

Practical and Digital Proposals for Restoration of the Main Apse of the Basilica of Santa Maria Assunta in Torcello

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Abstract. One of the recent developments in the digital domain is its application to the preservation and presentation of cultural heritage. Although a lot has been done on describing and improving the technical aspect of it, insufficient attention has been given to its theoretical aspect. Especially to the part that concerns the relation between the practical philosophical and ethical postulates of contemporary conservation and restoration practice and the sphere of digital restoration. The case study on which the whole research is applied is the basilica of Santa Maria Assunta on the island of Torcello, located in the northern part of the Venetian lagoon. More precisely, the aim of this paper is to offer possible solutions for both the digital and practical restoration practice regarding the main apse of the church, with its two-layered fresco and mosaic strata.

Keywords: digital, virtual, restoration, Torcello, medieval art, cultural heritage.

1 Introduction

The basilica of Santa Maria Assunta on the island of Torcello is one of the oldest and historically most important monuments in the Venetian lagoon. Its fame stems from the beautiful mosaic and sculptural decoration that attracts tourists. However, the church has several issues that require interventions with the aim of conserving the architectural structure and the works of art that are housed in it.

In this paper, the focus will be on the two-layered wall decoration of the main apse. The main idea is to present the proposals for future conservation that will be carried out in near future. All the proposals are based and argued on the postulates and concepts previously exhibited in this paper using the multidisciplinary and transdisciplinary approach. A particularly innovative approach is in the use of digital technologies, mainly VR, that will compensate for the consequences of practical restoration. The aim is to stress the connection between physical and virtual practice and to pay attention to the possible consequences of seductive properties of digital tools.

2 History of the basilica of Torcello

The island of Torcello is located in the northern part of the Venetian lagoon. The basilica of Santa Maria Assunta is its main monument that has dominated the island for centuries. Thanks to the recent archeological excavations, the real history, and development of architecture can be reimagined.

Due to economic development and the flourishing urban character of the new settlement [1], in 639 the construction of the first cathedral in Torcello was started during the reign of Byzantine emperor Heraclitus. It was dedicated to Santa Maria Genetrix [2]. The church had two subsequent changes that led to its current appearance: in the 9th century during Deusdedit II, and in the 11th century during the Orseolo rule [3]; as well as a heavy restoration in the 19th century.

2.1 Santa Maria Assunta

The *Chronicon Venetum* which is hypothetically ascribed to Giovanni Diacono [4] (John the deacon) is the main document that describes all the construction phases of the basilica [5]. According to it, the biggest transformation occurred in the 11th century when the bishops were Orso (1008-1012) and his brother Vitale III (1012-1047), the sons of doge Pietro II Orseolo [5]. Archaeological excavations have managed to shed light on certain parts and confirm the statements in the chronicle. The focus will be solely on the 11th century because the main apse was reconstructed and decorated in that period.

This is understandable since the 11th century is described as a period in which “Europe cloaked itself in the robes of the new basilicas or reconstructed old ones.” [6] According to Giovanni Diacono, the whole church has been refurbished [5]. This reconstruction included arched collonades that divided the nave into three parts, the relocation of the bodily remains of St Heliodorus under the main altar, creating a new set of the mosaic floor decoration, and the mosaic decoration of the interior walls [5]. The Byzantine workshops were brought to execute the mosaic decorations as well as the sculptural ones with motives imported from the East [7].

The frescoes are, according to Trevisan, dated to the 11th century [3]. The synthronon slightly covers the frescoes meaning that it was added after their execution.¹ The mosaic decoration was done after these two additions, covering the frescoes.

2.2 Internal decoration

Today, the basilica in Torcello is considered one of the artistic peaks of medieval art in the lagoon, right after the church of San Marco. Visitors are usually struck by the beauty and complexity of the *sectile* floor, as well as by the monumental golden mosaics covering the entrance wall and the main apse with *diakonicon*. (Figure 1)

¹ Regarding the frescoes, they were discovered in the 1930s and at that period were dated to the 7th century. However, in the 1980s they were proved originate from the 11th century. (La Cripta, 3)

The fresco fragments are described by A. Niero as being in the Benedictine style similar to that of the frescoes from the crypt in Aquileia [8]. The Benedictine monastic order had a strong presence on the island. When the synthronon has been created in the 11th century, probably during the reign of bishop Vitale III, the frescoes were covered with marble slabs, and a mosaic showing the twelve apostles and the Virgin Mary with baby Jesus has been put [7].

In the middle of the synthronon is a *cathedra* where the bishop would sit. Above it is a bust-length depiction of St Heliodorus, the first bishop of Altino. On both, his left and right are the twelve apostles standing on a grass field with flowers that can be found in the lagoon. Behind them is a typical golden background. In the upper part, occupying the whole semidome is the standing figure of the Virgin Mary holding baby Jesus. The effect of this mosaic is nicely described by Niero, saying that it serves as a reminder that “the space that surrounds us, the time in which we live, is a foretaste of eternity.” [8] This interpretation is reasonable when one considers that art, in our notion of the word, served, through beauty as a tie between “this world and the higher, earth and the sky, and the man and God.” [6] In the corners above the apse is the scene of Annunciation which is typically positioned there in Eastern churches. [8]

Comparing the mosaics and the technique of their production as well as stylistic components with other contemporary examples, Andreescu concluded that they were all done “somewhere in the eleventh century.” [9]



Figure 1 The synthronon in the main apse with the marble slabs and the mosaic. The fresco fragments can be seen on the left where the slabs are missing.

3 Virtual Restoration: Theory and Practice

Before going into the definition of virtual restoration, the digital object itself must be defined first. “It can be a reproduction of a physical artifact, or it can be natively

digital. The digital object, if limited to the reproduction of a real object, becomes a replica, if it is obtained through criteria and methodologies that guarantee fidelity and accuracy both at the topological/metric level and at the surface properties level. In this sense, the digital replica becomes a transmitter of information and allows the preservation of the knowledge of the object, even if the real original is lost.” [10] This definition given by E. Pietroni and D. Ferdani encompasses all the key aspects: reproduction or natively digital (model), based on information accumulated within the object as a document, transmission of information, creating knowledge, and creating a digital testimony/patrimony. All of these characteristics of the digital object should be kept in mind for further discussion.

The idea behind digital heritage is not just to document and keep objects of cultural heritage in a repository of information, but to contextualize it. That is why the term virtual, understood as a recontextualization of an object is highly applicable here. According to R. Deloche, virtualization is understood as “the process of transitioning into the problem, decontextualization or manipulation of the artifact.” [11] In other words, it “allows the transition of the given problem...into other possible solutions.” [11] When a digital version of an object is made, it allows for innumerable changes to be made, in contrast with the one in the material reality, that, when once altered, permanently remains as such.

However, the point is not just to digitize something, but to create “a parallel testimony” between the material original and the virtual copy. As nice as this might sound, there is another theoretical problem of understanding the virtual. These equivalents that are paradoxically unequal to the starting material object are actually self-referent images, or at least have a tendency to become. The real danger of the virtualization of an object used in a museum context (bear in mind the educational aspect) is the annihilation of the referential aspect, leading to a simulacrum. As a consequence, the parallel testimony is lost. [12]

Thus, when put into this new situation, a digital model can serve for representing abstract ideas and concepts that help recreate the past and present it to the viewer. In this way, the goal of obtaining knowledge and disseminating it is achieved. “Hence, the goal of a virtual process is to increase perceptual and cognitive levels, reactivating spatial-temporal relationships and meanings of the cultural object. The virtual dimension facilitates the mental process of imagination, giving shape to an abstract concept (a vanished ancient context cannot be perceived and experienced), making legible and recognizable what the visitor is often unable to “decode,” identify, and contextualize.” [10] VR serves as the best illustration of this description.

There are two main charters that regulate the use of digital tools in heritage conservation. The London Charter emphasized the importance of documentation, not just the one used in creating a virtual model, but also to try and document the process of model production. “Sufficient information should be documented and disseminated to allow computer-based visualization methods and outcomes to be understood and evaluated in relation to the contexts and purposes for which they are deployed.” It was followed by the Principles of Seville that deal with the authenticity and scientific transparency. The former one stresses the need to distinguish the “real, genuine, or authentic” from the

additions and reconstructions. The latter addresses the same issue by pointing out the need to “gather and present transparently the entire work process.” [10]

4 Restoration Proposal for the Main Apse

This chapter deals with the practical approach as suggestions to be applied in the case of the conservation issues in the main apse of the basilica of Santa Maria Assunta in Torcello. It is based on the contemporary postulates in conservation, museological theory, and the knowledge of the virtual.

Before addressing the main issues, it is important to stress that Santa Maria Assunta is the church in the cult [13], that exhibits its objects and works of art in a museum-like context with the aim of preserving its sanctity. Therefore, all of the interventions made need to take into account the importance of the objects themselves, their place within the church, the importance of the church for the island and its local community, and finally, the role of the island of Torcello in the lagoon of Venice. The logic of this approach is based on the micro-macro principle. This follows the value-based approach in which “conservation professionals” are “supervising the stakeholder groups.” [14]

“In the case of entire ‘sites’, i.e. complex works of man and nature than combine both tangible and intangible assets, insofar as these areas are still associated with a ‘living’ religious tradition and, thus, are still functioning as ‘sacral’ places, their legal approach, and therefore their management, involves delicate issues of cultural, spiritual and natural maintenance. Hence, when approaching such sites, one must keep a balance between heritage preservation, cultural management, tourism development, and ‘active’ practices of faith.” [15] A very important point related to the church as a museum space is the preservation of sacral character. B. Deloche, when quoting Malraux says that any museum has the function of preserving the sacred. [11] In the case of Torcello, and its potential virtual tools, it plays the main role of narrating the “time, people, context of life, and knowledge.” [13] The beginning of this kind of preservation begins with the conservation of the material, especially of that which by Brandi is termed “aspect,” as it is the bearer of the artistic meaning. [16] This is achieved when the tangible is viewed in the wider context, the intangible one. [15]

As for the virtual counterpart, it should be noted that the use of technology, however appealing it may be, should not lead to fetishizing it. [17] On the other hand, the cybernetic approach and the digital heritage have become an almost inseparable part of the museum and exhibition practice. Digitalization and virtualization allow for new ways of presenting and understanding the past. This is made possible because virtualization transports the given problem into other possible solutions. [11] These solutions are visualizations in the form of a movie, VR, augmented reality (AR) or mixed reality (MR), 3D models, or 2D reproductions. Whichever of these is chosen as an adequate tool for the solution to the problem, two important questions must be answered: 1. “Is the use of this tool in a digital form adding value to the project that is balanced by the ethics of its use?” [18] 2. For whom is the model made i.e. who is the group that the model is

meant for? [10] Only when both of these questions are provided with satisfactory answers, one can proceed to make digital models.

4.1 Fine or Applied Art?

Despite the interventions from a later date, the apse must be treated as an original medieval setting. Speaking of medieval art, a very important question should be posed and answered in order to decide how to treat the restoration problem. Should the mosaics and the synthronon be treated by today's understanding of art, or according to the medieval notion? To reformulate it, should it be viewed as fine or applied art?

Personally, I am more for the option of treating it in its original meaning because that is the only way we can truly respect this work of art. The purpose of an image, whether a fresco, an icon, or a mosaic, was to openly and directly spread Christian messages onto the faithful. "The notion of sacredness is intertwined with the notion of functionality." [15] In the Middle Ages, the meaning and its bearer are the same. [6] This is most evident during the religious service. At that moment, the functionality of an artwork reaches its peak. In the *Dialogues* of Gregory the Great, he states that during the service "the heavens are opened and choirs of angels are presented at the mystery of Jesus Christ, that the lowest is united with the most sublime, earth is joined to the heavens, the visible and the invisible become one." [19] Therefore, the role of art was to help the believer overcome the material and reach the divine. Hence, if we view the apse as a masterpiece of medieval art, we neglect its non-artistic intangible properties which were the main reason for adorning it in the first place. It is very important to note that these objects that constitute the interior decoration of the apse incorporate in themselves "specific ideas, beliefs, and theological doctrines." [15] This goes hand in hand with the UNESCO Convention on the Safeguarding of the Intangible Cultural Heritage that treated religious "practices, representations, expressions, knowledge, skills— as well as the instruments, objects, artifacts and cultural spaces associated therewith" [15] as part of religious heritage and should not be separated from its material counterpart.

In conclusion, it can be said that for the sake of preserving the religious intangible properties embedded in the material, the decoration of the apse should be viewed, understood, and conserved/restored as a work of applied art (by today's notion).

4.2 Proposal for Practical Restoration

Since the apse is viewed as applied art, before going into proposals for practical restoration, we should turn to Cesare Brandi. He differs the work of art from an industrial object. In the case of the latter, restoration tends to bring back its functionality. When it comes to the works of art that have a functional purpose, such as architecture or objects of applied arts, restoring their functionality, according to Brandi, is only secondary. [16] However, when the functionality is what gives meaning to the object, especially that of a religious function that is inexplicably tied to the interior of an architectural space, restoring it should not be of secondary importance. Medieval art is a special case because its utility is realized through its aesthetics. The best unity between the

concept of beauty and functionality is realized in the interior decoration of the church, in this case, the apse.

The next question is addressed to the newly discovered frescoes that adorned the walls of the apse at the beginning of the 11th century. If they remain visible, how does that affect the overall aesthetic unity and readability of them, of the mosaics, and of the apse as a whole? The first part of the frescoes was discovered at the end of the 30s of the previous century. [7] They were restored and the marble slabs that covered them have been removed. The apse looked like that ever since. However, the new ones are in a very bad state. Most of the mortar is gone, and only a few figures are recognizable (the ones on the far left and far right). On top of that, the upper parts are covered with the mosaic, so it is impossible to identify who is represented. If they are cleaned, conserved, and restored, they would still remain fragments that would be hard to read and understand, especially for the tourists who are often not educated in the history of art. In Brandi's terminology, this is defined as a "ruin," i.e. an artifact that remains in such a poor condition that it is impossible to return it to its former potential unity without making a forgery. [16] However, a ruin or a fragment is still transmitted from one reality, the past, into another reality, the present. As such, it is understood as a document by using imaginative mechanisms. [12] Hence, these frescoes, or rather what remains of them, cannot be disregarded. On the other hand, if the bishops remain visible, they would add to the confusion making the decoration harder to understand. This leads to two possible solutions: return the marble slabs completely, or return the slabs partially revealing the fragments that were discovered in the 30s and the ones that have been recently discovered.

In the first case, the aesthetical unity would be fully achieved. The role of marble slabs in Byzantine art is a symbolic one as they represent the element of water or the Holy Spirit. Having them returned partially will result in partial unity of the decoration. The support for this is found in Brandi's theory of restoration. The second principle of restoration states that it should tend to reestablish the potential unity of a work of art without making a forgery, and without canceling every trace of the passage of time that is visible in the work of art. [16] At first, this might seem like an argument for keeping the parts of fresco fragments visible since they are evidence of the past times before the mosaic decoration. However, it should be noted that they originally were not meant to be seen and they are not evidence of the passage of time on the mosaic, rather they are considered an autonomous and separate work of art. Furthermore, Brandi often stated that the aesthetical principle always has priority over the historical. [16] On top of this, he states the importance of understanding the space based on the paintings exhibited in it and their relation to it. By this, he is not referring to interior design, rather to the interpretation of space. [16] This is fully compatible with the functionality of medieval architecture, its separation of the sacred from the profane, and the role of art as the bearer of intangible religious beliefs and doctrines. By returning all of the marble slabs to their place, the restorers will put the "tangible religious heritage in its wider (intangible) context." [15] Another argument pro returning of marble slabs stems from the medieval notion of art and symmetry as one of its main attributes. Even though medieval art is rather spontaneous and diverse, the idea of symmetry and balance is

omnipresent. [20] Therefore, if the slabs are returned unequally, the apse loses its symmetry, and consequentially, its aesthetics is diminished.

The cons of this practical solution are seen in the loss of a historical narrative. Neither the public nor the experts would have the access to these fragments. If the philosophy of heritage is understood as selected memory that is crucial for preserving an identity [12], we can say that this approach would mean an open cancelation of one part of the basilica's historic narrative. However, this could be overcome, at least in the case of the expert audience, by cleaning, conserving, and making detailed documentation of the fragments before returning the marble slabs.

On the other hand, the partial return of the slabs would only partially re-establish the visual unity in the Byzantine aesthetic. The pros of this situation are that the best-looking or most easily-readable fragments remain accessible to the public. According to a different interpretation of Brandi's second law of restoration, the historical interventions, however bad they might have been, should be exposed because they too are the documents of the past. [16] Every action in the domain of preservation and exhibition of heritage has a documentary duality. On one side it tends to extract and communicate the ideas embedded in the object, on the other, it is a document of its own time and practice. As a consequence, the aesthetic unity that is crucial for the functionality of medieval art is only partially realized, while the historic narrative is reconstructed more easily.

Where, then, is the solution to this problem? I would opt for the total return of the marble slabs because the importance is given to the aesthetic principle and medieval unity. The loss of the narrative can be overcome by the use of digital tools.

If one insists on making a compromised solution between the first two proposals, it can be done by borrowing the logic used in the church of Santa Maria Novella in Florence. In it, movable mechanisms hold the paintings in the 16th-century frames. From time to time, these paintings are "opened" to exhibit the remains of frescoes dated before Vasari's renovation. A similar thing can be done in Santa Maria Assunta, where the first set of slabs on both sides of the apse can be made movable and occasionally opened to allow for the observers to peak behind them.

The last issue addressed here regarding the apse is the bishop's throne. There are strong indications that the so-called "Throne of Attila" was the cathedra of the bishop and adorned the top of the synthronon. Returning it to its original place would complete the visual/aesthetical unity of the apse that was argued before, but it would deprive the island of Torcello of its famous symbol. The solution to this problem is a rather simple one. A 1:1 scale 3D material copy of Attila's throne can be made and put in its current place in front of Santa Fosca, while the original is returned to its former place.

4.3 Virtual Proposals and Solutions

Unlike in the previous case, there are several solutions here that will be presented, giving their pros and cons. It should be noted that they all depend on what the officials who are responsible for the church intend to do. The virtual solutions, especially the elaborate ones such as virtual reality require a proper team, a significant amount of time, and, naturally, a lot of resources.

The dynamic history of renovations and interventions should be narrated before presenting the problem of the apse to visitors. One of the possibilities is to make material 3D models. However, these consume a lot of space. An even bigger problem is that they require more information. In the case of the first two architectural phases of the church, as well as the fresco decoration of the apse, virtually no information remains. Therefore, a lot of reinventing should be done, which leads to the forging of history. Instead, schematic 3D models that are deprived of details should be used. In this way, the architectural and artistic evolution is easier to understand, both for the professional and non-professional audience. A new question that opens up is this: how and where should these models be presented?

There are two options: the first one is on a screen; the second one is on panels. (Figure 2) There is a common problem for both. “Positioned physical means, like information boards [, screens,] and plaques, may be helpful in providing explanations and interpretations close to the object, but they can never furnish the object with rich and deep contextual information and knowledge without cluttering the environment and thus disturb the cultural experience one initially intends to improve.” [21] What is meant by this is that they often seclude parts of the historical environment. Indeed, putting large-scale panels or flatscreens inside a church does seem a bit strange. The solution to the problem can be to put these in a side chamber that has no function and is of no importance for understanding, experiencing, and enjoying the religious struc-



Figure 2 Usage of flat screens and information panels for educational purposes

ture. In the case of Santa Maria Assunta, this can be, perhaps, in one of the rooms in the so-called fourth isle, that is currently used as storage. It is immensely important for the digital objects to be close to the original structure because in the perception of the visitors, the value or the importance of the virtual stems from the authority of the material original. [22] There is another reason that confirms this idea. It stems from the understanding of religious art that the common visitors often lack. T. Tsvolas noted that only “someone familiar with the conventions can understand the significance of the symbols.” [15] In the domain of education, it is more useful if the object one just heard or learned about can be experienced immediately, especially if the person is not familiar with the language of the symbols, as is often the case with religious heritage

and art. “It will often be completely impossible for the visiting layman to understand their original shape, use, and significance.” [21]

Indirect Augmented Reality (IAR) might be another helpful tool for visitors to use. “A large array of video cameras and other sensors that would capture, in real-time, the real environment and permit a perfect reconstruction of that environment, in real-time, as seen from any arbitrary viewpoint.”[21] As a consequence, if a viewer aims his/her phone towards the apse, he/she would see a corresponding virtual reconstruction on the screen. The practical use of IAR so far was mostly limited to outdoor sites and archaeology. It is a complex technique that brings us back to one of the starting questions: how is this tool adding value to the project? In the case of the apse of the basilica in Torcello, not much. The reconstructions that would be viewed on the screen of the phone are appealing but they can be viewed, on a much smaller budget on a flat-screen in the annex chamber with other digital models. Using the IAR for the sake of its attractiveness would be fetishizing technology. Another risk, that is applied also to VR, is that a certain percentage of users would focus “on the process of using the technology, rather than on the content.” [23]

If, however, one wants to invest in high-tech equipment that enhances the experience of visitors, a far superior tool is a Virtual Reality model. Before any further elaboration of its usage, it should be noted that VR involves the space around the observer. As such, it is often not acceptable in museum spaces, especially in a church. It also often threatens to become the protagonist instead of the real object. [23] This can be overcome by placing it in a separate room that has no historic importance and is deprived of any artifacts. As proposed earlier, the one in the adjacent part of the church would suit this purpose nicely.

Where does VR’s advantage lay? It lies in its use of the screen as a phenomenon. In the case of IAR, the visitor holds the device that allows for a visual overlap. However,



Figure 3 An illustration of the potential VR reconstruction of a service held in the 11th century in the basilica of Torcello

the edges, or rather the limit of the screen are clearly visible allowing for a perfect distinction between the real and the virtual. In the case of VR, the dynamic screen covers the whole field of view canceling all visual/mental connections that its consumer has with his/her surrounding. [24] Instead, the viewer is instantly and mentally transported into the domain of the virtual [25], allowing for a fuller experience that satiates the visual (and other) sense in a more comprehensive way.

The proposal for use of VR would be the presence in a sequence of a virtual medieval service. (Figure 3) This is envisioned following the concept of “electrification of imagination” that allows the viewer to experience the past and “cross centuries.” [26] The inspiration for this idea came from the (at that time) groundbreaking VR pilgrimage in the Cluny Abbey that was presented in 1993 [27] and became one of the most revolutionary innovations in the application of new technologies in cultural heritage.

The religious aspect can be further enhanced by stimulating the original use of the object, i.e. holding services in the basilica. However, since this probably will not be an option, a ritual aspect can be simulated through the use of VR. It “can include various non-material aspects such as symbolism, ideology, and ritual; a concern with the social and abstract dimensions of heritage, ceremony, and the creative use of aesthetic objects and spaces.” [28] Through a stimulating setting like this, it can allow for a more personal relationship between the visitor and the represented object. “Given the idiom ‘seeing is believing,’ the realism achieved by modern visualization systems could lead the users to perceive the virtual model as ‘truth’ instead of as the result of interpretation.” [10] This is unlikely in the case of Torcello because with the return of the slabs in the apse, the visual difference between the virtual and the real would be a matter of atmosphere, not the artistic aesthetic. The viewer would experience something that is otherwise inaccessible, something for which the apse with its synthronon, mosaic, and marble slabs would serve as a scenography. The idea is that a description of a medieval service, that is today completely abandoned in the sense of its atmosphere, no longer needs to be just a written description. These vivid descriptions of medieval religious service, such as that of Gregory of Nyssa [29] can become even more vivid through the use of VR. In real life in the 21st century, no church is going to light hundreds of candles to illuminate its interior. In the case of Santa Maria Assunta, it is unlikely that a large congregation of believers would gather to attend the mass. On the contrary, this can be accurately reproduced and visualized in the virtual domain. I reiterate, there is no fear of virtual competing with the real, as it would be clearly presented as a didactic tool with the aim of compensating for the lack of possible experience. This is because “in a simulation environment, presence and excitement are privileged over the reflection and contemplation associated with direct experience at the monument.” [28] The contemplating part can be done in direct contact with the work of art in its original setting, i.e. the central nave of the church. The “excitement” is reserved for the VR domain in the adjacent room.

4.4 Remarks regarding the use of VR

There are, however, a few important remarks that can be said about the use of virtual reality in cultural heritage: 1. The immersion into the virtual does not equal knowledge

gaining; 2. Realism can act as a distractor from the content; 3. VR eliminates the communication within a group; 4. VR imposes its own narrative on the viewer.

Regarding the first problem, the “users needed to have the representation codes of the original knowledge domain, otherwise, the immersive application would become another source of problems, added to those which arise while trying to understand the content.” [23] Basically, the same problem as with viewing a work of art without any previous knowledge. To overcome this, the use of a VR headset would be assisted by a staff member or a plaque explaining its purpose and content.

One particular characteristic of VR is its alluring realism and the ability to accurately reproduce physical reality. According to certain studies, a more detailed version of virtual reality is not necessarily better. On the contrary, it can distract the user from the point of the content. “Simplified or abstract representations can be more effective.” [23] In the case of the common audience, as mentioned above, details often distract resulting in a lack of obtained knowledge. When it comes to professionals, the abundance of details is not important since they “can work with increased levels of abstraction.” In the case of my proposal, the context justifies the details. I would deliberately focus on a more detailed simulation because the purpose of it is the experience. The educational part is done by the digital models and other visual tools before a user reaches the headset.

The third remark is a valid one and cannot be countered. It is in most part the fault of technology as it often prevents a group from collectively enjoying a simulation.

The fourth and the final remark is made towards the persuasiveness of VR. “Certainly, a compelling visualization can make itself ‘easy to love and difficult to doubt’.” [17] Because of this, it needs to be clearly stated that virtual reality is a hypothetical simulation or a visual interpretation of certain data. One can indeed make a remark about how the guided tour leaves more space for imagination, and it would be fully valid. However, imagination is highly personal, and not everyone has the ability to mentally recreate an 11th-century religious service. Also, the usage of VR technology is not mandatory. Those who prefer to stroll around and absorb the current atmosphere of the church are fully encouraged to do so.

5 Conclusion

In conclusion, the marble slabs and the throne of Attila should be put back as an aim to restore the aesthetic unity of the apse. It would further contribute to its functionality in the religious interior. The fresco fragments that would be covered by the marble slabs would be visible in digital reconstructions. In the adjacent chamber, information panels or screens should be put. They would demonstrate the architectural narrative of the church through 3D models while providing the necessary information to the visitors. Instead of using AR, MR, or IAR, it is better to invest in a VR version of the apse, that would help the viewer to experience, and through it understand the purpose and function of art in the Middle Ages by being present in an 11th-century service.

The main outcome of this paper is the importance of connection and dependence of the digital restoration on the physical one, both in terms of theory and practice.

References

1. Calaon, Diego. *Quando Torcello era abitata, Regione del Veneto, Venice, 2013.*
2. Andreescu-Treadgold, Irina. "A Ninth-Century Chapel in the Basilica's Crypt at Torcello." In *Per l'Arte da Venezia all'Europa, Studi in Onore di Giuseppe Maria Pilo, ARTE, Edizioni della Laguna, Venice, 2001.* pp. 55-66.
3. Trevisan, Gianpaolo. "Il rinnovamento architettonico degli edifici religiosi a Torcello, Aquileia e Venezia nella prima metà del secolo XI," in: *La reliquia del Sangue di Cristo: Mantova, l'Italia e l'Europa al tempo di Leone IX, Atti del Convegno internazionale (Mantova, 23-26 novembre 2011), ed. G. Cantarella and A. Calzona, Scripta, Verona, 2012.* pp. 479-504.
4. Gasparri, Stefano. "The formation of an early medieval community: Venice between provincial and urban identity." In *Three empires, three cities: identity, material culture and legitimacy in Venice, Ravenna and Rome, 750-1000, An International Workshop organized by All Souls College of University of Oxford, 20-22 March, 2014.* ed. V. West-Harling, Brepols, Turnhout, 2015. pp. 35-51.
5. Zanetto, Serena. *Tradizione Costruttive nell'alto e medio Adriatico (secoli VII-XI): Eredità e innovazione nell'alto Medioevo, All'Insegna del Giglio, Sesto Fiorentino, 2017.*
6. Асунто, Розарио. *Теорија о Лепом у Средњем Веку, прев. Г. Ерњаковић, Српска Књижевна Задруга, Београд, 1975.*
7. Fabbri, Luca. "La cripta di Santa Maria Assunta a Torcello: il richiamo a Bisanzio all'interno della politica di legittimazione orseoliana," in: *Citazioni, modelli e tipologie nella produzione dell'opera d'arte. Atti delle Giornate di studio. Padova 29-30 maggio 2008, 2011.* pp. 3-10.
8. Niero, Antonio. *Die Basilika von Torcello und Santa Fosca, Ardo/Edizioni d'Arte, Venezia, 1963.*
9. Andreescu-Treadgold, Irina. "The Mosaics of Venice and Venetian Lagoon: Thirty-Five Years of Research at Torcello." In: *Arte Medievale, Sapienza Università di Roma, Rome, 2013.* pp. 193-207.
10. Pietroni, E.; Ferdani, D. *Virtual Restoration and Virtual Reconstruction in Cultural Heritage: Terminology, Methodologies, Visual Representation Techniques, and Cognitive Models. Information 2021, 12, 167.* <https://doi.org/10.3390/info12040167>
11. Deloš, Bernar. *Virtuelni Muzej, прев. V. Pavlović, Clio, Beograd, 2006.*
12. Popadić, Milan. *Čiji je Mikelandjelov David? Baština u Svakodnevnom Životu, ur. D. Bulatović, Centar za muzeologiju i heritologiju Filozofskog fakulteta Univerziteta u Beogradu, Beograd, 2012.*
13. Maroević, Ivo. *Uvod u Muzeologiju, Zavod za informacijske studije Odsjeka za informacijske znanosti Filozofskog fakulteta Sveučilišta u Zagrebu, Zagreb, 1993.*
14. Poullos, Ioannis. "Discussing strategy in heritage conservation: Living heritage approach as an example of strategic innovation", *Journal of Cultural Heritage Management and Sustainable Development Vol. 4 No. 1, 2014* pp. 16-34.
15. Tsivolas, Theodosios. *Law and Religious Cultural Heritage in Europe. Springer, London, 2014.*
16. Бранди, Чезаре. *Теорија Рестаурације, ур. и прев. Б. Шекарић, Италијанска кооперација, Београд, 2007.*

17. Watterson, A. "Beyond Digital Dwelling: Re-thinking Interpretive Visualization in Archaeology", *Open Archaeology*, 2015; 1: 119-130 DOI 10.1515/opar-2015-0006
18. Dennis, LM. 2020. Digital Archaeological Ethics: Successes and Failures in Disciplinary Attention. *Journal of Computer Applications in Archaeology*, 3(1), pp. 210–218. DOI: <https://doi.org/10.5334/jcaa.24>
19. Wingfield, Kim Butler. "Networks of Knowledge: Inventing Theology in the Stanza della Segnatura", *Studies in Iconography*, Princeton University Press, Vol. 38, 2017, pp. 174- 221.
20. Gilbert, Katarina Everet i Kun, Helmut. *Istorija estetike*, transl. D. Puhalo, Kultura, Beograd, 1969.
21. Liestol, Gunnar and Hadjidaki, Elpida. "Quasi-Mixed Reality in Digital Cultural Heritage: Combining 3D Reconstructions with Real Structures on Location – The Case of Ancient Phalasarua." In *Digital Cultural Heritage*, ed. H. Kremers, Springer, Cham, 2020. pp. 423-433.
22. Cameron, Fiona. Beyond the Cult of the Replicant – Museums and Historical Digital Objects: Traditional Concerns, New Discourses, in: *Theorizing Digital Cultural Heritage*, ed. F. Cameron and S. Kenderdine, MIT Press, Massachusetts, 2007. pp. 49-77.
23. Economou, Maria and Pujol Tost, Laia. "Educational Tool or Expensive Toy? Evaluating VR Evaluation and its Relevance for Virtual Heritage" in *New Heritage: New Media and Cultural Heritage*, ed. Y.E. Kalay, T. Kvan, and J. Affleck, Routledge, New York, 2008. pp. 242-261.
24. Manovič, Lev. *Metamediji*, Centar za savremenu umetnost, Beograd, 2001.
25. Grau, Oliver. *Virtual Art: From Illusion to Immersion*, trans. G. Custance, MIT Press, London, 2003.
26. Thwaites, Harold. "Digital Heritage: What Happens When We Digitize Everything?" In *Visual Heritage in the Digital Age*, ed. E. Ch'ng, V. Gaffney and H. Chapman, Springer, London, 2013. pp. 327-349.
27. Boniface, Priscilla. *Managing Quality Cultural Tourism*, Routledge, New York, 2003.
28. Iozzia, Daniele. *Aesthetic Themes in Pagan and Christian Neoplatonism: From Plotinus to Gregory of Nyssa*. Bloomsbury, London, 2015.
29. Flynn, Bernadette. "The Morphology of Space in Virtual Heritage." In: *Theorizing Digital Cultural Heritage*, ed. F. Cameron and S. Kenderdine, MIT Press, Massachusetts, 2007. pp. 349-369.
29. Iozzia, Daniele. *Aesthetic Themes in Pagan and Christian Neoplatonism: From Plotinus to Gregory of Nyssa*. Bloomsbury, London, 2015.