without accidentally activating other elements. This is helpful to all users, but is particularly useful to those with a mobility impairment (Google developers group).

Not everyone perceives colour in the same way, and interactions between different colours are complex and manifold. As a result, some colour combinations that are easy to read for some persons may be

difficult or impossible for others who may have a deficit in their colour perception. Such difficulties may be mitigated by adjusting the colour contrast between different elements of the foreground and background.

In the WCAG, contrast is a measure of the difference in "luminance" or perceived luminosity between two colours.

The WCAG furthermore advise that when colour is used to communicate information, one should make sure to "provide cues in addition to colour so that users who may have difficulty perceiving colour differences or have low vision can identify them...Visual cues can take many forms including changes to the font style, the addition of underlines, bold, or italics, or changes to the font size."

In this manner we should ensure that the functionality of every element is not dependent on colour alone, for example through the use of icons to indicate the state of a button.

Furthermore, the CSS properties make it possible to design layouts based on flexible and reactive grids to provide the best possible experience across different functions. The layout reconfigures itself according to the screen size and the different zoom levels.

A vital characteristic in terms of accessibility is the ability to allow users to zoom in to different levels, to enlarge text or images, while maintaining the logical and functional coherence of all the document contents.

The I-Access project has aimed to render digital content through web and mobile interfaces that guarantees users with different needs as equivalent an experience as possible, in terms of value, quality and efficiency.

The writing of an HTML code with semantic elements (tags) that expressly describe their significance to the browser as well as to technological supports (such as screen readers) makes it possible to separate content from its representation, which is no longer confined to a single medium.

This multiplicity offers alternative channels for the enjoyment of the same textual content via screen readers, simple keyboard inputs or, in the case of Apps, through the augmented reality made possible by the Arianna system.

The 'mobile first' approach that has been adopted prioritises the optimisation of on–site user experience using mobile devices over desktop interaction, and exploits the interactively reconfigured layout[6] to guarantee a multi-faceted experience that is coherent in its logic, composition and function.

Colour contrast, developed in accordance with the WCAG2.0 guidelines and specific field testing, provides a high degree of legibility not only of the texts but also of interactive content such as maps.

The colour palette used for the latter is also helpful in the clear representation of geo-located information, in the form of points of interest that may be displayed through filters and clusters according to categories or themes, such as for instance conservation interventions.

Themes such as conservation interventions are rendered accessible through various components of the interface – such as for example the text or the map – and depending on the type of use, are made accessible in alternative but equivalent channels.

Two navigation systems were implemented in the mobile App, the first for Android systems based on environmental recognition and computer vision (Garlisi, 2020) and the second for iOS systems based on Machine Learning (Lo Valvo, 2020), adding another layer of accessibility.

The contents may be experienced in the form of a walk along which the visually impaired or the blind are guided along a physical (Lo Valvo) or virtual (Garlisi) line, installed along the route or by means of specific points of physical access (QRCode, stencil). Feedback in the form of vibrations and audio are provided according to the position along the route to indicate information (such as one's position), the presence of a point of interest (a monument or piazza) or access to information content (the story of a stage in a building's history).

On 28 May 2020 Google[7] introduced the Web Vitals programme, a unique guide to measure web user experience, "a set of metrics that measure real-world user experience for loading performance, interactivity, and visual stability of the page"[8].

Thanks to the Web Vitals programme, developers and website owners may evaluate the performance and quality of their coding, content and design: these are three fundamental aspects, all of which contribute in equal measure to the quality of the final product.

Beyond the metrics, the programme also generates a report to identify the critical issues that have been addressed, and those still present, while suggesting possible solutions. The same report also lists all those aspects which cannot be measured by an algorithm and which therefore have to be evaluated individually by the designers or users. For example, while an algorithm is able to measure and evaluate the colour contrast between figure and background, it cannot evaluate whether the logic of a page's tab order is correctly structured, or

whether the interactive elements, such as links or buttons, indicate their state, or whether they may be readily distinguished from non-interactive elements. Such aspects require study and analysis by the developer, designer and copy writer.

When evaluated, the I-Access project successfully met the greater part of the Web Vitals tests, particularly in terms of accessibility, where the page dedicated to points of interest (POI), registered the highest score. Following the online publication of the project, further empirical and manual evaluation is required of all those aspects which, as indicated above, cannot be automatically measured. Such evaluation need to be informed by the experience of diverse users, beyond the project team. This will be achieved by gathering and recording data on user satisfaction when accessing and using website content.

Some of this may be achieved by means of automated tools, such as the heat maps that represent user behaviour within a page, mouse movement, clicks, page scrolling, and screen taps on mobile devices. Other tools allow the anonymised video recording of actual real-life user experiences of navigating the site.

A different set of tools that is also available depends on the direct collaboration of users.

Sharing a checklist within the project team may be an excellent tool to check the design before and after its publication. The Vox Media team, for example, uses one subdivided in five specific sections (designers, engineers, project managers, QA, editorial)[9].

Personal testing or cognitive simulation may be effective methods to abstract and synthesize transverse needs that may impact a wide range of users[10].

The continuous evolution of technology and web standards requires us to continue to monitor the quality of our digital products. It would therefore be opportune to publish and update a "declaration" of the accessibility level of the web pages, indicating which are fully accessible, partially accessible, or not accessible.

Such a practice has already been implemented for all institutional websites of the Government of the United Kingdom[11] and of Italy's Public Administration[12].

1. Responsive Layout adapts the display according to different screen sizes, while preserving the internal coherence of the contents.

2. Tools for developers allow them to simulate how a web page is experienced by people with different forms of colour blindness, from protanopia to loss of colour contrast.

Guidelines for accessibility in the historic city of Valletta

3. Developer tools being used to inspect a button, which is found to conform to standards in terms of font, contrast between figure and field (AAA 10.86), presence of labels and text describing the action.

4. An instrument to measure the performance of a website in terms of Performance, Accessibility, Best Practices and SEO is made available by Google at the following web address: https://web.dev/measure/.

5. Apart from the metrics, Google generates a dedicated report for each webpage analysed, providing advice for improvement to help resolve the critical issues identified, listing the components that satisfied the automatic checks, and those that require manual verification.

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Accessibility

These checks highlight opportunities to improve the accessibility of your web app. Only a subset of accessibility issues can be automatically detected so manual testing is also encouraged.

Additional items to manually check (10) — These items address areas which an automated testing tool cannot cover. Learn more in our guide on conducting an accessibility review.

- The page has a logical tab order
- Interactive controls are keyboard focusable
- Interactive elements indicate their purpose and state
- The user's focus is directed to new content added to the page
- User focus is not accidentally trapped in a region
- Custom controls have associated labels
- Custom controls have ARIA roles
- Visual order on the page follows DOM order
- Offscreen content is hidden from assistive technology
- HTML5 landmark elements are used to improve navigation

Passed audits (23)

- `[aria-*]` attributes match their roles
- `button`, `link`, and `menuitem` elements have accessible names
- `[aria-hidden="true"]` is not present on the document `<body>`
- `[aria-hidden="true"]` elements do not contain focusable descendents
- `[role]`s have all required `[aria-*]` attributes
- `[role]` values are valid

5

Notes

1 SWAN, POUNCEY, PICKERING, WATSON, 2017.

2 BOXHALL, DODSON, GASH, KEANEY, 2020.

3 PICKERING, 2020.

4 SWAN, POUNCEY, PICKERING, WATSON, 2017.

5 PICKERING, 2020.

6 MARCOTTE, 2011.

7 CHROMIUM BLOG, 2020.

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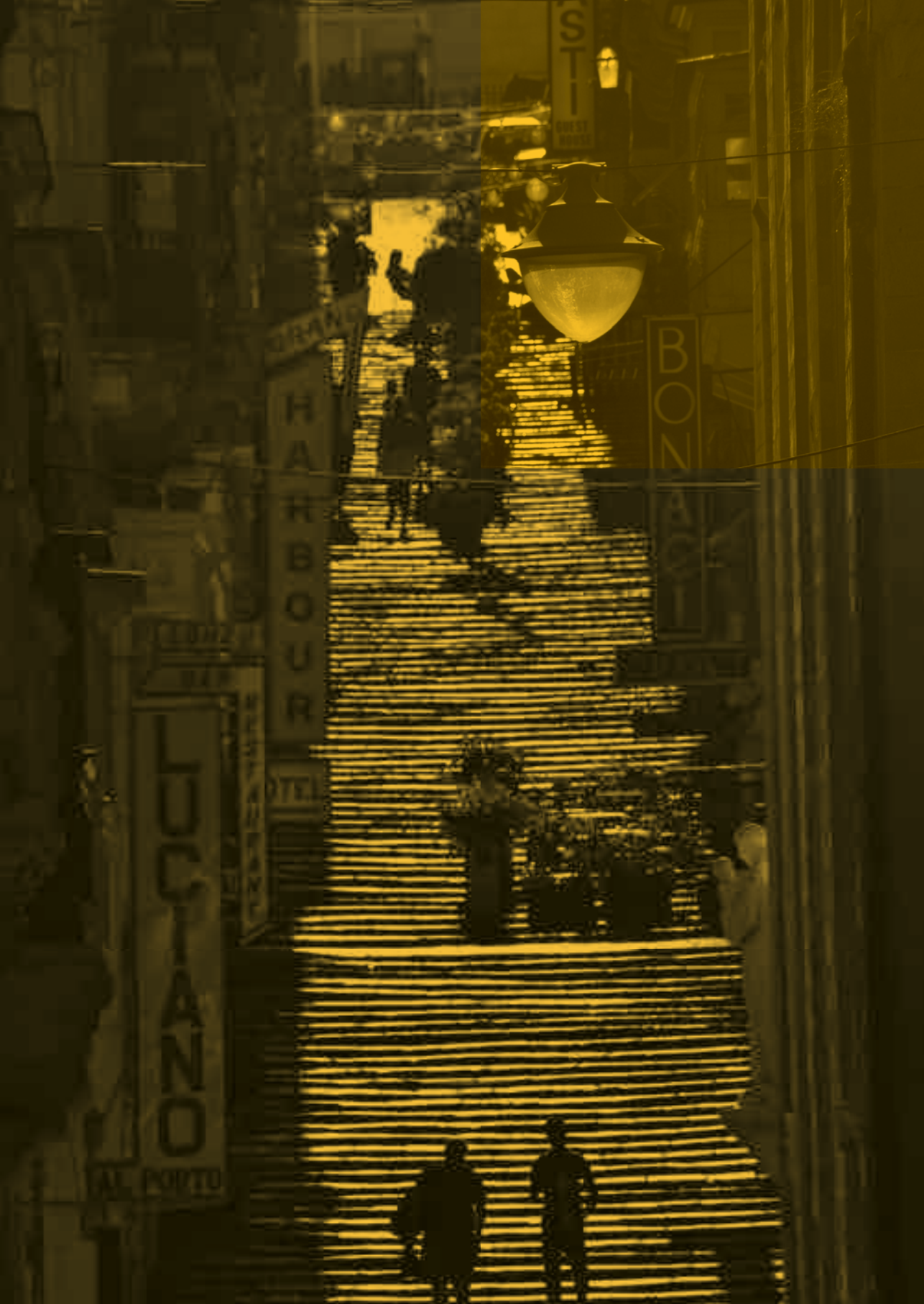
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