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Cover image: embankments at the Danube waterfront of Regensburg "Donaumarkt" made of re-used Roman material, probably Carolingian (S. Codreanu-Windauer, BLfD 2014).

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EDITORIAL

Rivers have always been a great opportunity for communication, commerce, sources of energy and resources. Around them real economic landscapes have developed, such as those in England analyzed with GIS techniques by Eljas Oksanen. A paper that shows – as many others in this volume – how well established today are spatial, temporal and statistical analyses among archaeologists, offering novel perspectives on traditional topics. At the same time rivers connect and divide, representing frontiers and obstacles, as well as a continuous threat for those living at the waterfront (as was the case with the River Trent in England analyzed by Richard Jones, Rebecca Gregory, Susan Kilby, Ben Pears), navigating or crossing them. In the drainage basin, more than elsewhere, it is possible to measure the ability to adapt and the resilience of the local communities, using remote sensing techniques and geoarchaeological surveys. These tools have been used to reconstruct ancient river paths, flow rate variations, and man-induced hydraulic modifications in the Lower Tiber valley (Antonia Arnoldus-Huyzendveld) and along the Tirso River near Oristano (Pier Giorgio Spanu). These techniques can also be used to investigate the evolution of agrarian landscapes near rivers, which in the low plain can be heavily transformed by the abandonment of agrarian landscapes, formation of marshy areas, and land reclamations (such as in the Lower Adige basin: Gian Pietro Brogiolo, Julia Sarabia). Furthermore, archaeological methods also can identify channels, such as the Fossa Carolina, an excavated unfinished channel about 5 meters wide, with a minimum water depth of about 50 cm (Lukas Werther, Lars Kröger). Beyond channels, consolidation and precautionary measures, specific building techniques in wetlands, drainage systems in areas affected by stagnation or flooding hazards, and transports also can be analyzed.

Rivers can tell many stories, sometimes being enemies and other times resource donors, but they are always incentives to create new social and political groups able to cope with them.

Cécile Rivals, winner of the 2017 PCA Award, proposes the use of the graph theory applied to urban landscape, to transform the fiscal appraisal notes, dated to the 15th century, into developmental planimetries of the blocks. New perspectives in the study of ceramics, especially for those still without conclusive chronology, are offered by the rehydroxylation dating method (RHX) for the dating of early medieval ceramics from southern Apulia in Italy (Paul Arthur, Alessandro Buccolieri, Marco Leo Imperiale). These methodological issues, as well as the paleopathological and anthropological analyses (here proposed by Jesús Herrerin, Lucía Muñoz, Natasa Sarkic, Rosa Dinarés on the necropolis of Viana de Duero in Spain), can be considered part of "traditional" archaeology. A different research line, with political implications, follows the archaeological study of English colonization in Ireland (imposed to punish a rebellion) between 1595 and 1643: an excellent paper describes a recent project developed by David Edwards and Colin Rynne.

Massimiliano Granieri's dossier about the legal framework of cultural heritage raises issues about political choices. Among the different countries, Italy stands out negatively, because of its elitist ideas on heritage, which result in restrictions and economic problems for researchers. A more open and democratic access to research is inspiring some of the recent projects developed in Padova, such as the participatory processes of research and heritage valorisation presented by Alexandra Chavarría, Francesca Benetti, Francesca Giannetti, Vito Santacesaria. The Council of Europe legislated these themes in different years with antithetic conventions: initially with the repressive Valletta Convention, which reaffirmed a bureaucratic idea of heritage management; later with the Faro Convention, inspired by the concept of a shared understanding and protection of heritage. This latter concept should be followed to give impulse to a discipline in crisis. A traditional understanding of archaeology (as Enrico Gianichedda highlighted) was used instead by the panel of the recent exam for archaeologists of the Italian Soprintendenza. In fact ignoring the real state of the art of a multidisciplinary and diachronic science, no trace of the methodological or transchronological aspects of archaeology appeared in the final oral exam used to discard 23 candidates out of the last 226.

A trend towards a focus on chronological specialisations and ignoring the real state of the art of a multidisciplinary and diachronic science that also reflects current programs in many Italian universities, condemning our academic and management systems to isolation from the exciting future perspectives which European archaeology is offering abroad.

The objective of PCA, now arrived to its 7th volume, is to open a window to this forward-looking international perspective.

Building participatory digital narratives about medieval Padua and its territory

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Internet technologies offer a broad set of opportunities for archaeologists to share information and to involve the public in multiple ways in order to build historical narratives together. During the last decade, the Medieval Archaeological Research Group at the University of Padua conducted a research about medieval architectures and historical landscapes in Padua and its territory. At the same time as developing methodologies for recording, dating and understanding medieval architectures and historical landscapes, we have been interested in the communication of this complex information to the wider public in order to reach a wider community which can also be interested in collaborating in our research increasing in that way their social impact and future development.

Keywords: medieval architectures, mobile app, public engagement, participatory approach

Le tecnologie digitali offrono oggi agli archeologi ampie opportunità per la condivisione delle informazioni e per il coinvolgimento del pubblico al fine di una costruzione condivisa della storia. Negli ultimi dieci anni, il gruppo di Archeologia medievale dell'Università di Padova ha condotto una ricerca sulle architetture medievali e sui paesaggi storici di Padova e del suo territorio. Oltre a sviluppare metodologie di registrazione, datazione e comprensione delle architetture e dei paesaggi storici, una particolare attenzione è stata riservata alla comunicazione di queste informazioni complesse a un pubblico vasto, interessato anche a collaborare nella ricerca, aumentandone così l'impatto sociale e assicurandone lo sviluppo futuro.

Parole chiave: architetture medievali, app, coinvolgimento del pubblico, approccio partecipativo

1. Introduction¹

There has been a growing awareness in recent years that in the context of current systemic economic, social and cultural crisis, with a loss of consensus across society about official archaeology, a mere academic

¹ Chapters 1-2 and 7 were written by A. Chavarria Arnau; chapters 3-4 by V. Santacesaria and F. Giannetti; chapters 5-6 by F. Benetti.

top-down presentation of research by professionals to an interested audience is no longer appropriate (Becerra, Moya 2010; Brogiolo 2014; Castillo 2016). Therefore, alternative approaches and methods must be explored in order to enhance awareness of and confidence in scientific work (Rowe, Frewer 2000; but also the EU council conclusions on participatory governance of Cultural Heritage, 2014/C463/01).

Sixty years ago Sir Mortimer Wheeler (Wheeler 1956, p. 234) wrote that archaeologists were obliged to disseminate their findings to the public, impressing it and using a common (non-technical) language able to reach its understanding. Instead of this, the continuous development of obscure and elitist academic discourses since the mid-20th century has rendered archaeology inaccessible to the general public and therefore far from their interests.

If archaeologists desire to have any chance to find direct public support, it is absolutely necessary to foster the participation of non-specialized audiences in all stages of the archaeological process from planification of research to the final presentation of results. Therefore it is essential to focus on the development of bottom-up archaeological projects which directly involve, possibly also emotionally, the participation of the general public in order to build historical narratives together.

Obviously this kind of approach needs, in the first place, to improve our understanding of the different people we will involve through participation in the research as well as the audiences to whom our narratives will be directed. It is also a necessity, once the information has been disseminated, to assess its effectiveness and whether our message has been successfully received by the audience (Merriman 2002, p. 547).

Digital technologies are now a popular culturally and socially embedded phenomenon and can be a valuable tool for public engagement with the past (Merriman 2004, p. 4; Lievrouw 2012; Richardson 2014, p. 50). Internet offers also a broad set of opportunities to faster and most effective construction of data, both in processing it into narratives and in the verification of public involvement in particular projects.

During the last decade, the Medieval Archaeological Research Group at the University of Padua (AMP) has been developing research methodologies for the digital cataloguing and understanding of historic rural and urban landscapes. Since 2007, the city of Padua, in north-eastern Italy, has been used as a case study thanks to funding by the Fondazione Cassa di Risparmio di Padova e Rovigo, which has supported the project ARMEP (Architetture Residenziali Medievali di Padova) between 2007 and 2016. The analysis of historical landscapes in the territory of southern Padua (the Euganean Hills) has been part of an FP7 project devoted

to the comprehension of agrarian landscapes in Mediterranean Mountainous Landscapes (MEMOLA project) running from 2014 to 2017.

At the same time as developing methodologies for recording, dating and understanding historic landscapes and architectures, we have also been interested in involving local communities in the research process as well as the communication of this complex information. Our objective was to foster knowledge and awareness of the multiple values contained in cultural elements within the city and landscapes giving this heritage the opportunity to be understood and to survive thanks to a community-oriented collaboration (McDavid 2004, p. 37; Perkin 2010, p. 117). Although traditional dissemination methods (tours, brochures, public conferences for amateur archaeological associations) have been employed with success, we have also been searching for methods to attract and replicate this experience for different target audiences and not only to heritage enthusiasts. Therefore we explored the possibilities offered by Internet communication technologies (mainly a WebGIS and web thematic maps) as well as digital applications which can be downloaded from the Internet. In order to understand the potential public, we also investigated the impact of our research on non-specialised audiences. We also worked with social media and online questionnaires addressing issues about the medieval heritage of Padua.

2. An effective dissemination needs to be interactive and touch public emotions

In September 2012, the international research service at the University contacted AMP to introduce to Paduan citizens the research we were developing about the medieval city, in the context of the European Researchers' Night, a Marie Skłodowska Curie EU action dedicated to popular science and fun learning². In order to present our work to the most varied possible audience in an engaging and interactive way, we decided to organise different kind of activities: games for children under 10 years old (reconstructing the coats of arms of the different families in Padua, puzzles with the stratigraphy of some palaces), an audio-visual presentation about our methods, and a 'medieval evening' tour through the old city (fig. 1). All activities were prepared and performed by ourselves, academics and students of the Cultural Heritage department at

² http://ec.europa.eu/research/mariecurieactions/about-msca/actions/researcher-night/index_en.htm.



Fig. 1. Activities of AMP in the context of the European Researchers' Night (September 2012).

the University of Padua. The last activity was the most complex and risky as it included two different itineraries in which a guide (dressed as a medieval noblewoman), accompanied by a group of medieval characters, conducted the visitors through the city, stopping to give information on the medieval buildings (mainly medieval houses, and thus generally not well known by the citizens) or the methodology we employ to record and study them. While the visitors were listening to the guides' explanation, other medieval characters from Paduan history emerged from the palaces or appeared among the group, interrupting the general explanation and introducing historical references, anecdotes, jokes, etc, generally inspired by contemporary medieval texts (fig. 2). The tour therefore included at least three different kinds of information: scientific, historical and anecdotal.

Not being professional actors we were quite unsure of the results. The events were unexpectedly successful, based on the number of participants (almost 50 participants rather than the 15 we predicted for each tour) and their reactions after the visits (most of them asked when



we were doing it again, how to book, and if we did private tours). It must be underlined that even though the theatrical presentation (costumes and performance) played an important part in its success, the public was also thrilled by the new information we were communicating though it was frequently quite specialised and complex.

After that experience, we realised that the interest in our work increased, firstly among the academic community of Padua (including colleagues and students, who saw how it was possible to make research very alive) but also by our increased presence in local series of conferences on historic aspects of the city organised by community groups (Comitato Mura, Società Archeologica Veneta, Italia Nostra) and the City Museum (Museo Civico agli Eremitani). Pleasingly, the demand for further information about our work also grew.

In order to profit from this interest and increase the possibilities of public engagement with our project and more generally with medieval architectural urban heritage we explored and developed different technological possibilities of communicating information and interacting with the public.

First of all we created two digital tools: at a specialised level all the information produced by the project team (written forms, photos, cartography, different kind of analysis, results, etc.) was uploaded in a WebGIS platform (Valente 2011) which also allowed queries by the user. Unfortunately, this product was very slow and cumbersome and frequently encountered problems with the server's capacity, which frequently crashed so that we temporarily removed it from the web. One of our current objectives is to improve this tool in order to give a spe-

Fig. 2. One of the two different itineraries in which a guide (dressed as a medieval noblewoman), accompanied by a group of medieval characters, conducted the visitors through the city, stopping to give information on the medieval buildings.



Alexandra Chavarria Arnau, Francesca Benetti, Francesca Giannetti, Vito Santacesaria



HOME | PROGETTO | APPROVA | EVENTI

MAPPA INTERATTIVA



DESCRIZIONE

APPROFONDIMENTO STORICO

ANALISI STRATIGRAFICA

Torre degli Anzian via Oberdan 17

DESCRIZIONE

Il palazzo si affaccia su via dei Soncin con il prospetto nord costituito da quattro piani. Il piano terra è formato da un portico con due archi, uno a tutto sesto, l'altro a sesto ribassato, entrambi poggianti su pilastri. Nel sottoportico si possono notare quattro porte, una rettangolare con stipiti in pietra e arco di scarico in laterizi, due di grandi dimensioni a sesto acuto con ghiera in laterizi e bardellone (uno a zig-zag, l'altro a quadrati) ed una porta a sesto ribassato con ghiera in laterizi. Tra il piano terra e il primo piano si sviluppa il mezzanino con tre finestre quadrangolari, due stemmi scudati illeggibili e una feritoia.



Fotopiano del prospetto principale del palazzo.



Questo palazzo conserva uno dei pochi sottoportici di Padova ancora in buon stato di conservazione.

ANALISI STRATIGRAFICA

La prima fase della casa dell'Angelo l'edificio è collocabile tra XIII e XIV secolo. Questa fase è ancora visibile in alcune parti del primo piano (per tutti i prospetti) e del piano terra (per i prospetti sud e est), a cui si aggiungono la canna fumaria del prospetto est e le monofore ancora oggi in uso.

In una seconda fase, compresa tra XV e XVI secolo, l'edificio viene alzato di un piano e vengono inserite le rispettive aperture in pietra di Vicenza.

La terza fase, successiva al XVI secolo, vede rifacimenti nel prospetto nord e in il tamponamento delle canne fumarie sul prospetto sud.

La quarta fase è relativa ad un "restauro in stile" fatto nel 1930 che vede l'inserimento della quarta finestra rettangolare al secondo piano del prospetto nord, al cui posto, come dimostrato dalle foto storiche, vi erano in precedenza due finestre di minordimensione; vi è inoltre l'inserimento delle arcate che danno su piazza dell'Insurrezione e delle finestre del primo piano che vanno ad obliterare gli elementi di prima fase. Sul prospetto sud vengono inserite tre monofore e una porta in laterizio, mentre nel prospetto est, una monofora al primo piano, una finestra rettangolare al secondo piano e una finestrella all'altezza della soffitta. A questa fase risale l'inserimento dello stemma in pietra bianca con relativo archetto di scarico.

Infine si osservano una serie di restauri contemporanei tra cui il rifacimento del tetto.



Lettura stratigrafica del prospetto.



Lettura stratigrafica del prospetto.



Fig. 3. Digital thematic map of the project, which presents information about the most significant buildings which are being studied in the project.

cialised public the ability to consult first-hand information about our research³.

A much friendlier interactive product is the digital thematic map of the project, which presents information about the most significant buildings which are being studied⁴. This map is based on a very simple aerial photography template with links to the different residential buildings (one of the main subjects of our research). Each building card is composed of 4 different levels starting with 1. a very short introduction on the cover page (max 50 words); 2. description of the building (c. 150 words); 3. broader historical exploration (max 250 words); 4. stratigraphical analysis (max 250 words) (fig. 3). The idea is that the user is able to interact with the information, gaining progressively greater knowledge of the buildings. It is also extremely useful for us, as it allows a rapid upload of new information about our ongoing research on the different buildings. This map is connected to a larger traditional webpage which displays information on the objectives, methodologies, bibliography, results and events related to the project.

However none of these products could be compared with the emotional experience and results of the itineraries. Replicating such a participative activity is eventually possible but the number of public that we reach is always going to be quite limited. For this reason we continued exploring how to effectively communicate not only the information but also the emotions we transmitted during the Researchers' Night medieval itineraries. The result of this research has been a digital application called "Medioevo APPadova".

3. Medioevo APPadova

"Medioevo APPadova" (Middle Ages at Padua) was developed with the collaboration and technical support of the Swipe Story team (AI² - Applicazioni di Ingegneria ed Informatica s.r.l.) composed of archaeologists, storytellers, experts in digital creativity and in ICT. The objective was to convert the scientific information collected by the ARMEP team during the project (Chavarría Arnau 2011) into a captivating illustrated story linking written, iconographic and archaeological sources, using the model we had already experienced in the real itineraries: combining traditional archaeological and historical data with more anecdotal information and

³ A work in progress currently developed by Federico Giacomello as a part of his PhD.

⁴ See http://arcmcd.lettere.unipd.it/CatMedievale/ARMEP_mappa_interattiva.html.

also giving the public the opportunity to interact with the visit by choosing to explore more in depth the kind of data in which they were more interested.

“Medioevo APPadova” is designed following the “swipe story” methodology: it is a digital tale that drives the user along the streets of medieval Padua, using a simple and immediate language based on illustrations, images, texts, games, sounds and videos (De Felice, Santacesaria 2013). The story is composed of a series of scenes (frames) that flow – swiping in both horizontal and vertical directions – on a mobile device touchscreen. Several types of transitions among the scenes give the feeling of walking through the streets of the city in time and in space (crossing places in spatial continuity, turning corners, entering and leaving the buildings). The transitions between frames are characterized by a parallax effect that simulates a 3D effect: different levels of images, moving at different speeds and directions, give depth to the scenes (fig. 4). In addition to this, the episode frames are enriched by many points of interest. In order to better customize the user knowledge path, the contents have been divided into a generic fruition level (story, dialogue balloons and sounds) and a more detailed fruition level (insights, curiosities, games and videos). A specific tool is dedicated to showing the stratigraphy of buildings in order to satisfy the user who searches for scientific archaeological descriptions of the medieval buildings.

Once the app has been downloaded and installed on a tablet or smartphone, the user can explore the old centre of Padua by selecting two itineraries marked on an interactive map displayed on the homepage. The itineraries include mainly the residential buildings erected between the 11th and the 15th centuries in Padua, but some public buildings and churches have also been included as they are part of the idea that citizens have of their own city (as understood by talking with them) and could help them to orient themselves better in the urban landscape. The first episode connects the suburban area (Santa Giustina church) to the Bo Tower in centre of the city (and where the main building of the University is) and describes different scenarios of Paduan medieval history between the 6th and the 15th centuries, a period (especially between the 12th and the 14th centuries) in which Padua achieved some of its most important political, cultural and architectural milestones (fig. 5). The second episode begins again exactly from this last point (University) and ends at the medieval Cathedral, but the chronological context has changed and now the history is centred on the end of the 18th century up to the first decades of the 20th, when many Italian cities experienced a sort of medieval revival due to a series of cultural and political reasons (see Chavarría, Zucconi

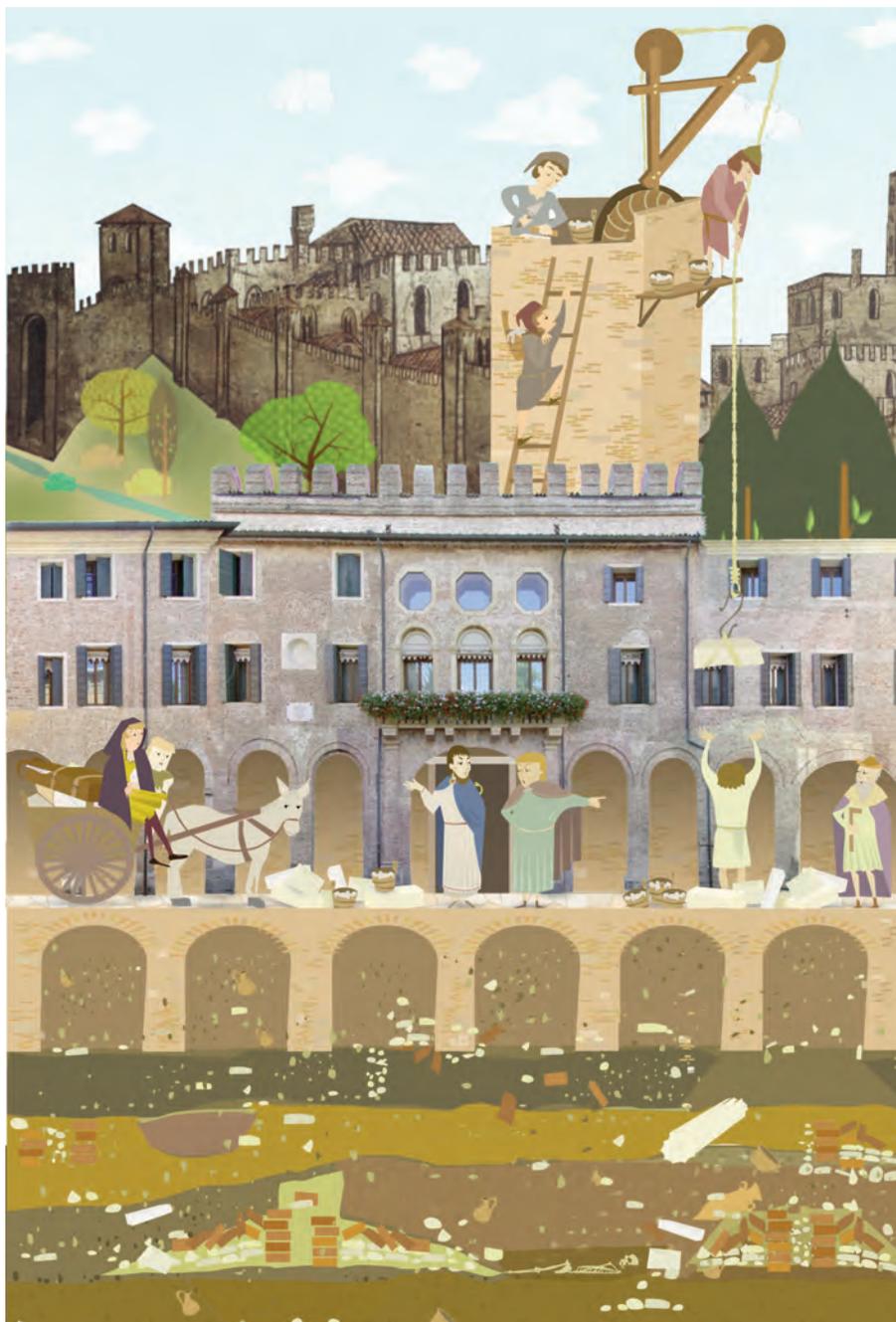


Fig. 4. One of the frames of "Medioevo APPadova", that flows in both horizontal and vertical directions (swiping with a finger on a mobile device touchscreen).



Fig. 5. One of the scenes of the first episode, which connects the suburban area (Santa Giustina church) to the Bo Tower in the centre of the city and describes different scenarios of Paduan medieval history between the 6th and the 15th centuries.

2016 with previous bibliography) (fig. 6). Having selected an itinerary, the user can start a “walk” in Padua, following the story and the main characters’ adventures through the city. This central story appears in the form of dialogues between the protagonist and other characters, some invented and some real. Motivated by curiosity or personal interest, the user can select the insights that appear on the screen or move forward to the next scene. Both general and detailed user experience paths give, in addition to a diachronic vision about the urban evolution of the city, a cross section of daily life, social, political and economic scenarios of Padua during the medieval and modern period.

“Medioevo APPadova” links medieval and modern social life to the city places, becoming a tool that not only produces a cultural value, but brings into play other stories with the aim of shaping a sense of ownership, including the diverse identities of communities, and underlines the important role of the past (Silberman 2015). The captivating pace of the story and the scrolling of the scenes convert the cultural content from a didactic to an evocative form, with the aim of reinforcing the transfer between medieval architectures and users. The informal and multidirectional knowledge process is based on emotional involvement and intuitive recognition, due to the strong suggestive power of the buildings of Padua: photogrammetrical plans of the buildings have been reused as architectural backdrops and one of the most famous medieval representa-

tions of the city (fig. 5), a 13th century painting by Giusto de Menabuoi, appears behind most of the frames in the first itinerary (fig. 6). For the second itinerary, we choose instead to use historical photographs of the city dated to the beginning of the century, collected at the Historical Archive of Padua, combining them with the photoplans and drawings. It is also important to recall that many medieval buildings mentioned in the app are part of the living present of the city “as a kind of cultural ‘biosphere’ that offers society a sense of time and historical orientation” (Zerubavel 2004).

“Medioevo APPadova” was uploaded on the web (GooglePlay and App-store) in September 2015. We publicised it mainly through the Facebook pages of AMP and Swipe Story and it was downloaded during its first month on the web by 2,500 users, reaching 30,000 views.

4. Potential uses and audience of “Medioevo APPadova”

Thanks to a high degree of interactivity and the possibility to personalize learning (Cheverst *et al.* 2000), “Medioevo APPadova” can provide tailored experiences for many different users.



Fig. 6. One of the scenes of the second episode, which begins from the Bo Tower and ends at the medieval Cathedral. The chronological context has changed: the history is centred on the end of the 18th century up to the first decades of the 20th, when many Italian cities experienced a sort of medieval revival.

Our first aim was to approach the inhabitants of Padua in order to make them aware of the significance of the large Paduan architectural heritage and to introduce them to the history of many important houses. In addition, the app helps them to expand their knowledge about certain aspects of the city which generally are not part of its “official history”, that has been usually centred on the churches (primarily Saint Anthony, followed by the Scrovegni Chapel) and other public monuments (mainly the Palazzo della Ragione and the University), which are only incidental to our itineraries.

“Medioevo APPadova” can also be used for educational purposes in primary and secondary school as it contains not only information about the architectural heritage of the city but also some historical subjects which are part of their current curricula (e.g. the emergence of the local aristocracies and the conflicts between State and Church). We have been noticed that during the school year 2016-2017 the app has been used in classes by three Paduan second-grade school teachers who were looking for “alternative” learning facilities. We received positive feedbacks, as they said it has been a useful tool both in class and in the trips.

The app can also fulfil tourism requests, aiming to increase curiosity of the medieval heritage (Bruner 2005). Previous studies have shown that many sites are selected precisely because of their storytelling potential and consequently the tourist goes where good stories are to be found (Rosaldo 1986). In this way, the app can help visitors and tourism professionals to organize and plan itineraries in the medieval quarters. The combination of scientific and anecdotal data can also help tourist guides to balance their talks, depending on the different compositions of their groups. Beyond the use of the app during the tour in Padua, the app can also be useful after the visit because the content can be consolidated and the user personalises the story further.

5. Getting to know our public

After our first tentative but successful communicative approaches, in the beginning of 2016 we felt the need to better know our audience, in order to verify the effectiveness of our communication activities and to meet specific demands in planning the future outreach activities. In Italy, questionnaires about the public perception of archaeology and heritage have been previously conducted mostly in relation to museums (exception by Bonacchi 2014). The majority is related more to the accessibility of the museums, the reasons for visiting, visitor behaviour and learning ex-

perience (e.g. Solima 2000; Bollo 2004; La Regina 2009), rather than to the general perception of heritage and archaeology by the public.

For this reason, we decided to carry out a public survey using online questionnaires, aimed to answer some basic questions about the relationship between the Paduans, their heritage and the app.

The main issues we were interested to know were:

- Do citizens know the extent of the medieval architectural heritage in Padua? Are they willing to preserve it as a fundamental part of the spirit of the city or do they perceive it as an obstacle to the development of the city?
- How do they feel about cultural and architectural heritage?
- We believe in the social participation and public access to heritage. Do the citizens feel involved in the decision making for the planning of the historic city centre? Or do they want to be more involved?
- Do they use mobile apps? How do they evaluate the app we developed? Did they learn something new from it or did they feel irritated?

To answer these questions, the questionnaire was divided into 3 different sections. The first aimed to define the socio-demographic characteristics of those interviewed: age, residence, education. Gender was considered meaningless as no Paduan monument is linked with a gendered history and males and females follow the same education path, but the other characteristics seemed important as they could influence the perception of the architectural heritage. The second section explored the perception of the historical significance of medieval architecture in the city and of the transformations that changed the city centre in the last 15 years, in fact since the beginning of the 21st century the crisis of the traditional local shops, replaced by international franchising stores, have become evident. The third section investigated the willingness of citizens to participate in the decision making process about planning the future of the city centre.

Respondents were self-recruited, through an anonymous digital questionnaire built with Google Forms and publicized mainly on Facebook, in three groups about Padua ("La Vecchia Padova", "Padova ieri oggi e domani", "Archeologia Medievale Unipd") with a large participation (c. 15,000 subscribers in total). We collected 168 answers, with a good representation of all ages, except for under-18 (just one) and all education levels. However, these selected groups are mostly composed of people passionate for the history of Padua. Even if the results can not be extended to the general public, we thought that this kind of people could have a previous knowledge and experience of the architectural heritage and could also have downloaded "Medioevo APPadova".



Fig. 7. Symbolic and favourite monuments of Padua: 1. Church of St Anthony; 2. Specola (medieval tower of the castle); 3. the Scrovegni Chapel painted by Giotto; 4. the 14th c. Clock; 5. Palazzo della Ragione.



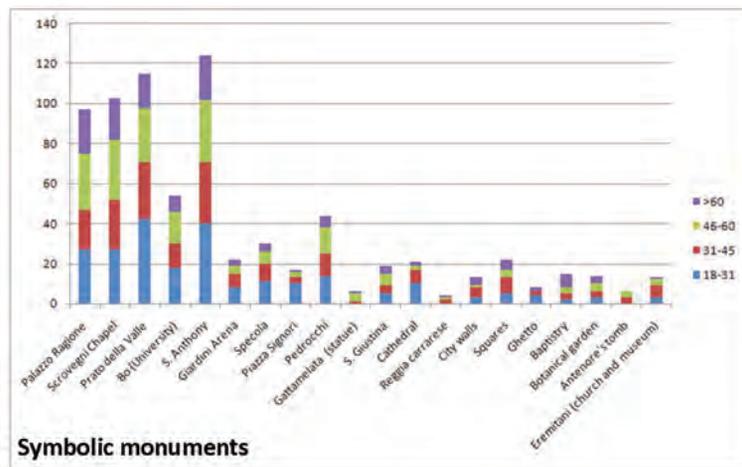


Fig. 8. Results from the online questionnaire: the “symbolic monuments” of Padua indicated by the respondents (divided by age).

Respondents have a high awareness of the historical significance of the city, thanks to the preservation of some historic architectures. In fact, people were asked to list five monuments they considered the symbol of Padua and three of the first four monuments were built in medieval period (fig. 8): the Church of Saint Anthony is the most popular, as it is closely linked to the “identity” of the city, in fact Padua is also called “the City of the Saint”; the Prato della Valle (the only monument built after the medieval period), one of the most popular squares of the city, is in second place; the Scrovegni Chapel is in third place, probably because of its importance to Italian art history as it was decorated by Giotto; in fourth place, was Palazzo della Ragione, the medieval tribunal and commercial heart of the city (still the site of the public market today). More generally, 70% of the monuments listed are medieval (6% Roman, 12% built between the 16th and the 19th c.). Some small variations in the list were related to the age of the respondents and specific social habits (e.g. people aged between 18 and 45 also listed the 14th c. Clock, which is located in an area popular for the ‘happy hour’ and the nightlife but also close to the University buildings), but the general picture did not change. Only a few people considered as symbolic the medieval castle, probably one of the most ancient and multi-stratified buildings of the city, whose future is currently under discussion in the municipality. Those who listed it particularly identified as symbolic the astronomical observatory, called “Specola”, built in the medieval tower of the castle (called “Torlonga”). Popular history links the Specola to Galileo Galilei, who lived in Padua and taught in the Univer-

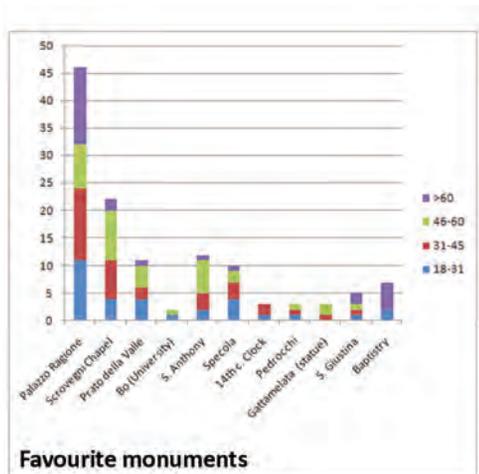


Fig. 9. Results from the online questionnaire: the “favourite monuments” of Padua indicated by the respondents (divided by age).

sity. In answer to the question of which was their favourite monument, ratings changed significantly (fig. 9): the Palazzo della Ragione is the most popular monument, while the Church of Saint Anthony is much less significant. We also noted an increased popularity of the Torlonga/Specola, the tower of the castle. Once again, some answers seem to be age-related: the Clock is popular only for people between 18 and 45 and only few people of the same categories (5) listed the Church of Saint Anthony. This is probably due to many factors: the church is located outside the routes commonly frequented by young and middle-aged people, the traditions related to the church (e.g. a great procession on June 13th) are perceived as old-fashioned, and finally the number of young and middle-aged holding Christian beliefs has decreased in the last 15 years.

The perception of the historical significance is however high: 96.3% agree to rate Padua as *historic* city (72.4% completely agree, 23.9% agree). Surprisingly, considered the listing of the monuments, the perception of a *medieval* city is a bit low: on a scale from 1 to 5, 26.4% rated 5, 40.5% rated 4, 21.5% 3, 8% 2, 3.6% 1 (fig. 10). Even more surprisingly, people have a fairly strong perception of Padua as a *Roman* city (17.3%: 5; 24.1%:4; 30.4%: 3; 22.1%: 2; 6.1%: 1), even though only two standing monuments still exist (the arena and a Roman bridge – now underground, but occasionally open to the public thanks to a local volunteer group). This perception is probably due to long-lasting and effective communication activities carried out by the Civic Museum. It could also be related to the fame of the Roman writer Titus Livius whose anniversary is being celebrated this year.

Regarding the respondents' confidence with cultural digital tools as mobile apps, 59.4% have downloaded a mobile app at least once. Surpris-

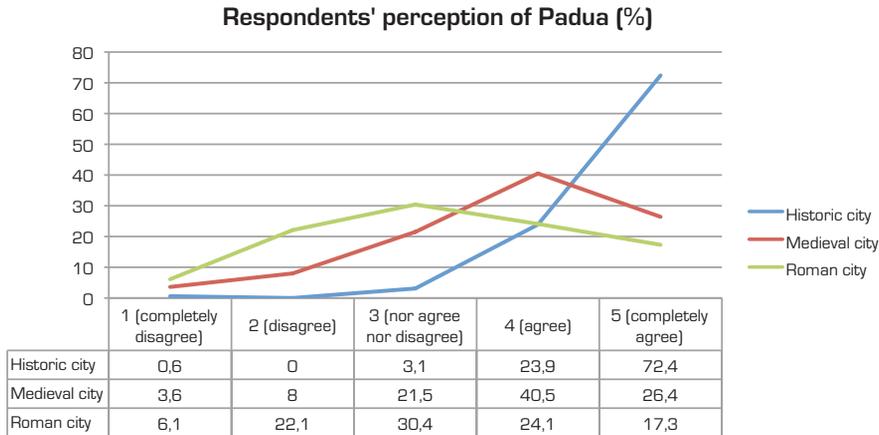


Fig. 10. Results from the online questionnaire: respondents' perception of Padua.

ingly for us, results showed that older people downloaded cultural apps more frequently. We asked what kind of app the respondents had downloaded at least once, with a multiple choice question. The most popular downloaded apps are related to visits to cities (83.3%), and museums (76%), with much less popular apps including cultural apps for children (5.2%). This is also due to the fact that this kind of app, in Italian, is rare.

We also investigated reasons for not downloading cultural apps. 47.8% of those who said that they had never downloaded an app indicated as the main reason the fact that they did not know of the existence of this kind of app. 20.3% did not have a smartphone/tablet. 11.6% of respondents were not interested in this kind of app, and 7.2% declared that these apps are boring (the rest answered "other").

Twentyfive respondents had downloaded "Medioevo APPadova": they are characterized mostly at middle/high school level. We also investigated their evaluation of the app: they generally gave a positive evaluation of their experience. On a scale from 1 to 5 (1= not positive at all; 5= very positive), 8% rated it 5, 52% 4, 32% 3 and the rest rated it 1 and 2. 68% also generally considered the experience *instructive*. We also asked if they learned something new and 84% answered yes. We investigated what they had learned from our app and substantially verified that we have reached the objective of communicating the importance of the medieval residential architectural heritage in Padua. We received some pleasing comments: "I learned places and historic people I didn't know before" (31-45 years, lives in a town in Padua province); "It brushed up on what I learned before: I'm a history-fan and the app gave

me the opportunity to have more details" (aged over 60, lives outside Italy but comes from Padua). We asked if they found any aspect annoying them and only 4 comments were made: two said that the app was demanding on smartphone memory, one asked for an extension of the places within the app and the last one suggested to improve the app adding a reference to the map of the contemporary city to help users to orient themselves. We immediately accepted this last comment and we improved the app with a tool which links the path of the medieval character with the map of the contemporary Padua.

Finally we asked also how they felt about their relationship with the decisions which are taken in relation to the Paduan historic heritage and how much they would like to take part in the changes which affect it. 49.7% of respondents said they were willing to participate more to the decision making process regarding the city centre and the architectural heritage. Traditionally, the most practical way to do this, is to be part of a volunteer group, as many groups indirectly participate, acting as facilitators or influencing public opinion, and by spreading information about current issues under discussion by the municipality. This is becoming outdated, however, and in fact only 8.8% of respondents were members of a volunteer group. Moreover, over half of these are aged over 60. This suggests that we must pursue and improve non-traditional outreach activities, such as mobile apps, as a way not only to communicate research to a non-specialized audience, but also to seek a deeper participation by the community. Engaging digital technologies related to historic heritage of the city centre targeted to young people could in fact establish a link between them and the civic life of the community, fostering their participation and their involvement.

Audience feedback, although based on a small group of passionate people, provided stimulating information to immediately improve the app or to develop the future communication strategy of the project. Some proposals were immediately accepted to improve the app (and this is one of the benefits of working with digital products), others were considered for future products.

6. Meeting the needs and expectations of the public

One of the lessons we learned regards the importance of knowing our public before the development of the communication tools, in our case the mobile app, in order to better meet the expectations of interested people. Therefore, when we had another opportunity to design an app related to the historic landscapes of the Euganean Hills, we planned

a previous public survey, carried out between the end of 2016 and spring 2017. The objectives were: (1) to investigate the familiarity with cultural mobile apps; (2) to understand what people would like to find in a mobile app related to archaeology and to the Euganean Hills; (3) to know the places of the territory particularly valued by the local communities; (4) to know how people would use a cultural mobile app based on storytelling.

The territory we wanted to communicate is located some 15-20 km southern from the city and has always been historically linked to Padua. It has been protected by the presence of a Regional Park since 1989 and therefore it still preserves large natural reserve being an ideal walking or biking area. However very few people is aware of the history and cultural remains of this territory related to the richness of landscape and architectures.

In this second survey the section related to the socio-demographic characteristics included age, residence, education and gender, in order to verify if some gender-related differences exist. Again, the questionnaire was digital and anonymous, built with Google Forms. Respondents were self-recruited, and again we publicized the survey on Facebook, in several groups related to Padua and its province. We collected 213 valid responses (out of 228 total answers). The group of people aged under 18 was underrepresented, in fact only 3 persons participated to the survey (1 male and 2 females). As this number was not considered statistically significant, we decided to exclude this group from the analysis. The majority of respondents' age ranged from 18 to 50⁵.

Firstly, we asked whether the respondents have ever downloaded a touristic and/or cultural app before, or no. A quick glimpse to the data shows a medium use of this kind of app, as 55.3% of the sample has never downloaded a touristic/cultural app. Analysing the responses in relation to age and sex, we saw that 65% of the people elder then 65 never downloaded these mobile apps, but surprisingly 20% of males in this group said they download touristic/cultural apps once a month or every two months. Between the group aged from 51 to 65, 11% of the males often download these apps. The highest rate of use is however between females from 18 to 65 years old, in fact 55% has downloaded these apps at least once. We investigated the reason for not utilizing this digital tool using also the previous survey to draw the multiple choice answers and the four most important causes were: that these mobile

⁵ Gender distribution of the sample: 56.6% females, 43.4% males. Age: 1.3% under 18 years old, 32.5% between 18 and 30 years old, 31.1% between 31 and 50 years old, 23.2% from 51 to 65 years old, 11.8% aged over 65.

apps are too demanding on smartphone memory (31% of the total sample), that respondents are not interested in these tools (23%) or do not have the infrastructure useful to them as smartphone and/or tablet (19%) or have never heard about these apps (17%). The first cause was particularly important all groups (males/females of different ages) without any significant distinction. The second one is particularly important for males aged 31-50. Some men aged over 51 (9% aged 51-65, 13% aged over 65) addressed this missed use to their lack of confidence with technology. The third reason was indicated by all groups except females aged between 18 and 30. The fourth is particularly important for males aged 31-50 (20%) but also for females aged 18-30 (10%). Another reason indicated by all groups is that touristic/cultural apps are not useful. Only few respondents said that these tools are often expensive (mostly men) or boring (6% of females aged 31-50 and 9% of males aged 51-65). Some people (males and females aged 18-30) also added that these apps are poorly advertised, an aspect we investigated further, as we asked with a multiple choice question how people who downloaded a touristic/cultural app at least once knew its existence. 48% of respondents said that they saw an advertisement on the social media, instead 31.4% knew the app looking at the app stores (especially males aged 18-30 and over 65). A significant percentage came to know the mobile tool by word of mouth (27.5%, especially females under 50 years old) or looking at web pages (23.5%, particularly men). Far less significant seems press-related advertising especially between the youngest (a bit more for males aged 31-50).

In order to compare the idea of our mobile app to other successful apps we asked the name of an interesting cultural app. Only 36 people, mostly coming from Padua, answered this question and pleasantly 9 of them said "Medioevo APPadova". 3 recommended a recently realised app related to the World Heritage site of the Paduan Botanic Garden, 2 an app related to the history of the walls and gates of Padua. 4 people instead cited the app related to tourism and events in Padua, managed by the town council. The rest recommended general touristic apps such as izi.travel, maps.me, tripadvisor or related to specific cities or regions (e.g. Venice, Alsace).

Focusing on archaeology, we asked what people would like to find in a mobile app devoted to this argument (multiple choice question). The most popular answer was "fun facts, legends, folklore and traditions" (62.3%). In second place, 53.9% of the respondents answered "having general information about the area where I live". 48.7% said it could be useful to have general information about an area to better organise a trip or a journey. A bit less popular (46.9%) is the possibility to visualize three-

dimensional reconstructions. Less than half of the respondents (40.8%) would like to have in-depth information. Far less interesting seems to be the possibility to play games, even though people younger than 18 were not part of the sample. No significant sex- or age-related differences were found.

In the second part of the survey we specifically focused on our app, notifying the respondents that AMP is working on a non-commercial mobile app about history and heritage of the Euganean Hills. We firstly asked what people would like to find out in this app. Again and not surprisingly, most of the people (64.9%) said they would like to know more about curiosities and legends. Many of them (respectively 64% and 63.2%) would be pleased to find in-depth information about important places, such as the Monastery of Praglia (a famous sanctuary which still nowadays is very popular), and about poorly known places. Equal percentages of choice (60.5% and 60.1%) were collected for the answers “links between the local history of the Euganean Hills and the general history” and “comparison between present and past landscapes”. Medium success obtained the answers “information about famous historic characters such as Matilde di Canossa” (55.7%) and “information about minor and poorly known characters” (47.8%). For all these answer no sex- or age-related significant differences were identified. Far less popular was another option, i.e. “reference to rest stops, such as coffee and wine shops, restaurants and so on” (38.6% of the total sample), much more popular between the women than the men.

We also investigated if people would particularly recommend a place in the Euganean Hills (if they had previously visited the area) with an open question (fig. 11). People coming from outside the province of Padua nominated the most famous touristic places: Arquà Petrarca (the town where the famous poet died), the Monastery of Praglia and the Castle of Catajo (built in the 16th century). Those coming from the province of Padua recommended the widest variety of places, but beyond Arquà another place also emerged, much less known: the Monastery of the Olivetani on the Mount Venda, built in 1229 and now ruined. This place is at the end of an hiking path and was also visited by the poet Percy B. Shelley in his Grand Tour. The citizens of Padua particularly appreciate the Monastery of Praglia and a small town in the Hills, Cinto Euganeo, and a hiking place nearby, the “Busa dei Briganti”, a place that legends link to 19th century bandits.

In a further questionnaire (this time face to face) we specifically focused on local population who lives in the Euganean Hills. Respondents listed a wide variety of places, but mostly (32 out of 100) answered again Arquà Petrarca (fig. 12). But it is also important to note that many





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Fig. 11. Recommended places of the Euganean Hills: 1. view from Mount Venda; 2. Monastery of Olivetani on Mount Venda; 3. Monastery of Praglia; 4. the house of the poet Francesco Petrarca in Arquà Petrarca; 5. Catajo Castle.



5



Fig. 12. Results from the face to face questionnaire: recommended places of the Euganean Hills. Red dots: small towns; green dots: landscapes; blue dots: monuments. Bigger dots correspond to more respondents.

people (31) named the different hills explaining that they do not love a single place but the general landscape of a specific area (e.g. Mount Venda and Faedo, in the heart of the hills, Mount of Madonna, a popular hiking place, Mount Ricco).

In the third part of the survey we concentrated on the use of digital tools. We asked if people would like to use apps also by computer, even if the touch functions linked to the tablet should be disabled. Only 17.1% of the total sample (most of them females aged under 65) answered “no”, 38.6% answered affirmatively, while the rest remained indifferent. Finally, we investigated the potential use of the app, with a multiple choice question. 51.8% of the respondents would use it to better plan the trips at home or during a travel (this last option was especially chosen by the youngest). People aged over 65 would use this tool mostly at home, to know something more about places they like (answer chosen by 42.1% of the sample). Far less popular were two other options: “at home/school, to help children learn something new while entertaining them” (26.3%, mostly females) and “at home, in my spare time” (23.7%, mostly aged over 65).



Fig. 13. Rocca Pendice and Castelnuovo in the app "Walking in the Euganean Hills".

7. Appasseggio sui Colli Euganei / Walking in the Euganean Hills

The appreciation of "Medioevo APPadova" led us to plan the Euganean Hills App following the same storytelling philosophy although improving it by clearing its function and peoples's expectations about it: it is mainly created for the local communities (including schools, stakeholders, cultural groups) in order to empower them with a history (very poor known) of their own territory which they can later use for their own interests (linking traditional local products with a specific history, developing new touristic products, educational activities, among other possibilities)⁶. The objective of the app is not being an encyclopaedia of the "whole history" of the Hills, but just to deep in a very short period of time (the app is focused on the 11th century with some mentions to Roman and Lombard periods as well as more recent developments) which is the most unknown by inhabitants but at the same time one that has left relevant evidences in the landscape.

In the app, designed as a journey, we imagined a historical character travelling from Padua to the Hills meeting people from that period and passing through landscape and architectonic spots of the territory which

⁶ The app was created as an on-line deliverable of the MEMOLA project and its contents were also used for the Cultural Route of the Euganean Hills published in the MEMOLA webpage (www.memola-project.eu).



Fig. 14. Arquà Petrarca in autumn in the app "Walking in the Euganean Hills".

had been selected by local people or that were unknown by them although historically important for the territory. We considered aspects that had been underlined by local people such as the characteristic morphology of the hills or the spectacular changes of colours of nature especially in autumn (fig. 14). Several information were added about legends, folklore and traditions, many of them prepared by students during a didactic activity carried out during the beginning of 2017 in 5 second-grade schools located in the area.

Planning a survey before designing the digital tool has been extremely useful. As we have told, it gave us lots of data and suggestions that we used to create the app, still maintaining our philosophy of storytelling. We had the chance to better meet the needs and expectations of the audience who is going to benefit from it. It also gave us some suggestions for the future communication strategy of other projects as well as confirmations to some ideas we already had. For example, in the final comment section someone suggested to translate the app also in English or to add a voice which we have already added. Someone instead, enthusiast for the project, suggested to replicate the app and link the journey of our character with Venice, in order to tempt tourists that visit the lagoon city of art to visit also Padua and the Euganean Hills.

8. Conclusions

One of the objectives of the AMP projects in the last years has been to engage with a different kind of public in multiple ways, from traditional activities (lectures, guided tours), to innovative digital instruments (WebGIS, thematic map, apps) which involve their active participation in the creation process by implementing their contents. Digital tools seem to have the richest potential, as they gather large communities and permit engagement at different levels, from “many-to-many” communication facilities to the co-creation and co-design of the research and the content. The Swipe Story Apps (“Medioevo APPadova” as well as “Appasseggio sui Colli Euganei”) are elastic instruments, which attract different audiences, as they link entertainment (one of the reasons for using digital tools, as stated by Richardson 2014, p. 169) and historical information. The success of these apps must be sought in their storytelling narrative, that provides an immersive experience for the user, a kind of experiential guided tour back to the Middle Ages.

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