Four Dichotomies on Digital Environments Between Art, Heritage and Education: Opening Address

Alessandro Luigini(✉)

Faculty of Education, Free University of Bozen-Bolzano,
Viale Ratisbona 16, 39042 Brixen-Bressanone, BZ, Italy
alessandro.luigini@unibz.it

1 Art, Heritage and Digital Environment

As already mentioned, information technologies are deeply pervasive, and for some decades have been enhancing and changing every field of life at an ever-faster rate. As recalled in the text with which the European Union in May 2017 set up the European Year of Heritage 2018, the need to promote the contact between heritage and the younger generations is one of the main challenges. Challenges that, probably, also pass for information technology.

In recent years, increasingly powerful IT devices have become available to increasingly extended audiences, amplifying, in fact, the effects of the information revolution until recently relegated to large socio-economic processes or restricted professional or research fields. Currently buy a smartphone more powerful than the computer that sent the first man on the moon is available to everyone, even users with limited availability of money. In the field of education experience in art and heritage, it seems that the acceleration of this process of basic technological availability has made easily accessible technologies such as 3D printing - currently printers of sufficient quality for most common uses cost as much as a smartphone mid-range - and virtual or augmented reality despite the applications of these technologies still remain quantitatively, and sometimes qualitatively, unsatisfactory. In the formative experience of art and heritage, both in education and in museum-exhibition, today we can include all the capacity for increasing reality that digital technologies have promised for decades: from immersive VR through stereoscopic viewers to the use of smartphone or tablet for the use of augmentative contents, the accessible technological devices actually make the application possibilities endless. Infinite not for a technophile or cyber-literary approach, but because these technologies directly affect our real experience of the space acted, both physical and digital, and for this reason all the contexts of human action are potentially affected. For different reasons, however, our interest is focused on the potential of such technologies of increased spatial experience in the pedagogical use of art and heritage, i.e. how VR and AR technologies can decisively enhance the training role that art and heritage have acquired over the past few decades.

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2 Four Dichotomies: Starting from the Differences

The scientific proposal of the conference supports the construction of a transversal knowledge path, involving different sectors of research, aiming at the systematization of a participated dialogue and therefore shared on the themes around the digital heritage. To feed this path we try to deepen four dichotomies.

Let's start from the differences.

2.1 Authenticity/Reproducibility

The first dichotomy is on the relationship between authenticity and reproducibility of the work of art, starting from the reflection developed by Benjamin who in his famous essay "*Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit"* focuses on the possibility of reproducing technically the performing arts (musical incisions, films), as well as the figurative ones (photographs). But in the specific case, there are three concepts on which to focus, that is, the value of *uniqueness* that in some way every artworks had up to that moment and that with the reproducibility loses; *authenticity*, i.e. the difference between an authentic and a reproduced work; lastly, *hic et nunc,* the characteristic of an artwork realized or observed "here and now", not elsewhere and at any time.

2.1.1 Objectile

In the mid-nineties, an interesting experience on which we want to focus our attention, is Objectile, the project developed by the French architect Bernard Cache.

Objectile is first and foremost an exhibition organized in Paris in 1996, in which Cache poses with a pansytic attitude with respect to the relationship between architecture, design, philosophy and mathematics. He is concerned that digital technologies at some point give us the opportunity to move from a concept of object to that of objectil. The term is used by Gille Deleuze in "The Fold. Leibniz and the Baroque", a milestone of the philosophy "frequented" by the architects and designers of those years, and defines it in this way, citing Bernard Cache: «There exists thus a series of curves that not only imply constant parameters for each and every curve, but the reduction of variables to a 'single and unique variability' of the touching or tangent curve: the fold. The goal is no longer defined by an essential form, but reaches a pure functionality, as if declining a family of curves, framed by parameters, inseparable from a series of possible declensions or from a surface of variable curvature that it is itself describing. This new object we can call objectile. As Bernard Cache has demonstrated, this is a very modern conception of the technological object»[1] (Fig. 1).

To understand the applicative implications of this concept we refer to Cache's homonymous but subsequent experience, which founds a company through its website it was possible to buy objects, i.e. prototypes objects starting from mathematical algorithms with which the user-buyer could interact producing "Conformations"

[1] Deleuze, G. (1997). *THE FOLD. Leibniz adn the Baroque.* London-New York: Continuum. In several cases Deleuze cites a publication by Bernarde Cache, *L'ameublement du territoire*, actually published in 1997 with the title of *Terre Meuble*.

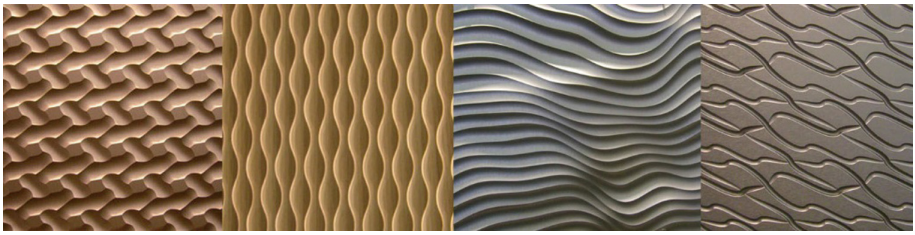

Fig. 1. Some patterns (objectiles) resulting from the modification of the Objectil algorithms.

completely personalized. Unique objects because they are the result of the user-buyer interaction with the basic algorithm. An authentic object, because it has been created for the user-purchaser who, therefore, receives the authentic prototype.

2.1.2 Human Part

To understand what today could mean reproducibility it would be too simple to remember the possibilities granted by the economic accessibility of 3D printing and its consequent diffusion. But in the experimental field, it is interesting to note a work conducted by the Bioengineer group Josè Luis Jorcano who used a mix of cells and nutrients in 2014 managed to print portions of skin to be used to repair tissues in the post-operative phase, as well as other applications. The point of contact with the above-mentioned experiences corresponds to that dimension which is proper to representation,

Fig. 2. Portion of skin printed using a 3d printer and a mix of cells and nutrients.

that is to make present what is not present, to make present something that is absent at a given moment which has to do with the experience of user. As it happens with the graphic representation, or with the three-dimensional printing of an object (Fig. 2).

But what happens when this prototyped, printed element is "installed" on the patient? Can we still speak of a representation of something that has now been assimilated as an integral part of the human body? Can we still refer to the representation of that object that until then was placed in the digital space, or does the "model" itself constitute the authentic element of the individual, though different from the others?

2.2 Authorship/Participation

The second dichotomy on which we want to reflect is authorship/participation. Consider the famous painting by Verrocchio "The baptism of Christ", painted while the young Leonardo da Vinci, "a bottega" from Verrocchio together with Sandro Botticelli, took his first steps, and on whose story Vasari dwells:

«[Per] Andrea del Verrocchio […che stava] faccendo una tavola dove San Giovanni battezzava Cristo, Leonardo lavorò un Angelo, che teneva alcune vesti; e benché fosse giovanetto, lo condusse di tal maniera che molto meglio de le figure d'Andrea stava l'Angelo di Leonardo. Il che fu cagione ch'Andrea mai più non volle toccar colori, sdegnatosi che un fanciullo ne sapesse più di lui»[2].

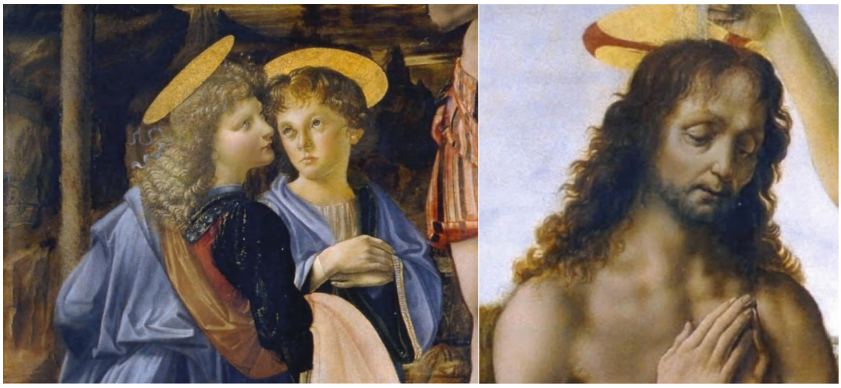

Fig. 3. Comparison between the angels painted by Leonardo da Vinci (and Sandro Botticelli) and the Christ of their master Andrea del Verrocchio. Andrea del Verrocchio, Leonardo da Vinci, "Baptism of Christ", 1475, Gallerie degli Uffizi, Florence. By permission of the Ministry of Heritage and Cultural Activities, Italy

[2] Giorgio Vasari, *Le vite de' più eccellenti pittori, scultori e architettori, Vita di Leonardo da Vinci pittore e scultore fiorentino*, 1568.

Vasari reminds us of the fact that Verrocchio refuses to continue to paint the pupil's advanced technique through envy, but the most interesting aspect concerns the paternity of the work, known for years as the "Baptism of Christ" of the Verrocchio; and it was precisely thanks to the presence of a young Leonardo, from a certain point in history, that the most recent historiography managed in some way to reconstruct the construction of this painting (Fig. 3).

The fundamental aspect is that any painting of the workshop of that period, or even later, may evidently be associated with the work of others and not only with the hand of the creator. Then, once again, the question of authorship is posed as something inseparable and rigid or participated and shared. It is clear that during the realization of the Angel, recently interpreted as the work of Botticelli, Leonardo had the master's indication on the elaboration of the subject, but the personal contribution of the student in the pictorial work is also clear, as Vasari also reports, achieves with a certain amount of autonomy the instructions received.

2.2.1 From Renaissance Workshop to Brian Eno: Autopoiesis

Maintaining a transdisciplinary approach, let us now reflect on the work of the famous musician, Brian Eno, who already in the sixties had extensively used electronic and then digital technologies to generate music. I do not intentionally use the concept of "composing" by borrowing the substantial differentiation that the musician puts into being between the notion of "composition" and that of "generation" of a piece. In 1975 Brian Eno published Discreet Music, an experimental album on whose cover he writes:

«I have gravitated towards situations and system that, once set into operation, could create music with little or no intervention on my part.

This is to say, I tend towards the role of planner and programmer, and then become an audience to the results».

Could it therefore be inferred that the musician is renouncing his own authorship? Evidently not, but most likely he is testing a different paradigm, in a relationship between authoriality and execution (Fig. 4).

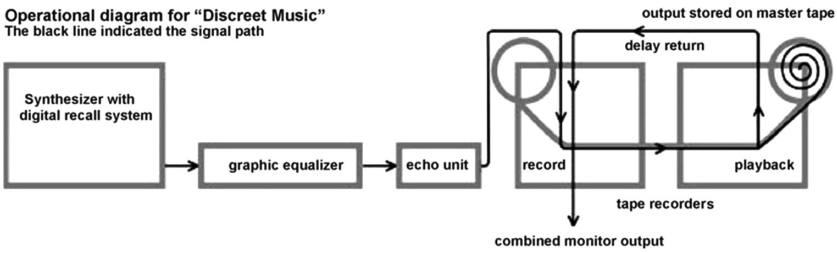

Fig. 4. Structure of the generative process used in Brian Eno's Discreet Music.

With a very similar approach, Fabio Bianchino, an Italian artist who deals with generative art, tells the conformation of his works[3]:

«In the evening I give instructions to the machine, which in the arc of the night processes the data and generates lines, shapes and colors independently. In the morning, when I wake up, I evaluate the results obtained. If I like the product I keep it, if it does not satisfy me I throw it».

In reality, on an international level, this type of approach, especially within generative art that directly concerns digital representation and digital heritage, is extremely widespread.

But continuing to think about the concept of authorship, think of the project by Oliver Auber, poietic generator, a poietic generator or more precisely a shared space in a digital environment with a 4×4 matrix containing four experiences of poietic generation. In this project a small digital space is provided to the user in which it is possible to choose and change the colors of the individual cells, interacting also with the previous user's work.

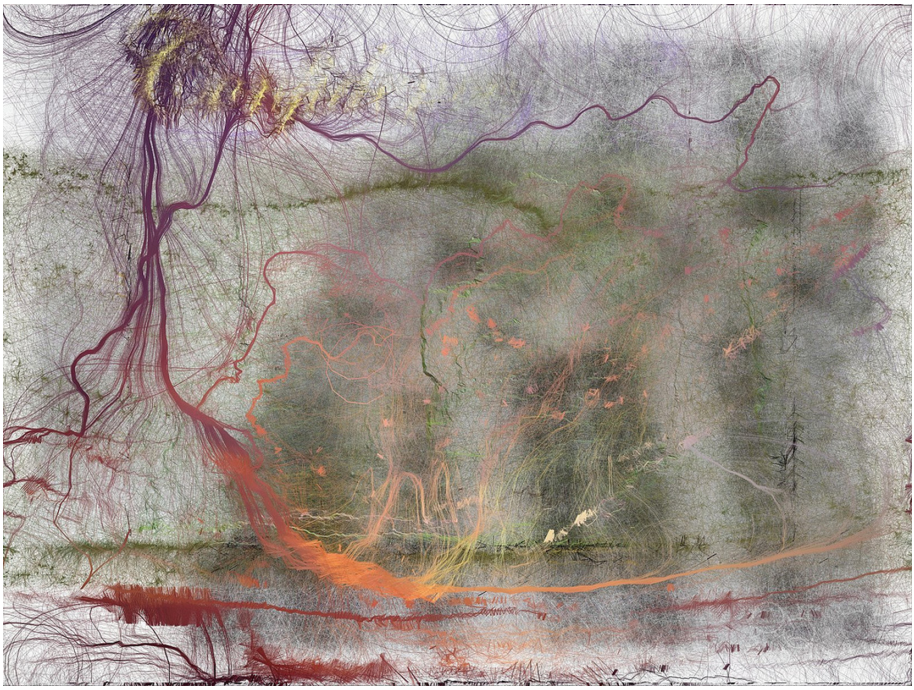

Fig. 5. Generative image of Leonardo Solaas reacting to user interaction.

[3] Cit. in MANCUSO, M. (2008). *Generative Nature. Estetica, ripetitività, selezione e adattamento*. Digicult. [30 January 2016]. Available at da: http://www.digicult.it/it/the-agency/lectures/generative-nature-fabrica-workshop.

What happens is that autopoiesis, that is, the automatism of constructing a figurative configuration, turns out to be a perfectly shared and participatory process, based in reality on the original idea of real authorship of the artist. A similar approach, of monitoring the user's action takes place, in a certain sense, also through the figurative works of the Argentinian artist Leonardo Solaas who records the behavior of the users within his websites (Fig. 5).

Recently, another Italian artist, Guido Segni, has proposed a work that has as a configurational moment a participatory process. The project entitled *Demand Full Laziness*, funded by a crowdfunding campaign with a five-year planning, time in which the artist claims the right to idleness. The possibility offered by the project is precisely that of reflecting on doing nothing, the subject in fact rests, reads a book, watches television: basically idleness. A webcam programmed inside the digital environment captures images, modifies them and deforms them using algorithms, continuously framing the artist, and the user participating in the crowdfunding will receive the work - the printed image elaborated by the algorithm - of the moment precise in which he adheres to the project. At this point the question concerning the paternity of the work arises spontaneously and specifically, if this is to be attributed entirely to the author or to those who participate in the project, which makes the project possible and determines its figurative structure.

2.3 Communication/Experience

The third dichotomy concerns the relationship between communication and experience. This is a dualism linked to the last fifty years of a system previously relegated to the dimension of "knowledge communication" but which slowly, following the passage from printed paper to interactive media, as well as the possibilities provided by the construction of hypertexts and digital spaces, has allowed us to achieve a clear and clear paradigm shift between communication and experience. A process of interchange also traceable in the project *Bloom: Open Space* by Brian Eno, which allows us to draw a line of continuity between the Sixties and today, just using an interactive virtual reality installation aimed not only at the realization of the performance but to its visual and sound configuration (Fig. 6).

It is therefore necessary to start making a distinction between communication and experience because the unquestionable development of digital heritage, favored by current technologies, has made available an extraordinary amount of material, so extraordinary that it becomes difficult to manage. Think of the *Europeana* platform, one of the main portals of documentation of the historical and artistic heritage through which it is possible to benefit from millions of works of art, which stimulates to reflect on the actual meaning of management this huge information patrimony. In fact, some questions arise: can we concretely state that we are benefiting from the works? Can an online generalist research be considered a cultural operation? Evidently not. In fact, the construction of this system is based on the narration, on the storytelling that relates works of art, often already linked to each other for historical, expressive, etc., but which is not sufficient compared to the large amount of material that instead it is contained in the portal. Accessibility is not enough: it is necessary to build meaningful experiences through narrative contents.

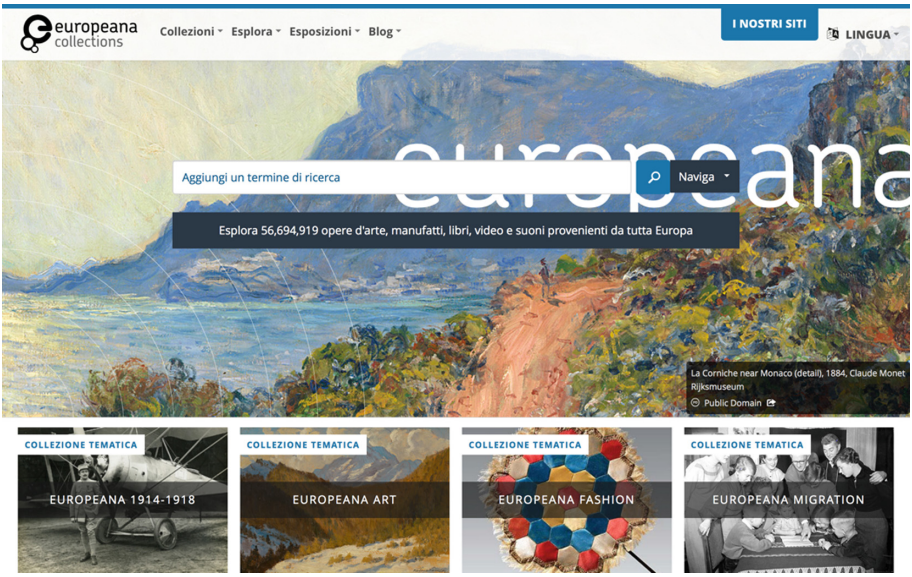

Fig. 6. Europeana home page: on 5th July 2018 there were 56,694,919 digitalized artwork.

2.4 Representation/Digital Environment: Conclusions

The last dichotomy on which I would like to focus on the concept of representation and that of the digital environment. A satellite photo taken from Google Earth already allows you to experience a digital environment that is complex enough to study, from a technical point of view, the effects on digital culture, on sociology, on technology, on the many disciplines that deal with the man towards life experiences and in the specific case of the digital environment (Fig. 7).

In any case, it must be emphasized that it is not a simple representation system, in fact, it is not turning our gaze towards a digital representation of the world that we can even superficially be aware of its form. Many, among philosophers, sociologists and geographers, have explained how from a certain moment of history the representations of the world no longer correspond to its image, but to the world itself that has become a representation of the models. Google Earth is one of those systems that has aimed to configure itself as a container of any content produced in the world to be able to contain any experience of any user.

A totality therefore that gives the possibility to reach the conclusion of our path to explain the proposal that we considered fundamental to propose with this conference. The idea of the acronym is developed starting from the clear reference to the English word earth, earth, which consists of the words Education, Art and Heritage, the topics specifically investigated through the study of digital environments. And it is precisely this kind of approach to knowledge and our life that we wanted to develop here, taking into account the pivotal role played by the authenticity of each experience that we conduct, in a participatory manner, within digital environments and that is to be configured in the effective quality of an individual authoriality of experience.

Fig. 7. The interface of Google Earth represents the World and (potentially) all its contents.

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