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Contemporary Art Digitalization: An Opportunity for Designing New Experiences

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Abstract. CLOUDART is a cross-disciplinary working group that joins the forces of three specific domain expert communities: Contemporary Art, Human-Computer Interaction, and Multimedia Software Engineering, all experienced in socio-technical creative projects. CLOUDART initiative aims to investigate how to design new hybrid user experiences for the online fruition of Contemporary Art.

Keywords: Art Digitalization, Human-Computer Interaction, Interaction Design, User Experience, Extended Reality

1 Introduction

Contemporary Art always anticipates society's visions and demands. Its field of action expands outside the physical outcome, going beyond something that can be seen, heard, or touched. Contemporary Art production is not composed of only paintings, drawings, or sculptures; the materials used come from different sources: tangible, intangible, or even dematerialized. This became obvious from the 1960s, when conceptual art, happenings and performances, land art, video art became central in the art discourse [1], and modes of their documentation, reproduction, and cataloging became hot archival issues [2].

The creation, maintenance, and distribution of digital art archives are the themes that mostly affect the field of Contemporary Art. This presents peculiar needs and issues to be addressed that originate from the large variety of the types of art that are put in place; e.g., site-specific installation art, participative art, public art (and their engagement in the social and political sphere), technology-based art. In all these examples, problems that arise are related to the challenges that emerge from the conservation of the artistic contribution – sometimes very difficult if not impossible due to the intangible nature of their materials or because of the obsolescence of technological hardware used in the original artworks.

This paper discusses the open issues and challenges that emerged so far from the cross-disciplinary collaboration that takes place in the CLOUDART working group. CLOUDART is an initiative that aims at joining the forces of three specific domain expert communities: Contemporary Art, Human-Computer Interaction, and multimedia software engineering, all experienced in socio-technical creative projects. CLOUDART aims to investigate the methodologies necessary to fill the gap of online fruition both by proposing techniques capable of increasing the fruition of art online and, in a more visionary way, to produce new types of experiences using disruptive technologies, producing new digital archives, trying to overcome the problem of the absence of body and shift toward a new paradigm. CLOUDART members' research is focused on the creation of a cross-media digitization able to design new use of digitalization experience, still unpredictable, but oriented to and implemented in the Contemporary Art field.

2 Contemporary Art: Beyond Physical Presence and Bodily Experiences

In 1999 Nicholas Mirzoeff proposes an overturned definition of postmodernity: “the postmodern is the crisis caused by modernism and modern culture confronting the failure of its strategy of visualizing. In other words, it is the visual crisis of culture that creates postmodernity, not its textuality.” [3]. Is it possible that today, our practices of looking – which increasingly continue swinging around the many images we encounter every day – are again in a new phase of transformation?

We believe that Contemporary Art production can help us to understand that transformation because in its very realm such practices of human measurement constantly change [4]. Just a few decades before Mirzoeff's reflections, still the body was the only one constant of scale for sculpture: in the 1960s Bob Morris in his famous *Notes on Sculpture* articles used to link art objects' qualities to be either intimate or public (namely non-personal) to their relative size (smaller or larger) as compared to human body¹ [5]. Till then and for centuries it has been an affair of Body and Space. Both of them vanished in the communicational and educational streams that flow through the Internet for most of our new days. So, proper digital measures enabling us to feel wonder as to when our body was in that real space should be studied or new practices of looking and the visualization through digital devices (to sympathetically and electively feel wonder) should be implemented. We always have to keep in mind that to make a ranking or a selection of relevancies, events of the same kind need to be ranged in a line, just like mountains ranges where one can easily identify the highest peak. In the history of ancient and modern art, the “line” and the “height” were quite clearly distinguishable in a linear progression of problems that are internal to the traditional technology and the language of art. For example, Decio Gioseffi stated that

¹ For the American artist it was the space between subject and object involved in this vision/comparison that determined the quality of the object. The larger a sculpture was, the greater the space needed to observe it, and therefore the greater its public quality.

Piero della Francesca's perspective "fundamentalism" leaves no room for doubts or trials and becomes a "public fact", a bold problem-solving milestone in universal art history: "After Piero nobody will paint as if Piero had not existed. After Piero nobody will feel the need to paint like him" [6]. In terms of linear path, art had changed already in the nineteenth century and became complicated in the early twentieth century.

For our purposes it is very interesting the direct influence, that is, the change of perspective on art discourse of contemporary American artists offered by George Kubler's theory, that might be defined as a theory of legitimate leaps. Kubler wished to find a historical-anthropological interpretation of art in view of gaining a wider framework of understanding of the new contemporary complexity he was immersed in. He concentrated on "sequences" and proved with evidence the importance that they are open, they can be started again, and they can be carried forward at any historical point, gradually enriched by the knowledge acquired all around, and thus different from when last used. When at the very beginning of Pop Art George Kubler wondered "What is now valid: the isolated work in its total physical presence, or the chain of works marking the known range of its position?", Contemporary Art world was different from now and, so to say, quite orderly, because the different sequences were still distinguishable, they were still more or less similar to his "formal sequences", and the art discourse was still within the boundaries of art language. However, soon afterward, conceptual art was once and for all legitimizing what would have been unacceptable before: the formal relevance of the work of art lost its importance in favor of the maximum relevance now given to the concept, the idea of the work. Joseph Kosuth stated that the traditional art historical discourse had reached its end and art had to work on its cultural significance rather than on forms [7]. In this sense, we can now say that Kosuth was a forerunner of the Visual Studies' theories of culturally organized images. About thirty years later – we are again in the 1990s – a last attempt to classify according to traditional criteria the main thoughts on artistic production in the second half of the twentieth century was made by Kristine Stiles and Peter Selz in their *Theories and Documents of Contemporary Art* the two authors drew a clear line under the issue, at the end of a century-long questioning the nature of art and in full postmodern times dismantling the concept of totality, while globality was urging (any conflict still to be clarified?) and Tim Berners-Lee's World Wide Web was already available to hundreds of millions of computers [8].

3 Digitalization of Contemporary Art: The CLOUDART Vision

In the Oxford English Dictionary, the term *digitization* refers to *the action or process of digitization; the conversion of analog data (especially in images, video and text for later use) into digital form*. By contrast, *digitalization* refers to *the adoption or increase in the use of digital or information technology by an organization, industry, country, etc*. By reflecting on the meaning of digitization and digitalization, it be-

comes clear that the future of a new digital market needs digitalization, in the sense of digitalization for precise purposes [9].

In September 2019, during a meeting that took place at the headquarters of Friuli Venezia Giulia Autonomous Region, with contributions from the Regional Minister for Work and various domain experts (museum experts, researchers, artists, and curators), it was done a first recognition of the main issues related to art and its digitization and digitalization. It was highlighted how artworks today, to become available and known all over the world, need to be appropriately dematerialized through the process of digitization, properly archived, and made available on the Internet. The entire process of artwork management, evolved through centuries and consolidated in the last 50 years, needs to be rethought.

A New Vision with CLOUDART. A question arises: what should be the correct use of digitalization for the diverse artwork of Contemporary Art field? There must be awareness of the concept of immateriality and the relative disappearance of objects. The fruition of art through a computer screen leads to a new principle of reality, a vision that is free from physical bodily sensations. The *perception* of art assumes new dimensions, so new psychological attitudes need to be investigated: the perception of art through the Internet loses the physical sensation that stems from seeing, living, interacting with art in presence, and that is led by personal previous experience. Digitalization and dematerialization concepts assign to screen-mediated art fruition a new principle of reality, detached from physicality, that has not yet been thoroughly investigated. The key factor of the CLOUDART initiative is the establishment of a team of stakeholders with diverse backgrounds and professionalism from a variety of fields to cooperate and mutually inspire the conversation. Particularly, the challenging relationship between art and technology and human work needs to be explored. The design of interactive applications to support the human work of professionals needs to be appropriately informed [10]: new design methods, approaches, and techniques need to be defined, as well as the development of new technologies and the disruptive use of old ones must be tailored on the specific artistic application domain. Despite that CLOUDART is focused specifically on Contemporary Art, the results of such research are relevant to other fields. The introduction of new design techniques, that insert the point of view of technological humanism in the redesign of established but obsolescent knowledge management process, is also expected to have a stimulating effect on the job market: cross-disciplines and intersections are crucial elements for redesigning new digitization and digitalization skills and such effect will be consistent with other significant drivers of both successful business development and general European economic development.

A “Breaking the Glass Ceiling” Approach. CLOUDART takes a “Breaking the Glass Ceiling” approach that aims at moving from a cultural elite appropriation of Contemporary Art to more universal and open accessibility. To influence the design of new hi-tech services and products it is fundamental to establish interdisciplinary communities of domain experts, capable of designing emotional services, shaped also

on the principles of artistic interpretation. The development of new products dedicated to the digitization of Contemporary Art must follow standards that not only respond to the constraints related to software and devices, but that involve the knowledge in art that has never been considered before by computer scientists in the digital humanities field. According to this vision, CLOUDART intends to design a new way of digitization and archiving, able at exploiting both new and old technologies but focused more on the users and less on technological tools. Digitization does not just revolve around archiving and storage, but also on the fruition of content and experience development. Applying to the art application domain the DO/FEEL/KNOW model of Interaction Design by Bill Verplank [11], the *DO* is the design activity of the archive and its storage features, the *FEEL* focuses on the design of access/fruition, while the *KNOW* is the design of the experience that can be lived through the use of technology. Specifically, for the CLOUDART initiative, the main aspects of art digitization are: 1) *DO* / Design: that reflects the purposes of an archive; 2) *KNOW* / Realization: that is related to the technologies to be adopted; 3) *FEEL* / Methods of use: that is linked to the experiences to be offered. According to the Verplank model and other Interaction Design models [12], only the balance of these aspects can create a sensible, technically efficient, and aesthetically pleasant atmosphere for a good interactive online experience [13]. From the Human-Computer Interaction (HCI) point of view, the most important questions to be posed are: “Who are going to be the users of the digital archives?” and “What is possible to do with the digitalized art?”. Full exploitation of the digitalization process requires HCI experts to go far beyond the mere usable design of archive search engines and data visualization. It means to understand how to exploit multichannel and hybrid features of Contemporary Art and its dimensions, identified by the domain experts together with art-goers.

Digital Objects and Digital User Experiences. In the context of CLOUDART, it is important to make a distinction between digital objects and digital user experience: when speaking about digital objects, the focus goes to the process of creating digital copies of real objects. This process takes into great account all the issues derived from technology, but very little attention is usually given to the humanists' knowledge about the objects that are digitalized. The role of humanists is somehow confined to a revision phase that takes place only after the digitization of the objects. Delaying the intervention of the domain experts precludes opportunities for technology exploitation that might be overlooked by technology experts. The most common activity assigned to domain experts in the art sector, when dealing with digitization, is label assignments. Tagging is undoubtedly a useful task, and the association of explicit semantics can greatly improve the possibility to navigate and search different categories of objects, including 3D digital copies. The evolution of technology towards augmented reality has introduced also the possibility to tag real objects with digital labels, creating therefore digitally augmented physical objects. However, also in this case assigning words to objects, represents only a first step, which can lead, through a further contribution of the humanists, to the creation of a digital user experience. The concept of digital user experience has deeply changed over the decades: it reflects the evolution of computer science and information technology and goes more and more to-

wards the simulation of a real-world experience. Hassenzahl states that a (digital) user experience is just a sub-category of the general concept of experience, created and shaped by interactive devices, a consequence of the user's internal state, the characteristics of the system, and the context [14]. When thinking about a digital experience conceived for the art domain, the interest is not just focused on the artworks as such, but on the relation with the context, including the physical and the human context (e.g., the guidance that the visitors might receive from experts). ToboA3D [15] is an example of exploitation of the potential of digital objects for the architecture domain. The platform provides a complete path from the social annotation of architectural digital objects to the creation of interactive stories through an interface accessible to art and architecture historians. Stories are then delivered on the digital platform and can be navigated by the visitors following a spatial and temporal path. Augmenting MODUS [16] is an augmented reality experience designed for a collateral event of La Biennale Arte 2017 which uses the labeling of the real artworks exposed at the exhibition as a baseline. On top of this baseline, different types of narrations are accessible to the visitors, including the artists' biographies and the exhibition's making. Besides, several emotional augmentations, often designed in collaboration with the artists, try to continue the dialogue with the visitors using digital means. Overall, Augmenting MODUS augments the initial exhibition proposing an alternative experience that the visitors can choose to experiment with their smartphone.

The CLOUDART Experience. The CLOUDART initiative recognizes the need to support the transition from digitalization of Contemporary Art artworks towards the digitalization of a whole Contemporary Art digital user experience. User Experience (UX) is defined as *user's perceptions and responses that result from the use and/or anticipated use of a system, product or service* [17]. Among user's perception and responses, also emotions, behaviours, and accomplishments are included. UX is the consequence of the way a product is presented, how it works and performs, of its interactive behaviour, but what is probably more important, it depends on the user's background, personality, abilities, skills, previous experiences, and also from the context of use. When people interact for the first time with a new device, e.g., a smartphone, very often the reaction is dramatically positive. The WOW factor is what we experience when we deal with a particularly fancy interface running on a nice electronic gadget. However, this phase of wonder and excitement will fade over time, and a new feeling of familiarity and ownership is developed towards the object and the interaction with it. But can digitalized artworks be compared with consumer objects and their interfaces? The interaction with digitalized artworks represents a hybrid UX (HX), and within this frame, the WOW factor for the art fruition itself adds up to the WOW factor for the interaction of its digital representation. Designing for the hybrid user experience of digitized Contemporary Art by adding SSH to engineering and art is not completely novel for the HCI research community, see for example [18, 19, 20, 21, 22]. Furthermore, there has a great deal of research on aesthetics in HCI, which is related but perhaps different from User Experience (UX) [23]. However, there is a great need for understanding the psychological phenomena, including UX, that mediate between the digital art and art-goers. Good UX has traditionally

been seen as strong, often dramatically strong, positive experiences, but this may not be the case for Contemporary Art, which is perhaps not always seeking simply hedonistic pleasures. The appreciation and appropriation of art may change over time due to increased feelings of familiarity and ownership. Among the many measures of UX, AttrakDiff [24] has gained popularity as a measure that captures positive experiences with products [25]. The idea behind AttrakDiff is that UX consists of pragmatic (e.g., effective, efficient) as well as hedonic (identification, stimulation) qualities [24, 26]. While AttrakDiff remains one of the most reliable tools to measure the hedonic aspects of UX [25], we would not expect a single tool such as AttrakDiff to fully explain the variation in UX of Contemporary Art over space and time. Walsh et al. [27] found that supplementing the quantitative AttrakDiff data with the qualitative and retrospective iScale [28] data gave additional insights as to why UX changed over time in product contexts. Karapanos et al. [29] investigated product adoption in a five-week study with AttrakDiff and found that the users' experiences differed across the three phases orientation, incorporation, and identification. We posit that the UXs of Contemporary Art artworks compared to consumer objects are substantially different. We suggest that UX of Contemporary Art can still be defined as the pragmatic and hedonic positive feelings stemming from the use of an interactive system since we treat digitized art as an interactive system. We thus believe that AttrakDiff can be used to collect data about UX of Contemporary Art, but these cannot stand alone, and they have to be interpreted with a different and extended version of the UX model that lies under AttrakDiff. A first beginning to capture the UX of art is thus AttrakDiff's dimensions: Pragmatic usability (what is the object supposed to do?), Hedonic identification (can the user identify with the object?), Hedonic stimulation (what emotions does the object stimulating in the user?), and Attractiveness (does the user find the object pleasant, likable, appealing, motivating?). However, we assume that both Hybrid experience (HX) of digitized art (e.g., the art both being physically and digitally present in the same space and time) and Unique experiences of art (UXofA) of digital art (e.g., when pure ownership is the ultimate in user experiences of (digital) art such as in the case of the NFTs of digital art² exists. This raises questions such as a) Will digitalized artworks in the future exhibit varying levels of "material agency" that goes along with "human agency" to produce "hybrid experience"? b) What are the experience dimensions of data analytics and AI-driven digitalized artworks? Also, we should study what is a quality experience of interacting with semi-autonomous digitalized artworks over time and in multiple and connect realities/data spaces, and also, the collaboration between art-goers should be investigated. One promising path forward to take into account the organizational setting of art (sometimes called 'museum') is the organizational 'heart' model of UX [30]. Further research into dramatic and ordinary user experiences of digital Contemporary Art can build on the existing notions of UX.

CLOUDART vision considers the existence of different aspects to be considered when evaluating HX: location, time, social context, senses involved (sight, touch, hearing, smell – some of all of them are often entangled). This calls for a further ef-

² See <https://www.wired.com/story/nfts-boom-collectors-shell-out-crypto/>

fort aimed at shifting the attention to these aspects from mere digital object creation to the design of complex hybrid digital user experience of Contemporary Art and the definition of proper evaluation methods.

4 Discussion and conclusion

To design for a new way of Contemporary Art digitalization at the service of new experience fruition means first of all to identify all difference between the *live* experience and the *remote* one. It means not just focusing on the missing aspects but also investigating all new potentials. We are already accustomed to extended reality [31], virtual reality, and augmented reality applied to the art domain, but the fruition experience needs to be further improved, especially through the creative use of technologies, not just the new ones but also the most well-known (old) ones [32]. Technology is never neutral because it always transforms our experience of reality: a new way of acting produces a new way of thinking and the remote experience is a clear example of that [33]. However, there is a profound difference between designing to fill the lack of physical senses and designing a new experience free from body boundaries. Digital technology is no longer to be seen as just prostheses capable of increasing, extending, enhancing some sensory aspects [34] but can be a new frontier in the design of new experiences.

The questions we ask ourselves are focused on the artistic, philosophical, scientific, and sociological fields: 1) How can we improve digital experiences of Contemporary Art through innovative digitization and digitalization processes? 2) How can be technology used for increasing, integrating, or even creating a new experience of Contemporary Art artworks? 3) Is it sufficient to enhance the experience or do we need to shift the paradigm and completely freeing experience from senses and inferences? 4) What are the possible development models to get beyond the standardized digital vision of archives, producing multilevel and hybrid user experiences? 5) What forms of design are needed to produce new forms of user experience?

The diversity of fields that are concerned by these questions reflect the plurality of expertise represented in the CLOUDART working group: Contemporary Art curators, HCI/Interaction Design researchers, multimedia software engineers. We believe that the definition of a new model, a new idea of creative design in Contemporary Art, emerges by the coexistence of three aspects: the mind of the designer, the technological tools at hand, and the context/environment in which the idea is developed and capable of being accepted.

The future steps of the CLOUDART initiative will be focused on carrying out a theoretical design analysis of new models of Contemporary Art fruition both in digitization and digitalization, on exploring the possibilities for designing for online delivery of new Contemporary Art experiences, and on investigating new education, training, and job skills opportunities in the Contemporary Art field.

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