

Edutainment, cultural innovation and social inclusion. Fort360, a project for cultural heritage enhancement

Edutainment, innovazione culturale e inclusione sociale. Fort360, un progetto per la valorizzazione del patrimonio culturale

Fort360 project is a cultural initiative that receives the main directives of edutainment processes, trying to provide an answer to the necessity of a capillary system of information and awareness about the dismissing cultural heritage.

The proposed study – carried out in the Fort Bravetta, Rome – presents a video where the educational aspect, related to the historical and architectural site contents, is strictly connected with the playful and emotional quality, resulted from a VR interaction with a panoramic video.

This first case study focuses on the use of low-cost digital instrumentation and tries to improve the value of culture from the bottom, proposing an alternative way of cultural heritage enjoyment, based on participation and on interdisciplinarity of the proposed contents.

Il progetto Fort360 è una iniziativa culturale che raccoglie le principali direttive dei processi di edutainment e tenta di fornire una risposta alla necessità di un sistema capillare di informazione e sensibilizzazione sul tema del patrimonio culturale in dismissione.

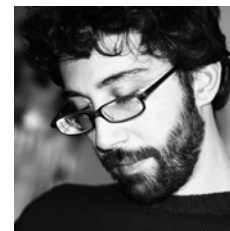
Il caso studio proposto - realizzato presso il Forte Bravetta a Roma - presenta un video dove l'aspetto educativo, legato ai contenuti storico-architettonici del luogo, si fonde con quello ludico-emozionale scaturito dall'interazione con un video panoramico mediante un visore VR.

Questa prima sperimentazione pone l'accento sull'utilizzo di strumentazioni digitali low-cost e tenta di recuperare il valore della cultura dal basso proponendo una alternativa modalità di fruizione dei beni culturali, fondata sulla partecipazione e sulla interdisciplinarietà dei contenuti proposti.



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1. INTRODUCTION

“Adequate forms of public enjoyment and full opportunity to study cultural heritage must be ensured” [1] What is a cultural asset? No, this is not a rhetorical question, too easy to be answered by authorized personnel or by those – naturally and personally - interested to cultural heritage that our country offers.

To be really valued, this question should be posed to large categories of civil society, to pupils, to whom is not spontaneously attracted to exhibitions, archeological sites, books, architecture, archives, urban and natural environment.

It is right to affirm that Italy’s main resource is its cultural assets, first in the world for cultural sites nominated World Heritage by UNESCO: 51 out of 1031, before China (48), Spain (44), France and Germany [2] (41); but how does this heritage really affects society? Each cultural asset in its widest meaning, has an important innate value, but as long as it is not enjoyed by a large public category, it stays exclusive, even inaccessible. Nowadays, it is necessary to re-imagine observation, research and narration methods of material and immaterial cultural assets.

In this context, the development and adoption of digital applications has sensitively modified the possibilities of access to culture, guaranteeing extension and diversification of its ways of fruition. The construction of mixed languages, where visual communication intersects interactive fruition system, gives the user the chance to personalize its own experience in a brand new sensorial participation.

The use of immersive or virtual systems - a resource still developing in the field of spread and enhancement of our country cultural heritage – seems to be the innovative way which – if followed – might lead to a new era, where cultural heritage could be accessible to many with little effort.

Among the companies which stood out for their use of innovative digital systems for the dissemination of knowledge of our territory’s cultural assets, we mention: ISIPU is an app realized thanks to the partnership between the Lab of Digital and Visual Studies in Architecture [3] and the Italian Institute of Human Paleontology, where the displaying augmented reality – along

with a 360 degree view – allows a certainly original communication of some pre-historical deposits rediscovered within Anagni (FR) basin; Oniride [4], - an interesting Roman company by Lazio Innova - realizes virtual applications about archeological sites, museums, monuments, and public spaces characterized by high cultural value, in order to improve the enhancement, the safety and permanent consumption by the public; finally, Google Art Project (fig.1), which - through the collaboration between Google and the most eminent art institutes in the world - digitalized over 6000 art pieces, viewable through panoramic tours and – at the same time – simplified the diffusion and knowledge of an extraordinary artistic inventory.

The virtual reality technologies are in an experimental phase also at the education level [5]: according to Indire, the National Institute of Documentation, Innovation and Didactic Research, the project Immersive Teaching aims at exploring and strengthening in the educational field the potentiality of the so-called “virtual worlds”, where users – connected through avatars – can explore settings, project activities and communicate with other users. Google Expedition Pioneer Program – for example – envisages hardware and software kits in the schools, in order to let the students travel - also for educational objectives – in places difficult to reach: museums, archeological sites or far countries.

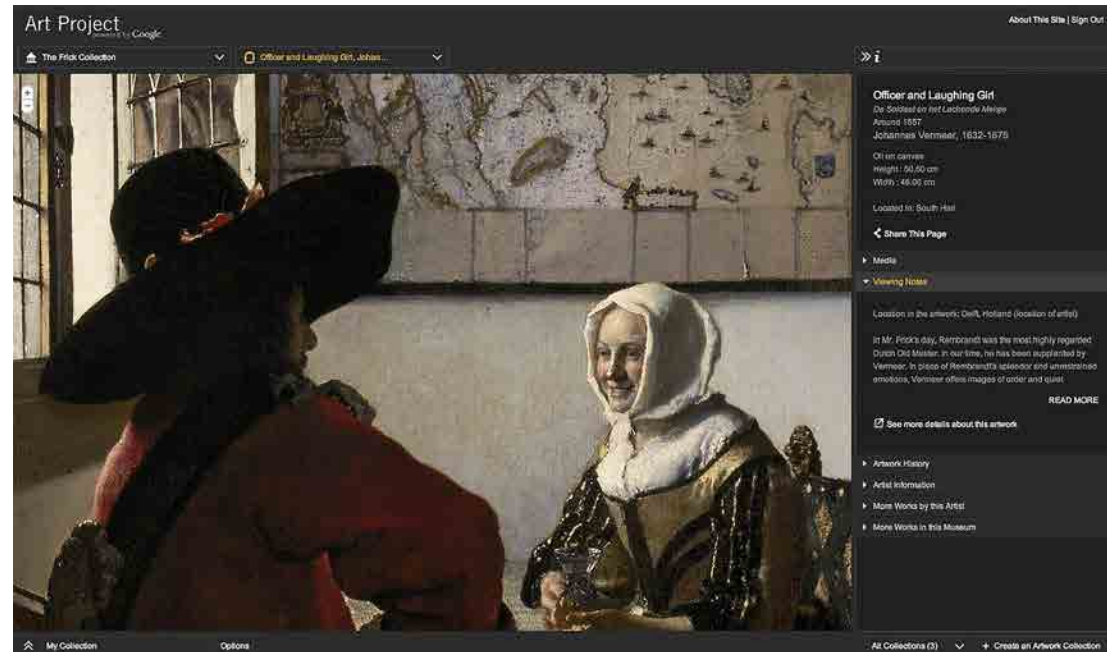


Fig. 1. One of the pieces within Google Art Project database, Johannes Vermeer, Officer and Laughing Girl.



Fig. 2. View of Fort Bravetta in the south-western area of the city.

2. FORT360, A PROJECT FOR THE PROMOTION OF FORTIFIED ARCHITECTURAL HERITAGE

The occasion for the realization of the project is part of the activities supported by the Progetto Forti Association [6], which – in the last ten years – has conducted many studies and disclosure activities about Rome fortified architectural heritage. Forts – dating back to the end of the 19th century – were built according to those defensive logics that had proliferated all over Europe since mid-800. Arranged in a ring-shaped pace around the city of Rome, they were placed in open countryside, 5-6 km away from the Aurelian walls.

Today these places, mainly absorbed by the suburbs' buildings, live a period of transition. Many of them were used as barracks in the Twentieth century [7] and are heading towards a gradual dismissal process and subsequent 'reutilization'.

The Forts restoration meets today important economical, social and cultural expectations. The substantial architectural interest, the evident presence of a historical memory and the high availability of new spaces and green areas in urban contexts, make these places an important test for the city near future. The fort

Bravetta (fig. 2), placed in the western sector of the En-trenched camp of Rome, presents some key features that have inspired and determined the project realized. The structure is managed and maintained by Rome Servizio Giardini, which organizes guided tours inside and outside the Forts, prior to individual or group reservations. Yet, there is no form of enhancement of the contents or spaces that have a long-term vision and aspires at the place requalification.

The project aims at filling a gap in the management of this asset and tries to offer a different and alternate possibility of use, on the basis of a spontaneous – as much as organized – need for communication and awareness on the heritage.

In this scenario, the Fort360 project collects the main guidelines of edutainment projects and – attempting to give an answer to the need for a detailed system of information on the theme – is directed to the dissemination, the awareness and the involvement of an audience of citizens as wide as possible.

Fort360 offers a narrative format that places the visitor at the centre of the communicative process and through digital equipment - whose implementation will go hand-in-hand with the project development -

tries to recover and describe the historical, architectural and naturalistic contents of these places, in order to make them a cultural location, as it is recognized under the Code of Cultural Heritage [8].

If we want to tell something innovative, it is also necessary to observe it in an innovative way. The proposed narrative excursus ranges among historical events, the architectural components related to the site and defensive strategies of the late Nineteenth century that found the three macro-areas through which unfolds the case chosen.

The editing of some panoramic shots (figg. 3-5) realized both inside and outside the spaces of the Fort, is supported by a narrative of the events not notional, but evocative. The user is not subjected to the tour passively, but instead has an active role, being able to look at 360 degrees.

A narrator accompanies the visitor and, in a wider idea of the experience personalization, the use of a VR viewer - a Google Cardboard - invites the user to explore the surrounding environment, letting her/him choose what and when to display.

The shots give a display of the surrounding area almost complete: indeed, the equipment [9] assembles a con-

vex lens able to catch images around the shooting station, covering the entire azimuth angle; vice versa, the device cannot cover the entire zenith angle, reaching a maximum value of 214 degrees (fig. 6) and causing the display of a black stripe at the bottom of the videos made. These are going to map the spherical environment within which the viewer can rotate and turn the eye. These are going to map the spherical environment within which the viewer can rotate and turn the eye. Once the video is edited and imported in the corresponding displaying application, it undergoes an automatic splitting process (fig. 7 and fig. 8), aimed at simulating - thanks to the lens supplied with the viewer VR [10] - a three-dimensional image reconstruction, as occurred in the Nineteenth century stereoscopes [11] (fig. 9).

3. DESIGNING FOR AN EXTENDED AUDIENCE

An added value of Fort360 concerns the process by which the project was inspired by an independent initiative and is part of a cultural background whose 'production from the bottom' represents the most important element.

The use of technologies easy to find and the procedures for maximum viewing spreading, make this work a clear example of how the participation process to the enhancement of cultural heritage is not the exclusive domain of great stakeholders [12]. Small and medium-sized companies, local associations and private citizens can - by opportunity or vocation - meet the need for requalification of a significant part of the cultural heritage that - as it does not offer immediate and tangible reputational benefits - is excluded from the attention of big companies and institutions operating in the industry of cultural assets.

In this regard, it seems appropriate to mention the case of loans extended within the program Art Bonus, which with a single subscription concerning large Italian companies (Unicredit with 14 million euro for the Verona Arena), proved the exceptional operation with regard to the companies, bodies and private citizens that - by a 34 million euro funding - contributed to the enhancement of cultural heritage, starting 272 initiatives [13].



Fig. 3. Equirectangular projection of the spherical panorama just outside Fort Bravetta entrance.

Fig. 4. Equirectangular projection of the spherical panorama inside Fort Bravetta troop shelters.

Fig. 5. Equirectangular projection of the spherical panorama outside Fort Bravetta.

The experience carried out reveals the dual role of urban regeneration, in according to local project inputs, can be beneficial both in the return of a cultural asset to the community and in the renewed confidence in the ruling class and political choices that believe and support such an initiative.

This phenomenon - particularly emphasized in the big cities where abandoned and discontinued spaces represent an important part of cultural heritage - clearly

arises where citizens are given the chance to participate to new and alternate forms of management [14] and use of cultural heritage, in direct connection with the dynamic of sharing and collaboration by creating new forms of social inclusion.

In this respect, low-cost digital applications can be common ground for such cultural tendencies and represent one of the possibilities to activate any different and multiple realities working on the territory.

The site chosen for this first trial is a state-property and difficult to access: Fort360 wants to promote knowledge, addressing a Wider Audience [15], in order to ensure a more inclusive and participate use of the cultural asset.

Reasoning in the view of a Wider Audience means – on the one hand – overcoming the concept of designing for the standard that tends to ignore differences and to turn to an abstract and ideal public and - on the other hand the concept of designing for disability, which instead outlines the differences and creates categories of users.

This goal also responds to the need for an innovative approach that seeks to include as many people as possible to achieve Total Quality, quality of life perceived by all people. This is not, however, about offering a service providing solutions for the removal of architectural barriers, but also trying to encourage new forms of social inclusion for those unable to get in touch with the subjects examined, due to organizational, bureaucratic and of various kinds reasons.

The accessibility problems of the Forts of Rome are also linked to their state of preservation and use: currently, most of them are disused and are not able to accommodate any services to the citizenship. This problem is linked mainly to the presence of impassable military areas or to a widespread state of degradation which makes the spaces available deficient in safety and health conditions.

The project wants to give an answer to this situation of current immobility and propose a different use of the fortified heritage itself as an opportunity for the redevelopment of these places and neighborhoods in which they are located. In this sense, it offers an opportunity to re-read the urban space out of the center-centrism of cities and recognizing the historical and cultural value of all urban landscapes and communities that identify themselves in them. Precisely for this reason these places can aspire to have a greater role in the panorama of the Italian cultural heritage, representing to some extent the history of the unification of Italy and preserving important stylistic features typical of fortified architecture codification, of which major Mariano Borgatti and Captain Battista Zanotti [16] are among the most outstanding exponents.



Fig. 6. Video management software interface on the equipment used.

In this regard, the project is well suited to the communication of culture in the field of education, where the immersive approach enables active use and the emotional component is to transform the visit into a game. For a child - as well as for a teenager - the exploration of a real space that is not physically surrounding her/him, and the possibility to observe it by a panoramic view, make the learning time interactive and playful. This has had concrete evidence during the 2016 edition of the Maker Faire (fig.10), the technological innovation fair involving the most varied fields of application, ranging from the medical sector to the food, from the recreational field to the artistic one.

Here, Fort360 project - presented within the Cultural Heritage category - challenged itself with users of all ages and has had the opportunity to test the effectiveness of the contents proposed, obtaining important information on the ways of interaction offered and on possible developments application.

Especially the first day - dedicated exclusively to schools - offered the opportunity to test the project with the sensitivity and curiosity of an audience between 11 and 18 years. Many kids let themselves be guided within Fort Bravetta living keen experiences they have had the pleasure to share with their classmates and from which reluctantly moved away, crying of protest: "Wait, I am listening to the story!".

Proposing an alternative educational experience, it has been actively observed the strong impact of the introduction of technology at the service of culture, leaving to imagination new developments and alternative applications in the field of education and training.

Aware of the possibilities that new technologies offer for the implementation of the use and dissemination of knowledge of the historical and cultural heritage, we believe that in addition to turn to civil society, it is necessary to create synergies with the various institutions in charge of culture. This means - in the first place - turning to institutions that rotate in different ways around the Forts, but also to the organizations - public and private, profit and non-profit - of the cultural and social sector with which starting partnerships and collaborations.

In this sense, the patronage of the city of Rome Department for Cultural Development, of Fiaba Onlus



Fig. 7. Display within the application through use of Google Cardboard; entrance gate.

Fig. 8. Display within the application through use of Google Cardboard; parade ground.



(the Italian Fund for the Elimination of Architectural Barriers) and the support of the Unimore Master in Public History for the realization of the pilot project on Fort Bravetta, presented at Rome Maker Faire 2016, represents a good starting point and suggests the way to pursue.

4. A METHOD BASED ON INTERDISCIPLINARITY

Fort360 aims at being not only a project of use of cultural heritage, but rather a method. In Europe there is more and more attention to the construction of super-structural methods, imagined to expand the use of disciplines that have an important social value, but which may not be able to express it, due to a limit in

the languages and in the approach to research. Public History [17] is now an increasingly popular and successful method to address the research and dissemination of history and cultural heritage. In Italy it is in a phase of experimentation and definition [18]. Any place, be it urban or natural, brings with it a story, a matter of interest that must be expressed in order to offer the user a more profound cognitive experience. With this in mind, it is natural to imagine the need to investigate an architectural asset or a place of memory with an interdisciplinary approach able to build a complex narration, where the data of interest is not claimed on one aspect: the architectural, historical, artistic or environmental, but it combines the different research fields in order to involve a variegated public

[19]. To make this shift, it is mandatory to intervene at first instance on two levels penetrating one into each other: observing the cultural asset in an innovative way and building a new grammar, flexible, resilient, capable of being understood by anyone and every time in a different way [20].

By expanding the observation point, the very essence of the observed space changes and this - for someone who desires to spread the cultural heritage to an audience as wide as possible - is an essential prerogative. If, then, we state that broaden the viewpoint of a cultural asset implicates a positive change of the narrative and substantive result of the asset itself, it is necessary to understand how to build a system of languages variable suitable to the maximum understanding of the message produced.

Fort360 has decided to place side by side a narrative simple but composite in the themes and the use of an innovative and low cost technology, simple and easy to use.

Making 360 degrees shoots requires the use of a specific technical - but not complex set and establishes the first step to make a remote fruition immersive.

Once a content or a message is built, it is now necessary to find a medium, a contents channel suitable to the use being imagined. Even at this stage, central is the role of digital technologies and - once again - of the most common object in the pockets and purses of men and women: the smartphone.

The message is conveyed through a free application and made immersive by the use of a VR viewer that despite appearing as an expensive and complex instrument, in its cardboard version has a very low cost and is made of "classic" materials such as cardboard and glass.

In the construction of an immersive reality, the medium tends to disappear, the user feels incorporated in the virtual environment through multisensory information that alienate her/him from the real context.

The narrative takes a shape more evocative rather than informative, more particulate than linear in relation to the transverse characteristics of multimedia languages that activate different sensitivities, generate synesthesia, involve the emotional component of the viewer, until they make her/him active.



Fig. 9. Stereoscope for the three-dimensional reconstruction of a subject, starting with two different frames.

Oswald Spengler [21], thinker and history philosopher of the late Nineteenth century highlighted the need for giving a human face to the historical facts and putting them in a context of sharing, even emotional, with those who have not lived that past but are observing it. Also Deltey, philosopher, psychologist and founder of German Historicism, spoke of 'Erlebins' (lived experience) to affirm that the contents of knowledge are not accepted in a passive way, but caught vividly in the flow of consciousness. The Erlebins are connected temporally in a retrospective and projective sense, so that originally there are no isolated 'Erlebins', but they are a real flow within which feelings, violations and knowledge are distinct.

The 'Erlebins' is the essential condition for grabbing all that is life, from the individual one to the historical, artistic or religious reality that escapes the analysis of the natural sciences.

The experience of Fort360 aims at achieving this goal, to involve the user on an emotional level through a careful research, so that she/he can fit into that retrospective and projective flow which makes the observation of a place like listening to a story clear on many levels.

Fort360 does not only want to be useful tool of analysis and comprehension of the innate result of a cultural object, but wants to be able to reach those physically unable to enjoy a place in person. The use of a technological mean as widespread as the smartphone makes real the possibility to put in the pockets of every citizen an extensive catalog of narratives referring to places and stories that make up the society we live in.

Fort360 participates in making a smartphone an object for the construction of knowledge and critical thinking, increasing awareness on the value of our country cultural heritage.

The immediate effect of the implementation of this process is to increase the use of the sites, making them accessible on multiple levels. Living the immersive experience will be interesting both for those who already know the history and places narrated and for those who have physical impossibility, therefore find in the immersive reality the best way to live the experience of a place where they would never be able to go.

5. CONCLUSIONS

Fort360 is a method, therefore, by its very nature implementable and replicable, as well as potentially subject to different uses.

Aware of this, in these final lines we have thought to share the important ideas that we have identified, in order to obtain a greater level of involvement and interactivity within the service.

Experience is perhaps the central term on which to build this reflection, convinced that it will not be definitive, but rather evolving.

In an immersive reality system, the visitor perceives the environment and objects as present and this feeling is functional to the quality and quantity of sensory modalities used, as well as the interactivity that the user can generate with the surrounding space. Therefore, the deeper and the more composite the experience lived by the user is, the more the environment

and the surrounding details seem familiar, thus easier to implement and understand.

To significantly insert the user into the narration, it is plausible to imagine different elements that can capture her/his attention and to propose as well the ability to follow or not a suggestion that will have either visual or auditory nature.

A sound, a word, a highlighted point or an alternative route. These and many others can be the elements that will guide the user in directing the storytelling and increasing he/his attention, knowing that she/he has not only an active role, but a critical one, in order for the narration to take place.

The applications added can be various, dramatic reconstructions, film footage, period films, or even three-dimensional reconstructions in overlapping, as many can be the fields of use: the Fort360 project, even before being a product, aspires at being an innovative method of management and enhancement of cultural heritage,



Fig. 10. Fort360 at the Maker Faire 2016, one of the moments of the first day, devoted to schools.

so that it can be replicated and developed according to the needs and areas of application.

The project aims – in line with the current experiences that are proposed in terms of didactic – at being an educational innovation element by sharing the opportunity to live in a deeper and more active way a place or a good that might otherwise be inaccessible: to spread an easy and extensive knowledge of cultural assets, making a critical use of technology, imagining that every element of culture and beauty of this country can be within reach.

Subsequent developments will certainly attempt to certify the scientific methodology of the process and deepen the participatory vocation of the project. If the study and experimentation of new techniques for acquisition and return of the product aim at creating a product gradually more and more eye-catching and full of interactions, the need to bring the experience so far conducted in different forms and contexts perfectly fulfills the intentions behind the initiative so far described.

The final formalization of technical procedures will eventually make possible to replicate and test the project on other different sites of interest, and - trying to promote the use of equipment easy to find and use, we advocate the creation of a database that can be shared and exported.

NOTES

[1] Atti della Commissione Franceschini, Parte prima - Beni culturali. Titolo I, XVII dichiarazione: Godimento pubblico dei beni culturali.

[2] National Institute of Statistics, Paesaggio Patrimonio culturale BES 2015, p. 212.

[3] DiSDRA Department, "Sapienza" University, scientific coordinator prof. Tommaso Empler.

[4] www.oniride.com.

[5] See the activities of the research group coordinated by Andrea Benassi, <http://www.indire.it/progetto/didattica-immersiva/>.

[6] The Association was formed in April 2016 from the homonymous research group, active since 2011.

[7] For a study about the history, actual uses and the regulatory status, see Simone Ferretti, Il sistema dei forti militari di Roma. Stato attuale e aspetti normativi, in *Opere e Forti*, Gangemi editore, Roma, 2009, pp. 25-31.

[8] The Fort of the Entrenched Camp of Rome are bound under the Cultural Heritage Code with the M.D. 11/15/1975 (Ostiense), the M.D. 07/13/1984 (Portuense and Casilina), the M.D. 04/29/2004 (Tiburтина), il M.D. 08/06/2008 (Monte Mario, Braschi, Boccea, Aurelia Antica, Bravetta, Ardeatina, Appia Antica, Prenestina and Monte Antenne), thrl M.D. 04/23/2012 (Pietralata) and with the M.D. 05/19/2014 (Trionfale); The Cultural Heritage Code 12th article, comma 1 constraints ope legis the remaining structures of Entrenched Camp (Batteria Appia Pignatelli, Batteria Porta Furba and Nomentana).

[9] The equipment used for reali-

zing video is a Kodak PixPro 360.

[10] The lenses have a diameter of 37 mm and a focal length corresponding to 45 mm.

[11] The references to the stereoscopy is related to the nature of the content display. Due to the presence of a single projection center during the video capturing, the splitting of every single frame responds to practical needs related to the display.

[12] This term refers to the major Italian cultural and research promoters, both in public and privately.

[13] Io Sono Cultura, Report 2016.

[14] See just a few examples: Culturability call, promoted by Unipolis Foundation; Boom-Polmoni Urbani to promote regeneration in Sicilian cities; Spazi Indecisi project, mapping and valorizing Romagna's dismissed cultural spaces; or the performing art activities by the Social Community Theatre Centre in Torino Studies University to promote social inclusion.

[15] Accolla, (2009).

[16] For the analysis and interpretation of the military fortifications see Zanotti B., *Fortificazione permanente*, tipografia Candeletti, Torino, 1981 e Borgatti M., *La fortificazione permanente contemporanea (teorica ed applicata)* [...], tipografia Cassone, Torino, 1898.

[17] <https://ifph.hypotheses.org/>.

[18] <http://aisoitalia.org/?p=496>.

[19] Scannagatta M., *Fuggite sciocchi! Riflessione su ciò che non esiste*, last reading december, 19, 2016, from https://www.academia.edu/17729970/Fuggite_Sciocchi_riflessione_su_ci%C3%B2_che_

[non_esiste?auto=download](#).

[20] White, (2006).

[21] Spengler, (2008).

REFERENCES

Dilthey W. (1906), *Das Erlebnis und die Dichtung*: Lessing, Goethe, Novalis, Holderlin, (v.26), Göttingen, Germany: Vandenhoeck & Ruprecht.

Varani A. (2004), *Realtà virtuale, apprendimento e didattica*, in *Informatica & scuola*. n.3.

White H. (2006), *Forme di storia: dalla realtà alla narrazione*, Rome, Italy: Carocci editore.

Spengler O. (2008), *Il Tramonto dell'occidente*, Milan, Italy: Longanesi edizioni.

Accolla A. (2009), *Design for all. Il progetto per l'individuo reale*, Milan, Italy: Franco Angeli edizioni.

Cappellini V. (2009), *La realtà virtuale per i beni culturali*, Bologna, Italy: Pitagora editrice.

Sacerdoti F. M. (2009), *New user interfaces for the fruition of cultural heritage*, in *Atti del Convegno internazionale Techa 2008. Technologies exploitation for the cultural heritage advancement*, pp-72-73, Rome, Italy: Gangemi editore.

Cervellini F. & Rossi D. (2011), *Comunicare emozionando. L'edutainment per la comunicazione intorno al patrimonio culturale*, in *Disegnare Con*, n.8, vol.4, *Tecnologie per la comunicazione del patrimonio culturale* edited by Elena Ippoliti and Alessandra Meschini, pp.48-55.

Pietroni E. (2011), *Ricostruzioni nel Patrimonio culturale: il museo*

virtuale della via Flaminia Antica, in *Lucilla Rami Ceci* (edited by), *Luoghi e oggetti della memoria. Valorizzare il patrimonio culturale. Studio di casi in Italia e Germania*, Rome, Italy: Armando Editore.

Rosa P. & Studio Azzurro (2011), *Dai musei di collezione ai musei di narrazione*, in *Disegnare Con*, n.8, vol.4, *Tecnologie per la comunicazione del patrimonio culturale* edited by Elena Ippoliti and Alessandra Meschini, pp.129-138.

Galofaro F., Gasperi D., Proni G. & Ragonese R. (2013), *Semiotica e ict per i beni culturali*, Milan, Italy: Franco Angeli edizioni.

Empler T. (2015), *APP design con uso della realtà aumentata per la divulgazione dei Beni Culturali*, in *Disegnare idee immagini*, n.50, pp. 60-69.

Io sono cultura – L'Italia della qualità e della bellezza sfida la crisi (2016), Report 2016, *Books of Symbola*, last reading december, 19, 2016, from <http://www.symbola.net/html/article/Rapporto-2016IOSONOCULTURA>.

Pizzato R. (2016), *Il Virtual Reality Cinema*, last reading december, 19, 2016, from <http://www.prismomag.com/virtual-reality-cinema/>.