

Street Art and Landscape Art: Kobra's homage to Michelangelo in Carrara

The Street Art pieces have entered an advanced stage, after being generated in contexts of urban complexity and difficult social and cultural mixtures, they reached the value of the real artworks, demonstrating how the "skin" of the cityscape may influence the feelings both of the people living there and the ones visiting that neighbourhood. The contribution of Street Art in single buildings and urban regeneration is clear, it can be considered a key passage to any revitalization and gentrification process. In the last years, the use of Street Art in urban environments was quite common and, for its "nature", it was strictly linked to the city. However, like any art in its "adult" phase, other possibilities and variables are now in their right moment for being explored and tested. In this particular time, in 2017, the Brazilian Artist Eduardo Kobra brought his art out of the cityscape and into a mix of the natural and industrial landscape, realizing a large mural

depicting the Michelangelo's David. It was realized on the front of a large marble cut in a white marble quarry above Carrara, Tuscany, Italy. In June 2017, at the end of the realization, full photogrammetry of the painting was made to document and create a digital version of the artwork to be easily disseminated. A specific scaled version of the mural was printed on marble to create a plate for exhibition in the city hall of Massa, one of the promoters of the event. The following paper will describe the conditions and events around this artistic operation and the technical procedures adopted in creating a digital versatile twin of the Kobra's artwork.

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1. INTRODUCTION

Street Art is an artistic current originated in New York in 1970 as a branch evolved from the Pop Art and Graffiti Writing to develop artistic demonstrations underlining and putting evidence on profound social issues.

In the year 2000 artists like Jean-Michel Basquiat and Keith Haring were able to bring this new way of doing art into the galleries and, thanks to the many official events, the artists began to collaborate with worldwide institutions to requalify the degraded areas of the urban scene through the realization of mural painting, attiring attention in neglected neighbourhoods and contributing in the revitalization of such areas discouraging illegal and clandestine activities (Daichendt and English, 2017). In time the use of Street Art in the gentrification processes brought to a relevant increase of artworks from the downtown to the remote neighbourhoods (Palermo, 2014).

Often the definition of "Street Art" is confused with the one of "Graffiti Writing". This is a common misunderstanding deriving from the fact that both these forms of alternative art are expressed in the same context: the street (Bassi et al. 2018).

The street means a public space, which is open, visible and shared by all. This condition creates the goal of Street Art: to share and make visible personal thoughts and creations with all the people.

Street Art is associated with other forms of expression: techniques like Sticker Art, Stencils, Video Projections, sculptures in public places etcetera, which usually does not prevail over the surrounding environment but rather integrates and underlines it (Bofkin, 2014).

Street Art, Urban Art are all names given by the means of mass communication for those art forms that are exposed in public places, sometimes illegally, some others on authorized sites, thereby increasing the possibility of reaching a very large audience, extremely larger than what it would be with the same artwork exhibited in a normal gallery (Bonami, 2019).

The artist who practices Urban Art relies on his motivations. These, together with a presence in a

public place and being free, are the common characteristics of this artistic current.

If urban and landscape were always considered the element of a dichotomy in the human settlements (Stewart, 2007), in the same way, the evolution of urban art has a parallel, or even a counterpart, in Land Art.

The definition of Land Art was determined during the '60s and '70s and is expressed in direct interventions on the natural environment (Carré, 2012). The name helps to avoid any misunderstanding of the definition with "Landscape Art" used in English mostly to indicate landscape painting. The natural dimension is directly opposed to the artificial character and geometric monumentality of the city.

Materials like soil, rocks, gravel, sand, tar, etcetera determine the realization of geometric primary forms which are dug, traced and built through accumulation in the environment.

Land Artists use space and natural elements as specific materials for constructing their works through interventions on a large scale. Nature is not a static concept but is material, becoming the true essence of the work: the bond with Nature is achieved by intervening with it, modifying and creating great connections of symbolic significance. The interest towards a world still uncontaminated is spurred by the recognition of the contamination of the environment. Acting in remote locations which are untouched or abandoned brings to an awareness of human limitation in front of the universe (Gianquitto, 2018). The huge commitment and expense of human energy and mechanical means result finally limited and contained as opposed to the primordial force and the immensely long time of Nature. The work of man is destined to be absorbed by natural processes and by a progressive decay as opposed to the unstoppable work of Nature. For this reason, in many situations, it is foreseen that the traces and signs left by the artist are fixed and specified just with photographs and videos at their various steps in time. The opera in itself is thought to be subject to changes and transformations, the time is often "integrated" in the design of the land art setup.

Michelangelo, in "Rime, 151" (Zaja, 2010), writes: "Non ha l'ottimo artista alcun concetto / ch'un Marmo solo in sé non circoscrive / Col suo soverchio, et solo a quello arriva / La man, che ubbidisce all'intelletto". These words came from an accurate parallel with the Aristotelian concept that identifies the artist as the one who translates into "action" what in Nature is present as "a potential" (Montesperelli, 2014). Thus this phrase is most of the time simplified with "the artwork is imprisoned in the material and the goal of the sculptor is to bring it out" (as well as in other similar formulations). In Land Art the artist works with the locations and the environment, investigating the relationship between man and Nature to create a maieutic act, especially on a conceptual level, becoming an integral part of the work. The artist tries to extract and underline natural features using human-made elements, adding "completions" or "integration" to enhance or exploit the environment in the search of well-directed experiences and suggestions. The alchemy of signs and structures completes and reveals the aspects of the place, extracting from Nature its "potential" using art and genius. In this sense, the integration of elements coming from the street-art shows two main points: 1) in our time the Street Art can be considered at all the effects inside a sort of "catalogue" of the art tools available in the integration of major projects, built with a long term strategy or with occasional events, it is no longer an act of attack and protest, it is one more possibility, commonly accepted by the public in search of interesting and intelligent communication as well as of surprise and amazement. 2) Land Art and Street Art are both considered parts of the "Public Art", in a combination that may allow the recovery and revitalization of altered contexts. After an evolution path of about 50 years, both are no longer considered as exceptional or occasional events but are a perfect component in the logic of planning for urban and extra-urban areas.

Starting from this reflections, it is possible to consider the experience of the "Michelangelo's David" by Eduardo Kobra, as the proposal of a workflow aimed to capture a stunning artwork, the David,



Fig. 1 - View of the artwork completed (Eduardo Kobra, 2017).

and to reproduce it on different support, creating a new quality and characterization. Operating a sort of re-reading or even a renovation for a masterpiece that should be considered as the most "iconic" statue in the world. A work intended not as durable for a very long time and then in need of documentation about its appearance when it is just finished and in perfect conditions, spreading awareness about the specific solutions and capable to fix a memory for future sharing of an experience that is quite innovative and may be appreciated, transformed, interpreted and reused in more than one place all around the world.

2. THE NEW CONDITION OF THE STREET ART ARTISTS: EDUARDO KOBRA PRODUCTION AND THE DIGITAL MEDIA APPROACH

Eduardo Kobra is a "recent" artist in the Street Art scenario. He is Brazilian and he was born in São Paulo in 1976. Eduardo early discovered his passion for Street Art: when he was just twelve years old, he joined to a graffiti crew called "Hip Hop", discovering the illegal world of tagging which led him to three arrests during his teenage years. As he grew up in a simple family of the city lower-class, he did not get any academic title, becoming a self-taught art-

ist known all over the world for his colourful-massive-scale murals. After the illegal beginnings, in the '90s he started a professional career in graphic production, realizing scenographies, posters and other decorative images. In these occasions, he experienced for the first time how it was possible to get paid for his art. Moreover, thanks to this experience, he started working for various advertising and event agencies, reaching high visibility in the subsequent years. The highest point of his early career was in 2007 when he created the Memorial Walls Project for the streets of São Paulo. This project aimed to transform the appearance of urban space through artworks and, at the same time, to bring back lost memories of the city. To realize this project he used old photos of the city and small murals juxtaposed in a panel which measured about 10,000 square feet, to underline the differences between the old and the new City of São Paulo. In 2011 Eduardo realized his first international artwork on a commission in France, very far from his homeland. He was commissioned to illustrate a wall in a revitalized neighbourhood. This experience has represented the first occasion for Eduardo Kobra to be worldwide known for his very characteristic murals. Also, it represented a second confirmation of his interests in the rejection of war, in history, in memory of places and people, before the last but not least concerns about environmental issues such as deforestation, overfishing, global warming and water pollution, that have distinguished all Kobra's artworks. The time Eduardo Kobra uses to spend in libraries and in the observation of customs and traditions of a community is the demonstration of his interest and attention in places and people. In his intention, there is the will about creating each of his artworks in a way that may well represent the city in which his mural is going to appear. He also takes inspiration from the old photographs of the place, creating paintings that can evoke memories and even nostalgia into the viewers. Kobra's artworks are high recognizable due to their large scale, their photorealism, their bold lines and their peculiar kaleidoscope-like adornment, he reaches

these results combining geometric shapes (circles, triangles and squares) in multi-coloured backgrounds. To obtain the photorealistic images he is famous for and, to deal with the massive surfaces he used to paint, he works with a combination of various techniques including painting with a mix of brushes, airbrush and aerosol cans. As said before, a peculiar characteristic of Kobra's work is the gigantic scale: he challenges himself in doing always bigger artwork and he is also interested in choosing the right place to guarantee the most stunning effect: his David in Carrara is certainly an outcome of this intention. In his official biography published on the personal website, he talks about the street artist he admires and follows. In this list, there are Keith Haring (1958-1990) (Blöß, 2017), Eric Grohe (1944) (Fleming, 2007) and Diego Rivera (1886-1957) (Lozano, 2017), but also the still unidentified British street artist Banksy (Banksy, 2011). Nowadays Kobra has disseminated his Street Art from Brazil to all over the world, leaving beautiful paintings in the USA, Russia, UK, Japan, Switzerland, France, Greece, Poland, Emirates and Italy. Despite his

worldwide fame, two facts are worthy: his way of living has remained simple, he still lives in São Paulo and he declares that he has no agent managing his activity. His approach to digital media is not exasperated, he bases his main online tools for dissemination and production documentation on his plain website and the personal Instagram page. Thus, as for many other artists operating in the digital revolution era, his works is the object of "posting" and indirect advertisement, the extremely recognizable style, the vivid colours and the preference for "iconic" subjects, make his art easily recognizable and highly compliant with the "globalized" taste of the digital communities. Each artwork have is greater importance and impact in its original place, but the continuous repetition of images taken by people visiting his artworks, posting images of the murals or of their own "selfies" with the murals in the background, posing in front of them and stimulating emulation, is a series of "collateral" effects that promote and disseminate his work with a continuous cycle that improves the impact of Kobra's communication worldwide (Macdowell, 2019).

3. THE STORY OF THE HOMAGE TO MICHELANGELO: HOW PAINTING IN THE QUARRY WAS MANAGED

The mural was realized on the front of a large marble cut in a white marble quarry above Carrara, Tuscany, Italy. This new mural, depicting the head and shoulders of the Michelangelo's David has a height of 11 metres and is realized in the typical geometric/chromatic style of Kobra. The place to receive the painting was the quarry named "Gioia" by Gualtiero Corsi in the nearby of "Colonnata", a small town originally settled by the people working in the quarries on the mountains around Carrara (Repetti, 1833). The realization of the artwork took about 5 days operating from a crane directly over the large, almost flat, marble surface. The position of this marble cut, at the top of the mountain, heavily altered by the material excavation. The mural is like a tribute to the transformation from landscape into the art of the stone itself. The very specific intervention becomes a sort of halfway between the use of Street Art for regenera-



Fig. 2 - Photogrammetry shooting: June 2017.

tion, the Landscape Art and the pure quoting of a very classic element of art history. The realization of the mural was commissioned by the Municipality of Massa and supported by various partners, the Television Network Sky Arte participated in the event filming a whole documentary about the making of the large mural. The artwork has reached quite good popularity so that the touristic guide series "Lonely Planet" used a picture of the Kobra's David for the cover of the edition 2018 of the "Tuscany" guide (Bassi et al. 2019). But just like all the street artworks, in such "open" environment, the "David" may be exposed to rapid decay, maybe it will be more protected from vandals and other street artists or writers in search of notoriety (and often ready to alter other works with their contribution). For sure the position is not the urban one. In fact in an urban scenario, or in general, in a context characterized by spontaneous events, the products of this current may change or disappear with an extremely rapid pace. The change of these elements can be assimilated in many parts to the generic subject of the urban furniture, such a renewal is highly characterizing the urban environment, but the rapid change defines an almost "liquid" context. Past studies have underlined this aspect of transformation, showing how in the will of reconstructing the changes in public art it is possible to apply the archaeology methods applied in periods of years instead than in centuries (Dixon, 2010). In the specific case of the "Homage to Michelangelo" the need to have documentation of the whole artwork was planned by photogrammetry, considering both a three-dimensional output than the extraction of frontal, orthographic views to appreciate, communicate and disseminate the mural from the quarry to a wider audience.

4. PHOTOGRAMMETRY BETWEEN THE STONES: HOW THE DIGITALIZATION OF THE ARTWORK WAS DONE

The starting conditions were a little more complex than those common for most of the urban survey: the area is at the top of a hill, largely

excavated by the quarry, the peak is made of white marble and the dust and specks of these materials, which is extremely reflective, are almost anywhere around the area and in front of the approximately cut where the murals are realized. The cut isolates a large and high front, with some deep cracks, it is oriented mainly westward. The top part of the hill is accessible by feet and allows safe access to the border of the cut. The platform in front of the mural is directly cut in the hill, covered by specks and dust and free from any elements. It is worth to say that a common "flat" rectification of single photography may be enough to have a complete image of the whole artwork, especially using a high-resolution camera or making a mosaic of pictures the result should be good enough to present the whole artwork in all the main situations. Thus, a single picture would not represent the depth of the cracks and the irregular alignment of the marble plane, the mural is made on a crude cut stone wall, monolithic but altered by its same nature and by the cut itself. Something to be documented to fully record the qualities of this artwork. The lighting condition of the area is not difficult for taking images, all along the morning the cut remains in a subtle shadow, receiving some soft reflections from all the white elements around, taking the pictures at this moment is extremely convenient, the blue dominant caused by the sky can be easily compensated by the basic "white balance" function of almost any good quality digital camera. For the photogrammetric work, the camera in use was a Nikon D800e, a digital SLR (Single Lens Reflex) offering a full-frame (FX) sensor with a resolution of 36.3 Megapixels, the camera was equipped with a Nikon Nikkor Zoom lens, a 24-120mm F4. The recording of the images was set on the RAW format, allowing the maximal quality and options for post-processing of the resulting pictures set. The camera was used in A mode (Aperture priority) and with the ISO speed set at 200. The lens blocked on the focal length of 24mm and the diaphragm stopping-down at

F8, in this way in the good light of the area the shutter speed kept on offering quite fast speed, between 1/180 and 1/250, more than enough to guarantee stable images at the selected focal length, with no shaking blur effects and appropriate depth of field (Doeffinger, 2011). Overall, considering the resolution of the camera and the will to have the most possible sharp images, a tripod was used for all the shots taken from the platform. The photogrammetric campaign has been organized moving the camera parallel to the cut, with a first series along the western border of the platform, and a second at a distance of about eight metres, for both the series the shots had an overlapping of about 1/4 in vertical (both series) and



Fig. 3 - Some pictures from the photogrammetry sequence: June 2017.

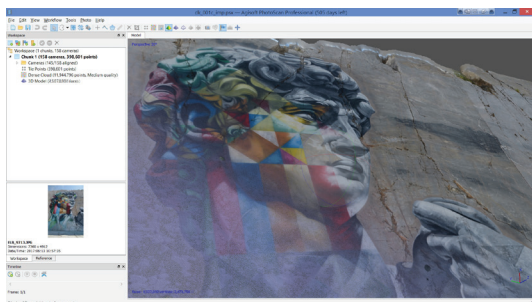
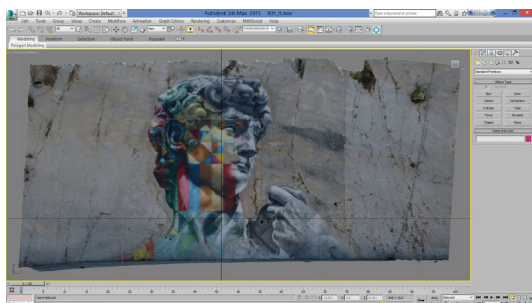


Fig. 4 -Photogrammetry data treatment: June 2017.

Fig. 5 -The Final 3D model with texturing imported in Autodesk 3D Studio Max: June 2017.



in horizontal (for the closer series). When this first session was done, it was time for taking a series of “various” shots all around the most interesting details reachable from the ground (cracks, nails, small plants, etc...). The photogrammetric shooting finished with a sequence of pictures from the top of the peak, using a monopod to extend the camera out of the cut border and operating the shutter using a remote control. This last series allowed to reduce the possible occlusions having most of the inner part of the cracks covered, at the same time, these shots brought the top border inside the final 3D model, avoiding the need of time-consuming procedures, like the masking of the pictures or the manual cleaning of the

point cloud and polygonal mesh output. The final photogrammetric session counted: 107 shots from the series moving parallel to the cut, 38 close range shots, 24 shots from the top. The overall session finished with some direct measurements taken on clear elements of the cut (lines from the artwork) used later to put in scale the resulting model. The total duration of the operations was about two hours. From this set of 169 pictures, it came out a sub-selection of 158 pictures after removing some redundant or lower quality results. Using the “Camera Raw” module in Adobe Photoshop, all the picture from the selection were then “developed” to final JPG files. The following processing took place using AgiSoft Photoscan (now Metashape), one of the most diffused Structure from Motion Image Matching (S.f.M./I.M.) software (Guidi, 2014). The operation went to completion following the classic procedure: alignment, with the whole set of 158 shots correctly aligned and the production of a first point cloud of 398.601 points; generation of the dense point cloud, resulting in 11.944.796 points; generation of the mesh (using the first set of options with zero simplification of the polygons) and having as result 25.078.138 faces and 12.544.830 vertex, the mesh was later simplified to a “lighter” version of about five million faces. The basic texturing calculation (thought for online and real-time dissemination) produced four 4096x4096 atlas images for an overall resolution of 64 megapixels, while the high resolution texturing (for printing and used for the realization of high quality rendering images) produced eight 6000x6000 images for an overall resolution of 288 megapixels. The measurements taken in place entered in this last phase, allowing to resize the 3D model to real units. The production of an exported OBJ format file with JPG images for texturing from the resulting 3D digital models completed this part of the processing. The OBJ was then used to import the photogrammetry result into Autodesk 3D Studio Max and from here starting the production of usable elements for the dissemination.

5. POST-PRODUCTION AND DISSEMINATION: THE OUTPUT OF THE DIGITAL TWIN OF THE KOBRA'S DAVID

Once the digital 3D model was completed and manageable in standard software, the resulting 3D digital model entered the process to produce two main results: interactive online visualization and the possibility to have a base suitable for printing and reproducing with a specific effect on the artwork. These intentions direct the aims of the research to the most efficient solutions for sharing and replicating the work from Kobra, using a commonly available solution and creating a copy on the same material, even if very “direct” showed out to be the best



Fig. 6 - The final model inserted in the Sketchfab.com platform: July 2017.

Fig. 7 -Preparation of the base for the printing process on the marble plate: July 2017.



approach to guarantee general dissemination without creating the risk excessive “specialization” in terms of comprehension and interpretation of the result from a wide public. In June 2017, at the end of the realization, using the full photogrammetry from the painting a realistic digital version of the artwork was then ready to be easily disseminated. For the online/shareable version, the use of Sketchfab.com appeared to be the best solution for this task. Uploading a the polygonal mesh in its simplified version of about five million faces and with the overall texture at about 64 megapixels the resulting model (limited by a maximum upload size of 200 megabytes) was well compliant with the requirement of the Sketchfab community and fully browsable and well detailed even for close up point of view. The model was uploaded using the direct plug-in in Autodesk 3D Studio Max. In this way, the model, included in the large collection of models offered by the Sketchfab.com community is accessible from the main website, but it is also possible to embed it into other webpages or posting it as a direct link. The well-known qualities of the Sketchfab format allow accessing the data in a “streaming” format with full graphic performance and easy visual access but avoiding unwanted sharing of



Fig. 8 -The Orthographic view of the whole mural: July 2017.

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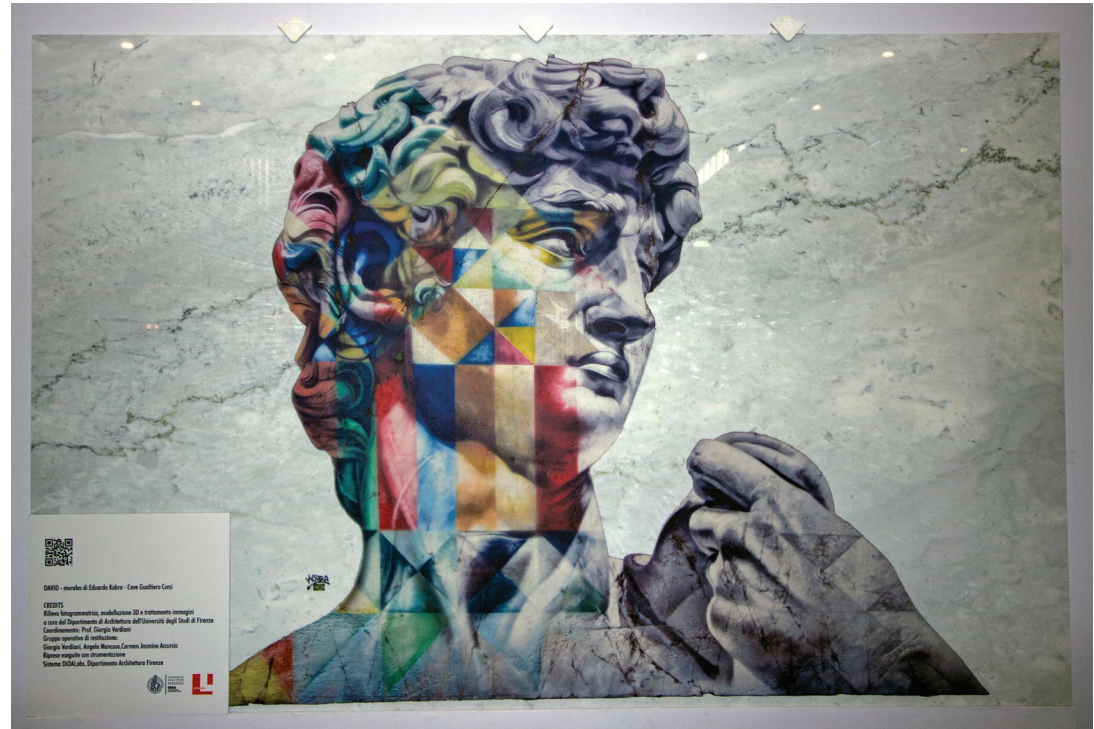


Fig. 9 -The UV printed marble slate: September 2017.

the 3D data with the final users. Starting from a high-resolution rendering from the 3D model which was produced with the resolution of 19.562x14.566 pixels, a specific scaled version of the mural was printed on marble to create a plate for exhibition in the Town Hall in Massa. The use of a Durst Rho 800 printer with UV technology printing system allowed the image production on various materials, even on stone and marble. The idea about creating a copy of the mural on a similar material instead than on a common panel was extremely intriguing, so, after a first test, the final marble plate with a size of 200 x 100 centimetres was produced. It was at first presented at the Marmomac fair in Verona in the stand of the Gualtiero Corsi S.r.l. and later moved to the Town Hall in Massa to be

moved for a permanent exhibition to the public in Villa Cuturi in Marina di Massa, the headquarter of the local Tourism Promotion Agency (APT).

6. CONCLUSIONS

The Kobra's tribute to Michelangelo is undoubtedly a product of our time, it gathers its reasons from a mix of communication purposes and wills of capture attention and surprise, moving from the common reality to an exceptional one. It is also a quite innovative situation, while it moves from the characteristic urban environment to the scale of the landscape creating two very different moments, one of the territories, where

the artwork is inserted in the context of the mountains suffered and altered by the quarries and the one of the direct surprise, the one that any visitors may get arriving in the place up the peak and finding the gigantic representation, with all the details well visible, while the shades of paints let the cracks and veins of the marble appearing from the base. At the same time, it is an artwork at risk of decay and transformation, exposed to the weather and maybe at risk of some alterations -in the short and long run- from the base material on which it is realized. In this sense, the creation of a versatile "digital twin" the 3D model generated by photogrammetry in this study, is the perfect way to make a step forward in digital preservation of these works [Fantini and Polizzi, 2016], documenting a part of the context, the one most sensitive to alterations, creating something more than the simple photographic materials, which, may continue to exist and add a great chance to people about fixing a memory of the place, but at the same time offering an additional solution to keep a well-detailed memory, recorded nearby the completion of the artwork and easily accessible in multiple conditions both in a digital representation as well as in a physical copy.

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Fig. 10 - Exhibition of the printed marble plate at the Marmomac fair in Verona: September 2017

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