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Guest Editorial Preface

Adérito Fernandes-Marcos, Universidade Aberta, Portugal

What is the need of new media as a separate domain if the computer is being integrated in all existing art forms anyway? (Lovink, 2007)

This issue embraces articles exposing some discussion and innovative developments in the field of digital new media arts (continuing the previous issue *Advances in Digital Media-Art*) as also some experimental work in the field of postdigital art along with their critical analysis.

PAPERS OF THE SET “ADVANCES IN DIGITAL MEDIA-ART”

In *The Sopro Artefact: A Quasi-Medium*, Pedro Correia et al. present a kind of postdigital artefact, named as hybrid, composed of analogue and digital technologies which crosses video art with installation and interactive art. It includes an interface which reveals a certain audio-visual flow when triggered by an interactor blowing insistently. It oscillates between an interface of concealment at the moment which allows somewhat to be visualized while self-neutralizes in the act of transmission; along with an interface that is revealed through the difficulties of the interactor in revealing the images and sounds (by blowing). This embraces a paradox, an ambiguity, singles out the artefact as a quasi-medium, in the sense that it has the ability to reveal audio-visual content but is not able to maintain fluid transmission.

José Hoguane et al. in *The Use of Media Convergence in the Preservation and Dissemination of Cultural Assets: Case of Mozambicans Timbila* show us the experience and perspectives of the use of media convergence through an artifact/installation in digital media art. The aim of the experience is, as an interface, to contribute to the knowledge dissemination about Mozambican timbila as cultural asset, especially in the younger strata, and to promote the reflection and awareness about the problem due to the risk of its disappearance.

FURTHER PAPERS

In *Anamorphic Atmospheres: The New Autonomy of the Digital Image*, Linda Matthews argues that digital technologies initiate anamorphic viewing conditions that correspond to previous attempts to destabilise the covert ambitions of linear perspective. By presenting digital anamorphic representations of contemporary urban space, it shows how the temporal nature of the image and the pixel-based geometry of the digital array not only contest the promotional city view but multiply the opportunity to understand previously unexplored qualitative, atmospheric properties of urban space. The author further maintains that anamorphosis was developed by intellectual dissidents as a drawing mechanism and as a counter to the previous representational constraints imposed by linear perspective. The

contemporary city image relies upon on an array of pixels mediated by technology to foster existing relationships between power and place.

Finally, in *Ecoações': An Approximation Between Post-Digital Art and Portuguese Heritage Expressions*, Selma Pereira brings to our attention the art installation *Ecoações*. The installation's title comes from the fusion of concepts "echo", and "equations". *Ecoações* embraces: from the traditions, the Algarve handmade textiles, the regional pottery, and the typical sounds of the customs associated with these activities; theater, scenography and costumes; from the fine arts, the sculpture (of the human figure) and the murals in low relief. From digital media art, soundscape, digital interaction and video projection. In *Ecoações*, the scenic space invites spectators to immerse themselves in the theme and to visit another dimension of heritage traditions, presented here under a contemporary aesthetic. The installation as scenography space implies in its all the theatricality of the visual narrative, hearing and tactile, giving the public the opportunity to explore tradition through the various senses. It is discussed how the installation brings the fruition experience closer to postdigital aesthetics while combining the scenic space, the traditions and digital media art.

We hope this selection of articles can promote useful and playful reading moments about current and future developments in technology, science and arts.

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The Sopro Artefact: A Quasi-Medium

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ABSTRACT

Sopro is a hybrid artefact composed of analogue and digital technologies that crosses video art with installation and interactive art. It includes an interface which reveals a certain audiovisual flow when triggered by an interactor blowing insistently. It oscillates between an interface of concealment at the moment that allows something to be visualized and self-neutralizes in the act of transmission and an interface that is revealed through the difficulties of the interactor in revealing the images and sounds (by blowing). This paradox, this ambiguity, singles out the artefact as a quasi-medium, in the sense that it has the ability to reveal audiovisual content but is not able to maintain fluid transmission. It does not withdraw; it shows itself.

KEYWORDS

Artefact, Breath, Interactive Installation, Interface, Medium

ARTEFACTOCENTRISM

Artistic practice enhanced by technology registers multifaceted and contradictory ways of doing things, convergences, hybridizations and crossings.

In the many approaches to the concept of media-art as a delimitation of artistic practices that use technological resources, the aggregating element can be found in the figure of the interactor.

Thus, the viewer is linked to these poetic propositions, not only as an observer who decodes, interprets, analyzes and criticizes, but also as the activator of the work. Without him, the work remains hidden.

In the introduction of a text in which Erick Felinto (2013, p. 121) speculates about the aesthetic dimension of error and noise as poetic foundations that can be thought of positively, he states that not only is the development of technologies overwhelming, but so are the concepts themselves which define phenomena related to the new media.

In the relationship between art and technology, artefact is the term we favour and which is associated with interactive computational artwork.

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*The word artifact stems from the Latin words *ars* and *facere*, which put together means as much as ‘artificially made’, or ‘made by human practice’. In traditional media theory, the term artifact refers mostly to an inaccurate, unwanted effects resulting from a (not perfectly working) technology. Attempts to use these artifacts as creative tools can be seen throughout art history and popular culture. (Rosa Menkman, 2010)*

The *Sopro* artefact, which is dissected in this study incorporates an interface, a technological device that allows interaction between viewer and work, an interactive video installation, triggered by the interactor's breath.

The interface emerges from this interactive experience, not only because of its conventional mediating role, that of a medium that shows moving images triggered in an unusual, almost magical way – by blowing – but also because, as we will see, it becomes manifest by the difficulties it causes in the interactor.

Digital technologies and computational processes have enhanced both the viewer's tangibility with the interactive work as well as the translatability of his presence into numerical language.

Qualitative investigations of the phenomenon of interactivity point to a continuous improvement in the connections between interactor and machine, in the sense of realism (Pold, 2005) and of its naturalization, seeking to make interfaces more engaging (Pais, 2014, p. 179 apud Fells, 2000) or increase their immersion levels (Pais, 2014, p. 179, apud Costello, 2005).

On the path of interfaces towards realism, Soren Pold (2019) upheld that “realism for the interface draws on an engineering tradition that aspires to make itself disappear in the name of an ideal of ‘transparency’” (2019, p. 74). However, in view of the expansion of contemporary interface, which is increasingly abstract and is being transferred to the cloud, finding new ways to hide (Pold, 2019), Pold feels the need to renew his thesis: “The metainterface paradigm currently aims to be both omnipresent and invisible, at once integrated into everyday objects and at the same time characterised by hidden exchanges of information” (*ibid.*, p. 74).

However, it was not this questioning that triggered the design of our project or guided our research. A question prior to our study of the artefact “what to do with the media?” instigated artistic practice with new media, at the same time as opening a research path into the way the artists have incorporated media into their practices.

Yet, with the development of the *Sopro* artefact, we defined that aspiration. With our critical focus on the tensions established between the phenomena of art and technology, we started to discuss the role of the interface in interactive works, particularly those that use moving images like interactive video installations. We hypothesized the possibility of interference of the interface towards the work. In this context, the issues of invisibility and ubiquity become raw material.

The conception of *Sopro* artefact is not based on the tradition of engineering or interface design, but on (subversive) strategies, intentions and technological contingencies that are structured (and in conflict) around an unusual interface. This strategy is similar to what Kluszczynsk (2010) classifies as strategy of instrument, in his study *Strategies of interactive art*:

in the Strategy of Instrument the interface plays the role of a device that generates visual or audiovisual events. By exposing it, placing in the foreground, puts emphasis on the interface itself, its uniqueness, at the same time weakening its connections with other elements of the system. (Kluszczyński, 2010, [p. 4])

It is also based on a strategy that favours conceptualization and is in agreement with Arlindo Machado (Mello, 2008, p.11) when he states that some artists are interested in concepts and not technologies. As technology is at the service of the idea, it is used according to the requirements of each project.

THE SPECTATOR IN A TRANCE

The invitation to action directed to the spectator, which was propagated in the artistic practices of the '60s, has historical antecedents. Lev Manovich (2001) states that "finally, in the 1960s, continuing where Futurism and Dada left off, new forms of art such as happenings, performance, and installation turned art explicitly participational" (p. 71).

Art, by involving the spectator in the work, forces a rupture, the appearance of an active, interactive model. The integration of the spectator implies the inclusion of his body in the work and responds to the phenomenological appeal that perception is not only formed through vision but through the totality of the senses. It is in response to this somatic involvement of the viewer with the work that, in association with the phenomenon of art, participation, experimentation, and interaction mediated by digital interfaces arise. These are devices that intrude between the work and the viewer.

Edmont Couchot (2003), a pioneer in researching interactivity and the use of breath in interactive art, referred to the way in which artists use computers and pointed out two trends: "the one that insists on the process of creation and the one that seeks the participation of the spectator" (Couchot, 2003, p. 199).

In interactive art installations, the public is asked to cross, penetrate or activate the work through the most varied strategies and compositions. Interactive art radicalizes the strategy that without a spectator there is no work of art. The artist Rafael Lozano-Hemmer emphasizes this intentionality:

My interest in the new media is in the idea that the work of art is conscious; is aware of the audience. The work of art is not only open to the public; the relationship must be reciprocal: the public must be open to the work because the work sees the public, listens to the public, feels the public and expects the public to do something special (...). Rafael Lozano-Hemmer (2007, p.62)

Milton Sogabe (2010) adds other important elements to the public, such as space, in which he states that its configuration is more conditioned to the concept than to the technology; what happens in it (the event); interactivity; and the interface and digital management. This last element is related to the interface, sensors, actuators, and the devices that "materialize the programmed operations" (Sogabe, 2010, p.67).

Thus, the viewer moves within the interactive installation, which is designed to generically offer him an aesthetic experience. The interacter is placed in a given preceptive context and is linked to the process through interfaces – sensorimotor devices – which can present multiple means (analogue and digital) and settings.

The interface, through the sensors which it includes, may require a concrete action from the viewer or may directly capture his presence (movements, sounds, etc.) and simultaneously trigger an actuator that enables audio-visuality.

In the specific case of the artefact under analysis, the public has a direct influence on the work. Their breath causes the images and the associated sound to appear. The flow of images depends on the rate of ones' exhalation. The performance of the interacter reveals the work and without this action, the work remains virtual and latent in the computational device. This phenomenon expresses a certain magic, a certain expectation, a belief provided by technology.

However, when interacting with the work, the viewer has no sense of immersion, nor is he free of technical and physical constraints, but nevertheless has an interactive aesthetic experience. *Sopro* goes from the metaphor of the belief in technology, to the physical force that moves the interface.

FAILURE

According to Dietr Mersch (2013), the concept of *medium* is contingent. A medium, or rather, what can become a medium only materializes under certain conditions. In his negative media theory, he

mentions that media escape any possibility of analysis, “they can at best be described negatively, that is, from a series of negations that always say what they are not” (Mersch, 2013, p. 209). Media cover up their mediality at the moment that mediation takes place. This phenomenon of “disappearance in the apparition” (2013, p. 212), which the author calls the medial paradox, can only be undone through other paradoxes: flaws that result from performativity, and that make the “medial conditions and structures” manifest (Mersch, 2013, p. 218).

In a similar way, Sybille Krämer (2015) uses the figure of the messenger as a metaphor for the function of the media. *“The Problem:* ‘Can transmission be creative?’ Messengers transmit what is given to them. They are supposed to pass their messages along across space and time with the least distortion possible, and they should by no means change them” (Krämer, 2015, p. 20). The messenger is committed to neutrality, the medium disappears behind the message. The messenger is asked to transmit the message and to protect it from intrusions (idem, p. 83). “The smoother media work, the more they remain below the threshold of our perception” (Krämer, 2015, p.31). The medium only reveals itself, only becomes present, when it encounters something anomalous, such as a technical failure:

At the same time that media bring something forth, they themselves recede into the background; media enable something to be visualized, while simultaneously remaining invisible. And vice versa: only noise, dysfunction and disturbance make the medium itself noticeable. (Krämer, 2015, p. 31)

Rosa Menkman (2010), an author who studies the poetic potential of technical failure from Glitch Art3, points in the same direction when she mentions that failure reminds the user of the materiality of the medium: “Rather than creating the illusion of a transparent interface to information, the machine reveals itself” (Menkman, 2010, n.p.).

In *Sopro*, the interface forces the limits of the body of the interactor, whose breath cannot make the moving images flow in an idealized way. It is in this impossibility that the interface (the medium) is revealed, adding a layer of meaning to the work which was not anticipated by the interactor, and which opens it to multiple speculations.

The challenge/game that is established between the interactor and the work produces a tension between technological fascination and its limits. Human error is combined with failures of technology. Thus, the interface incorporated in the artefact intermediates at the same time as it is revealed – paradoxically, due to the interactor’s errors – contaminating (potentially) the meaning of what they are mediating.

Sopro makes use of technology. It does not seek that the interactor should be the author of the work or that the work be managed by itself from a machinic scheme. The interactor acts – blows – to visualize the images, and it is the flow of images that he manages to move that makes his physical limitations evident. The films are difficult to watch because human breath has limitations; it is not continuous and needs to be continuously recharged. The work causes a physical (material) reaction in the interactor; the insistence on inhale-exhale causes discomfort and deoxygenates the brain. The exercise of trying to move the film without success creates anguish. What leads the interactor to proceed varies between internalized fascination with technology, the magic that seems to be behind the artefact and the expectation of seeing the totality of images, but also the challenge (the game) of testing limits.

In summary, we can say that the design of the artefact was based on the theoretical foundation of the concept of medium, artistic intentions and procedures contaminated by strategies of subversive and critical tradition. It also benefited from a renewed digital Techné, a revamped way of doing (knowing), which we will describe later.

TRANSLATABILITY

The breath concept contains multiple layers of meaning. Air emerges as a source of inspiration or as the source of all things. In mythology, our body, as a biological machine, comes to life when it is breathed into by God. "In ancient times, the Greeks did not believe that people thought, but that they breathed information, not even that they looked or heard it, but that they inhaled and exhaled it" (Kerckhove, 2003, p. 16). Among pre-Socratic Greek philosophers, Naturalists, those who associate reason and thought with natural phenomena, there was Anaxímenes (585 BC-524 BC), who detected the origin of all things in air.

Breath has also served as a raw material for multiple creationist metaphors in art. From the divine breath, the source of life, to the allegorical representation of Chloris exhaling flowers through his mouth in the painting by Sandro Botticelli ([1445–1510]), *Primavera* [1478], the symbolic strength of breath is present in multiple artistic manifestations, including those that make use of new means.

In the *Sopro* artefact, the type of trigger is intended to influence the work. To give meaning to the work. If the work was activated by a computer mouse, the whole sense would be neutralized. The act of blowing seeks to give power to the work, open it to multiple interpretations and to sensoriality because the visualization of what is represented (the moving images) has physical implications on the interactor's body.

The exhaled air can produce movement and animate. The idea of giving encouragement to objects from breath arises here, directly associated with technology. The arrival of the computer not only allowed the convergence of sounds and images and transformed them into the same digital code, but it also made it possible to translate movement, light, temperature, humidity or human breath into numerical data in that same language. Microcontrollers such as *Arduino* perform these operations and software such as *Processing* manage and make the data obtained available.

The *Arduino* microprocessor is an open-source board that allows the registration and constant change of codes programmed into its software installed on the computer. This programming is later transferred to the *Arduino* board via a USB cable. *Processing* is a programming graphical environment for interactive systems. This open-source software works in conjunction with *Arduino*, with the function of processing audiovisual content.

In *Sopro*, a sensor (cooler) captures the expiration of the interactor and receives the external analogue data (breath). The microprocessor (*Arduino*) converts them into digital data, which will be processed by *Processing*. That operativity confirms the numerical translatability of the breath and also enables a viewing of the film which was previously placed on the computer that controls the set of devices that make up the artefact.

TECHNE

As we have seen, the initial impulse of *Sopro* comes from a conceptual basis that questions the relationship between man and technology, and the body in relation to technological means. In this context, the technical interface that provides interactivity is the engine of the entire conceptual and critical design of the artefact. However, it becomes evident that it does so in the opposite direction to vertigo or technological fascination.

The interface stands out in the context of the work so that we can, in a speculative way, proceed with the deconstruction of technological means, as a utopian expectation of extending our perception and our sensoriality.

The *Sopro* artefact moves away from practices which are close to interaction design and its conception process is the result of the friendly bonds between an updated *Techné*, practices close to the DIY movement and creative (digital) programming. It presents prototypical characteristics, and is able to fit into the field of technological aesthetics and computational art.

Figure 1. Botticelli painting fragment



Figure 2. Interaction, Paratíssima, Lisbon, July 2016



The sensor that controls the interface is the result of the decontextualization of a component, a computer cooler, whose original function is to cool certain components (hardware) of a computer to avoid heating overload. The adaptation to the sensor function will capture the interactor's expiratory activity and mediate its passage to the *Arduino* microprocessor, which, in turn, will translate the blowing power into manipulable digital data.

The arrangement of objects in the installation was planned to welcome viewers and to facilitate their action. The device consists of a computer, a microcontroller, *Arduino* model *Uno*, one software (*Processing*) and also projection technology (variable)4: a set of speakers connected to the computer and a cone-shaped structure. This structure, which looks to be close to a wind instrument, is a kind of megaphone that amplifies not the sound but the breath of the interactor and refers to the need to make contact, to activate a relationship, for a certain communicational urgency.

The Interface also incorporates a cooler that works as a sensor (potentiometer), somewhat camouflaged in the structure of the metal cone trunk that is supported by a tripod. Therefore, it is close to configuring what Milton Sogabe (2012) calls a false interface.

The breath emitted by the interactor is the input signal from the interface. The movement of the cooler caused by the breath of the interactor generates a current that is captured by the microprocessor (*Arduino*). The cooler has the advantage of being able to operate at low voltages (5V-12V), just like the *Arduino*, and with dimensions that are both easily concealed. The received data are transcoded⁵, transformed into digital data by *Arduino* and transferred to *Processing*, which manages them and allows the control of images and sounds (video). *Processing* reads the current value, more intense or less so, according to the intensity of the breath, triggers the film (output) and controls the speed of the frames (frames) that can be viewed per second.

The viewing of the film is thus controlled by the interactor. And it will be viewed at its normal speed, reduced or accelerated speed, depending on the intensity – adequate, greater or lower – and the rhythm of the interactor's blowing.

Processing contains a feedback system. The blowing of the interactor activates a control system based on feedback. And gives the *input* to the enter mechanism while modeling the outflow (*output*). The computer articulates the whole process: *Arduino*, *Processing*, video and respective projection seen by the interactor.

Succinctly, the interactor activates the fan (cooler), which sends the data (movement/speed) to *Arduino*. This, in turn, transforms this airflow into numerical data that are delivered to *Processing*, that uses them to move the film that is in the video library. The video is always ready to be triggered by this input from outside. The interface (fan) does not function as a sound, colour or movement detector; it does not act by default; it forces the viewer to act. Only interactor's will discloses the work. And in the case of the *Sopro* artefact, this does not seem to be an easy task.

EXHIBITION AND RECEPTION

Before presentations, several tests were performed in *Processing* in order to make the relationship between the interactor's blowing and the image flow as natural as possible. In the first three presentations, there was always a need for small adjustments and modifications in the speed settings of the image flow, in the delay between the breath of the interactor and the start of the film, and in the loop. This system varied between the possibility of the film being viewed in its entirety and returning it immediately to the starting point, after a break in (or absence of) breath.

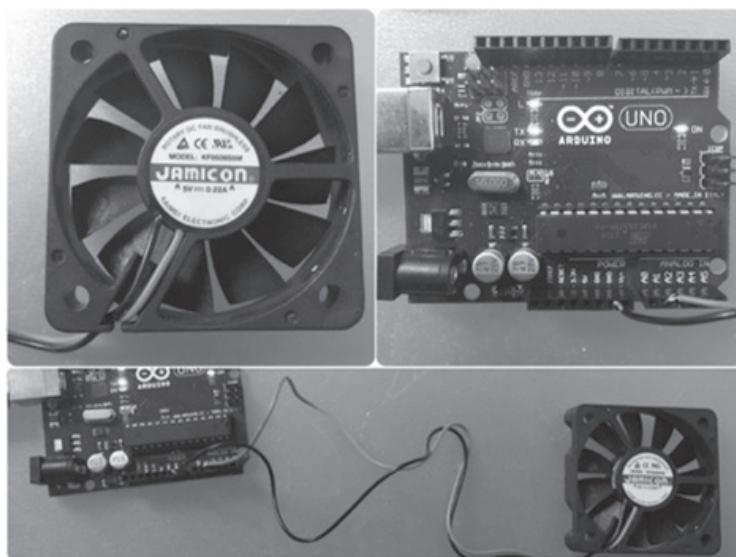
The *Arduino* reads the current value, which is more intense or less so, according to the intensity of blowing: the numerical values varied between 0/100 without breath and 100/499 with blowing. The maximum value obtained with blowing will allow a starting value to be established. The average value established in the different presentations varied between 100 and 120: at the value of 100, the film can flicker or show small sudden flows without blowing. With the value established at 120, only blowing can move it. The higher the start-up value, the more difficulties the interactor faces in putting the film in motion. Through the tests, we realized that, even with an easy start (value 100), the interactor still has difficulty because it is very difficult to sustain a constant and prolonged expiration.

Sopro 1: [Spring]

Paratíssima Arts Festival (Lisbon, July 2016)

The film *Primavera* is at the genesis of the *Sopro* artefact. A work not only of technological interlacing between analogue and digital systems but also of cultural references. The film wanders between the concepts of insertion and subversion as artistic strategies. It is a rescued insertion in the work of Cildo Meireles, *Insertions in Ideological Circuits*⁶, from the 1970s, in which the artist appropriated the commercial (Coca-Cola bottles) and monetary (notes) systems to insert/spread political messages.

Figure 3. Cooler and microprocessor Arduino



The title refers to the painting by Sandro Botticelli [1445-1510], *Primavera* [1477-1482], which, among others, portrays Mercury (Hermes), the messenger/medium of the gods and the nymph *Chloris*, abducted by *Zephyr*, the god of wind, blowing flowers through his mouth.

With the intention of subverting the cult film by Andrei Tarkovski [1932-1986], *Solaris* [1972], we converted one of his main sequences into video, in which the protagonist moves by car, in a pro-futuristic scenario, passing many other vehicles. In this specific sequence, using an analogical/DIY method (a lengthy process), we inserted the image of an African toy car built with cans rescued from the trash. The insertion of this strange element subverts Tarkovsky's film-work. The purpose is more ironic than political.

To the irony is added the magic of technology validated by the interactor's blowing that moves the film. The interaction device, the interface, provides the interactor with the perception that he can move the toy car because that is his point of view. But viewing the video is dependent on his performance and effort.

Sopro 2: [Inner Blow]

Algarve Design Meeting (Faro, 2018)

In the second presentation of the *Sopro* artefact, at the 8th Algarve Design Meeting, in Faro, the *Sopro* artefact received a film from the collective *The Inner Project*, coordinated by Bruno Mendes Silva and Mirian Tavares – an endoscopy, reworked (edited) with sounds that simulated the entrance of the interactor inside a body. The simulation is enhanced by blowing and the dimensions of the visualization.

Afterwards, it was noticed that the artefact behaved like a surrogate belly. As a medium, like a machine for viewing films, it (re)contextualized and absorbed new layers, but, again, a certain magic was present due to the possibility that the visualization of an endoscopy blowing involves. The issue of difficulties was not so present, perhaps because we associate endoscopy itself with a precarious and creeping flow of images, with flaws. The failures were accentuated by discontinuities in the sound.

Figure 4. Image of the *spring film* with the toy car inserted following the Solaris film, with the printed speed of the velocity (84,00x) [stop])



Figure 5. Spring, Paratíssima Arts Festival, Lisbon, July 2016



Sopro 3: [Pamphlet]

XX Vila Nova de Cerveira International Art Biennial, August/September 2018

In the presentation of the artefact at the Cerveira Biennial, in 2018, housed in the section of digital works proposed by the artistic higher education institutions, in this case, the Universidade Aberta and the Universidade do Algarve, *Sopro* became a dissolvent device. Therefore, in this third presentation, the interactor was invited to disaggregate a digitized portrait of Donald Trump by blowing, transforming the image into small black dots scattered across the screen. To achieve this, the interactor had to expend considerable physical effort.

Technically, the film without the action of blowing always returned to the initial position, in which the unified image was viewed. There is a slight delay between the action of the interactor

Figure 6. Insert caption here (Inner Blow, Algarve Design Meeting, 2018)



and the response of the device. The image insists on regenerating itself. After multiple attempts, the viewer found it impossible to dissolve.

The receptions varied between active participation (which seems to convey a commitment) and indifference, withdrawal, non-participation, non-commitment. Other hermeneutical layers of the project seem overwhelmed by the popular identification of the represented figure. The participation, the impetus to activate the apparatus through blowing, is often underlined with common verbal expressions. In this context, we observed that *Sopro* acquired the function of a *medium-pamphlet*.

A QUASI-MEDIUM

In the presentations of the artefact, we could observe multiple reactions on the part of the interactors. Among failures and resistances, we registered behaviours of contempt, involvement, discomfort, political verbalizations (pamphlet), attentive distance or discreet observation. In common, special attention to the interface.

“When the Lumière brothers invented the first cinematographic camera, viewers looked away from the film, because they were excited as much by the film as by the machine that produced the images.” Rafael Lozano-Hemmer (2007) 7

At the presentation of *Sopro* in Lisbon at the Paratíssima Arts Festival in 2016, records of purely performative reception emerged. A group of French-speaking interactors, without access to the project’s synopsis, decided to make a kind of contest among themselves. They tried, through the different blowing intensities, to give the highest possible speed to the African toy car infiltrated in the film.

The impetus for performance was given by the impression (print) of the blowing speed in one corner of the screen. This speed was permanently updated according to the blowing intensity and translated on the screen, numerically, with variations between 0 and 200. In this reception, the interpretive discourse seems to have been replaced by the purely playful performance provided by the technological apparatus. The content was not sought out by most of the interactors, nor even by their peers. On the contrary, it was appropriated by the interactors, due to the uniqueness of the interface, for the game it provided.

It becomes difficult for the interactor to maintain a continuous blow that reveals twenty-four frames per second. Flashes, sudden accelerations, flickering, sudden stops, these disturbances in the visualization reveal the interface. It is this instability, the failure, that calls up the interface.

Figure 7. Pamphlet, Cerveira International Art Biennial, 2018



From the presentations, we can highlight three interpretive layers of the artefact.

Layer 1: Magic and Deception

From the observations of the experiences and emotions expressed by the spectators in interaction with the artefact, we can wonder if, in first approaching the artefact, the interactor is surprised by a certain magic offered by technology. From his continued experience with the artefact, he realizes that the interface was not designed to fit effectively with the “watch-a-film” (video) function. Emotions range from surprise, enthusiasm, resistance, discomfort or physical pain. The interface is appealing, but it is not user-friendly; it appears unrelated to the efficiency, ease of use of engineering or Human-Computer Interaction Design.

The interactor appears to reach a post-technological fascination state. The interactor’s action of breathing out onto the technological interface reveals an inglorious effort, making him aware of his somatic limitations. The ground is prepared for the role of the *medium* to be questioned.

Layer 2: Transfiguration

Sopro was conceived as an interactive video installation that combined a (predetermined) video with a technological apparatus. The artefact was that whole that included the film *Primavera* and for which a specific interface was produced. All was in line with the conceptualization of the project. The objective was fulfilled in providing the interactive aesthetic experience and in reflecting on the totality of the interactive video installation, in which all the pieces of the puzzle seemed to fit together, making the artefact closed.

When the artefact was asked to receive the film from the group *The Inner Blow Project*, it became a machine for the unveiling and visualizing of moving images through blowing. The artefact detached itself from the initial concept, opening up to another role provided by the interface. In this process of the transfiguration of the artefact, new lines of escape were opened, and the unexpected and its expansion took on relevance.

Thus, following the three presentations, we found that the idea of the medium was inscribed in the artefact. This passage, a conceptual mutation that results from the fact that the interface that integrates the artefact can receive any film, was not foreseen in its genesis.

Layer 3: Contamination

From the entropy caused by the interface when viewing the film – manifested in intermittences, small interruptions, the non-fluidity of moving images and the discomfort it causes in the interactor – a new issue arises related to the possible contamination of the meaning of what is viewed. If the interface becomes visible, if it is positive, when its self-neutralization was expected, mixing with the content in the act of transmission, not only is the interactor compelled to question the work, but the work itself opens up (unfolds) the construction of other sense(s) that result from the manifestation of its materiality.

ESCAPE LINES

In the confrontation of the reviews and analyses of the *Sopro* artefact with its public presentations, we can detect that, as a *medium* that transmits moving images, the artefact is captive to a subversive, strategic and intentional gesture, which provokes the positivity of the interface during the act of transmission.

From the instability of the interface, its performance, its inconsistency, it can be inferred that it does not neutralize itself during transmission (Krämer, 2015). The interface emerges as a matter that is superimposed on the moving images it transmits and, consequently, on the sense of the images. This unusual operability, associated with noise and failure (technical and human), gives it the visibility that seems to validate our initial hypothesis of the possibility that the interface may interfere with the transmitted content and, thus, contaminate the meaning of what is viewed.

We realized that the development of the artefact is not fixed. Medial and nomadic characteristics were added to its relational and subversive nature. Thus, away from a closed *here and now*, it will remain unstable, open to revisions, interpretations, speculations, and deviations.

Thus, a set of strategies and considerations are left only to the artefact itself: an anti-hegemonic blow that subverts the dominant device, which operates, for example, in the counter current of the cinema device, installed in contemporary culture, questioning this pre-established to see; or even, a dystopian blow that suggests that art should not be concerned with the most grandiose, the most extraordinary, but, for example, with the most problematic.

For now, the development of the *Sopro* artefact, as an answer to the initial question: what to do with the media? took us to the concept of quasi-medium: the medium that can transmit any film, but that is not collected in the act of transmission. The medium which reveals itself together with what is unveiled. However, quasi-medium also refers to the end of closed definitions and to extremities (Mello, 2008) that rule out any idea of specificity.

In *Sopro*, as we tried to demonstrate, we idealized a way of seeing images in motion, at the same time as being disappointed with the limitations of our own body. Starting from the fascination with technology to show the disappointment, the breaking of expectations, and relating this to the development of a (quasi-)medium, one that almost collapses in the act of transmission, is one of the possible lines of escape.

TECHNICAL RIDER

Title: Artefacto *Sopro*

Year: 2016-2020

Project Description: Interactive video installation, triggered by the interactor's breath. A sensor (cooler) captures the expiration of the interactor and receives the external analogue data (breath). The

microcontroller (Arduino) converts them into digital data, which will be processed by Processing. That operativity confirms the numerical translatability of the breath and also enables a viewing of the film which was previously placed on the computer that controls the set of devices that make up the artefact.

Concept: Pedro Correia

Technical development: Pedro Correia, Elisabeth Carvalho and José Coelho.

Space: Should be at least 5m x 5m x 2,5m.

Components (set): Interface - a metal cone trunk with a hidden sensor (computer cooling fan); wire, extensions and electrical outlets.(não sei como traduzir “artilhado”).

Variable dimensions (width) x (length) x (height): minimum 3mx 3m x2m

Computer equipment: Hardware - Microcontroller Arduino R3, connect it to a computer with a USB cable, keyboard, and mouse; **Software - Processing** and Arduino

Video Projectors: Short-throw placed on the floor very close to the vertical projection wall or Mini Projector concealed / camouflaged in the cone trunk

Sound: 2 speakers

Electricity: 1 x AC socket.

Setup time: 5 hours.

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ENDNOTES

1 Blowing as an interface driver appears in the work of the artist and *media-art* theorist Edmont Couchot, in partnership with Michel Le Bret, *Les Pissenlits* (1988). The spectator blowing on a microphone causes the movement and dissipation of the seeds of a dandelion (virtual flowers projected on three screens).

2 Mi interés en los nuevos medios reside en la idea de que la obra de arte tiene conciencia; de que es consciente del público. La obra de arte no sólo se abre al público; su relación debe ser recíproca: El público tiene que estar abierto a la obra, porque la obra mira el público, escucha al público, siente al público y espera que el público haga algo especial. (Rafael Lozano Hemmer in Anderssom, 2007, p.6)

3 Glitch Art is characterized by the exploitation of intentional errors, by interference in the processing or compression of images and sounds, expressing faults, inventing faults or programming faults with the aim not only of obtaining audiovisual aesthetic effects, displacing this phenomenon of technology for media art but also for strategic purposes of technology.

4 At the Paratíssima festival, the projector used was a Short-throw. This model can be very close to the wall or projection screen.

5 Transcoding, in the language of the new media, is translating into another format (Manovich, 2001b, p. 64).

6 In these historical insertions (strategic, methodological and subversive), in which political action is confused with artistic practice, Meireles, with the objective of embarrassing censorship, conditioning and impunity propagated forbidden information and challenged the instituted power.

7 Rafael Lozano-Hemmer interviewed by Cecilia Andersson. Interview published in EXIT Express magazine, 2007, p. 6.

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The Use of Media Convergence in the Preservation and Dissemination of Cultural Assets: Case of Mozambicans Timbila

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ABSTRACT

This article intends to present the experience and perspectives of the use of media convergence through an artifact/installation in media digital art. The aim of the experience is, as an interface, to contribute to the knowledge dissemination about timbila of Mozambique as cultural asset, especially in the younger strata, and to lead reflection and awareness about the problem due the risk of its disappearance. The article aims to elucidate the role of digital media art in solving humanities' problems.

KEYWORDS

Cultural Preservation, Digital Artifact, Digital Humanities, Media Convergence, Mozambican Timbila

1. INTRODUCTION

The recognition of the need for communities' heritage assets and the preservation of its collective memory has occupied a privileged space in our contemporaneity. There are several policies that UNESCO has been designing and implementing worldwide, with emphasis on conventions of 1948, 1972, 2003 and the 2030 agenda of 2015. As a result, there is an evolution of awareness in the States about the cultural goods' importance (Zanirato & Ribeiro, 2006).

Similarly, the contemporary world is characterized by an evolution and diversification in technologies and its uses. In this scenario, issues that concern the Humanities (such as the arts and culture) find new possibilities of approach in technologies. In fact, more than simple technical resources, technologies are creating strong influence on several dimensions, including the sociocultural (Arantes, 2009), generating a knowledge production field of research that crosses methodologies from various scientific fields, called Digital Humanities (Fiornante, Numerico & Tomasi, 2015).

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Looking at Mozambique, more specifically for *timbila* (plural of *mbila*), it is possible to see, on the one hand, the imminent risk of disappearance of this cultural asset and folkloric symbol of the collective memory of *Copi* communities, in spite of some government actions to reverse the phenomenon. On the other hand, there is an emergence of “digital natives” for whom technologies can be used simultaneously for leisure and for knowledge construction.

The problem or threat of *timbila*’s disappearance, according to Manuense (2014) appears allied, among other factors, to (i) the practitioners’ aging that is not accompanied by the desired substitution by new practitioners; (ii) deforestation caused by the increasing demand for raw materials, and (iii) the decaracterization of the original sound due to the massive production encouraged by economic gains but disinterested with perfection.

Several initiatives have been done for preservation and dissemination of this cultural good, especially (i) the national festivals of traditional dance and instruments in Mozambique, (ii) the traditional festivities called *msaho*, (iii) the elevation to Intangible Heritage of Humanity by UNESCO in 2005, (iv) the placement of the *mbila*’s image in the 5Mt coin, and (v) the recent *mwenje*’s (*Ptaeroxilon oblicuum*) reforestation initiatives, the main raw material, although the desired effects can be harvested around 60 years later, time required for its wood maturation (Manuense, 2014).

The elevation to Intangible Heritage of Humanity has generated more interest and demand for *timbila*, which today are at risk of disappearance. In this article, the role of digital technologies is questioned and explored in the desideratum of preservation and dissemination of this cultural good, as well as, in the construction of the subjects’ cultural identity.

In this backdrop, this article presents an experimental journey that explores the technology role (embodied in a digital artefact that is assumed as a recreational and artistic creative interface) to conduct a reflection and contribute to education for cultural preservation (and simultaneously environmental preservation) mainly directed to a younger audience.

2. THEORETICAL BASES OF TECHNOLOGICAL EXPLORATION FOR CULTURAL HERITAGE PRESERVATION

This section presents the role of technology in the preservation of cultural assets and identities in the Globalization era, the possibilities brought by media convergence for cultural dissemination and the interactive, communicative and reflective dimensions that should accompany an artefact in digital media art.

2.1. Technology and Preservation of Cultural Assets

According to Marcos, Branco & Zagalo (2009) the content of cultural heritage collected from different sources (archaeological sites, museums, 2D and 3D digital recoveries of architecture and historical discoveries, etc.) has served as a raw material for modeling digital artefacts that aim to transmit messages. This positioning shows how important and fruitful the technological exploration can be in order to preserve culture.

Indeed, art-culture and technology coexist in the same spaces in our contemporaneity. The technology takes place in the conception of art objects as well as being seen as a support or dissemination medium (Tavares, 2016). It is in this context that issues traditionally concerning the Humanities find new possibilities for their resolution in digital technologies.

As shown by Porto-Renó, D., Versuti, A. C., Moraes-Gonçalves, E. & Gosciola, V. (2011), in a single communicational “package”, one can find text, video, audio, photo and graphics for narratives transmission, generating the convergence of different languages.

Taking a closer look at our contemporaneity, inhabited by “digital natives” and influenced by profound changes in communication and information systems, due to the possibilities offered by technologies, it is almost inconceivable to let oral practices (which characterize and keep Mozambican

traditions) continue to be largely responsible for passage and preservation of the cultural knowledge from generation to generation.

Digitization and virtualization are called upon to make their contribution, because, in addition to allowing easy information access, sharing, storage and reuse, new generations deal daily with a variety of media and languages convergence that influence them in their knowledge and identity construction.

2.2. Cultural Identity and its (Re)Construction

Hall (2006) recognizes the complexity to conceptualize the identity definition. However, he advances that since the end of the 20th century there have been structural changes that are transforming societies and their subjects. Such transformations change the personal identities, referring to the idea that the identities are not static, but (re)constructed by external influences.

The “evolution” of the above identities is based on three antagonistic conceptions of identity brought by Hall (2006, p.10): (i) the fully centered and culturally unified subject; (ii) the sociological subject who still carries an inner essence formed and modified in the interaction with external cultures and identities; (iii) the postmodern subject considered not having a fixed cultural identity, constantly constructed and reconstructed.

This last subject is character of the present. Its cultural identity is largely affected by the globalization process that, according to Freire (2006, p.58), by promoting cultural “interconnectivity” fragments the unique identity idea and builds an identity composed by various, sometimes contrary, identity ideas.

In this view, one can have acquired the false idea that in Globalization the globality prevails over the local. In fact, as Hall (2006, p.77) notes, Globalization explores and uses local differentiation, so it would be more accurate to think a new articulation between global and local. This articulation can be, in the authors’ opinion, carried out through a system of cultural exchanges. In this context, urge to (re)build a subject who is knowledgeable of his or her culture, in order to be able to participate in an exchanges cultural system with other subjects. To this end, he or she must have knowledge of the patrimony of his or her culture, which for Freire (2006, p.59) would function as a memory that by conserving and reproducing symbolic artefacts and materials from generation to generation, would become the depository of social information.

2.3. Media Convergence and Cultural Dissemination

As explained by Porto-Renó, D., Versuti, A. C., Moraes-Gonçalves, E. & Gosciola, V. (2011), media convergence or languages’ convergence are related to the communication possibility of being able to find text, video, audio, photo and graphics in a single communicational “package” for narratives transmission. Indeed, possibilities brought by the new media shall generate new dissemination ways of knowledge on the reality.

Some examples of digital platforms with projects aimed at the preservation and dissemination of cultural goods can be found at:

- <https://garrettonline.romanceiro.pt/> - this is a project that since 2013 seeks to edit digitally the Almeida Garrett’s *Romance*, an activity preceded by research and analysis of known sources (published, patents on pieces of theater, manuscripts, etc.) dispersed by several documentary centres in Portugal. It is intended to cover several types of reader, since he or she will be able to choose the level of reading at his or her reach, something impossible in a printed book. It presents the possibility of interaction with social networks, that can boost the dissemination of its existence and its content;
- <https://depts.washington.edu/hisprom/> - this is a database that aims to provide bibliographic and textual data, and audio files (digital reproductions of original oral performances or their musical notation) from the repertoire of the ballad pan-hispanic, documented worldwide since the 15th century;

- <http://www.arxiudefolklore.cat/p/qui-som.html> - this is the first genre archive in Catalan Universities, containing graphic texts, sound and audiovisual originating mainly from interviews in the southern and Catalonia regions, and constitute an abundant and valuable sample of regional folklore. In recent years, it incorporates pieces of non-oral folklore in order to encourage the preservation and study of new genres that have emerged in urban society;

The knowledge dissemination and construction can be made on various platforms of communication such as sites, blogs, television, cinema, print, radio, social networks, mobile devices and digital artefacts. These possibilities allow greater flexibility in the dissemination and coverage to an uncountable number of consumers. In addition, the public has several consultation options, depending on the need, interest, availability and time for access.

2.4. The Artefact in Digital Media-Art: Interaction, Communicationand Reflection

According to Marcos (2017), digital media-art objects refer essentially to digital or computational artefacts. They bring with them an informational load, in order to offer meaningful experiences to the user/enjoyer. This shows that the primary objective of a digital artefact, more than technological exploration, is to communicate or bring to the user/enjoyer a “certain amount” of information that will help him or her in knowledge construction.

Given and considering that technologies are no longer simple technical resources for artistic creation (Arantes, 2009), the authors of digital artefacts seek, through technology, to explore interactivity and expressiveness, which transforms such artefacts into inducers of artistic and cultural action-intervention (Marcos, 2017). From this principle, it is clear that artefacts should not be objects for mere and passive appreciation, on the contrary, they should present a level of expressiveness that leads to aesthetic appreciation and, at the same time, promote communication and interaction with the user / enjoyer, and lead him or her to reflection and meanings construction.

3. CONCEPTION AND PRESENTATION OF THE ARTEFACT “NÃO VÁS, Ó MBILA!”

This section presents the artefact guiding conceptual, the technical presentation and the way it works.

3.1. The Artefact Conceptual Presentation

The artefact / installation is called “*Não vás, ó mbila!*” (Don’t go, mbila!). The objectives of this installation are to raise awareness about the risk of timbila disappearance and mischaracterization, as a result of human action on Nature. It is also intended to disseminate knowledge about timbila as a cultural asset, especially among a younger audience.

The vertiginous increase in the demand for *timbila* by national and foreign tourists, raised the levels of the *timbilas’* production and commercialization, leading to indiscriminate felling of trees (from which the typical wood is extracted for their manufacture) and the mischaracterization of their original sound, both by the use of alternative woods, as well as by mass production careless with quality. This scenario threatens the *timbila* continuity and the consequent lack of *timbilas’* knowledge by the new generations. Therefore, it motivated the artefact creation.

3.2. The Artefacttechnical Presentation

3.2.1. Components and Material Used in the Artefact

The artefact / installation combines physical and virtual components (Figure 1):

- **Physical Component** - is comprised of the *mbila* prototype, PIR sensor, servo motor, plant environment miniature, several cards with images, book with text and images, computer, mouse, screen, projector, computer speakers, instruction sheets.

Figure 1. Explored software (a- Isadora, b- Bloveye AR and c- Arduino IDE)



- **Digital/Virtual Component** - is composed by software (Isadora, Bloveye AR and Arduino IDE version 1.8.13) and video files, for reading in augmented reality (AR) or manipulation in Isadora.

The choice of these softwares was based on knowledge and mastery over them. More than that, Isadora allows several possibilities for more fun and real-time interaction; Bloveye AR enables the creation and sharing of auras, accessible installation and operation to simpler smartphones; Arduino IDE allows easy interface between components such as the sensor and the servomotor used in the artefact. The combination of these softwares allows several possibilities of interaction with the user/enjoyer.

3.2.2. Conductive Vectors of Aesthetic Meditation

For Marcos (2012) it is necessary that the artefact provides a perceptive experience of pleasure, meaning or satisfaction, and a technological innovation that acts as a driving force for the creation of new aesthetic discourses. Next are the descriptions of the aesthetic apprehension and technological innovation brought in the artefact (Figure 2).

- **Aesthetic Apprehension** - the installation features artistic miniatures of *mbila* and a vegetable environment symbolizing the scenery from which the raw material is extracted. Videos and images are results of captures made at *timbila* orchestras and, exhibit the beauty of the orchestras' performance moments, sounds, songs, dancers' costumes, among others. The book and cards bring suggestive images and are easily linked to the part of the narrative to which they relate. This combination of shapes, images, colors and sounds aims to provide the user/enjoyer pleasure, meaning and satisfaction.
- **Technological Innovation** - the artefact explores and combines digital technology (Isadora, Bloveye-AR and Arduino IDE) that supports the user's interaction with the installation. These softwares are used in various situations, from professional environments to entertainment. Out of these environments, the innovation consists in the form of its combination to create enjoyment

Figure 2. Overview of the aesthetic result obtained



and new aesthetic discourses in the users. Their combination in the installation allows reflection on the issues involved and knowledge acquisition, all in a relaxed way. Furthermore, the chosen technology allows the installation to be used in various ways and simultaneously by several users.

3.3. Functioning and Form of Interaction

The interaction takes place when the *mbila* prototype is removed, and it makes that the PIR sensor placed under, activates the servo motor rotation (from 0° to 90°) leading to the tree miniature fall among many others already fallen, symbolizing the discriminated felling of trees for the mass production of *timbila*. Here begins the reflection on the human action consequences in Nature and the sustainable of *timbila* production.

Choosing AR, the user / enjoyer reads the QR codes (patents on each card and in each image in the book) with the smartphone's camera, in order to install the ARsoftware. Done that, simply follow and scan images from the book or cards, so that they come to life and generate videos with various knowledges about the *timbilanarrative*.

For the interactivity using the Isadora software, it happens through the keyboard and the mouse. By pressing certain keys indicated on the cards, corresponding videos that make up the narrative are rotated. Through the mouse movement, sound and visual effects are created on the videos, such as variation in volume, brightness, position, screen size, among others.

4. EXPOSURE MOMENTS AND RESULTS/FINDINGS

In the digital art cycle creation, the creative dives into a reflective process, which results from the gradual maturation of his or her initial vision, from practical experimentation, and from the artefact construction itself. This process impacts the refinement of the artefact meaning and the artefact form (Marcos, 2012). In this context, the moments that follow show this reflective and evolutionary process of the experienced artefact / installation.

4.1. The Experimental Exhibition

This was carried out with a view to the first contact of the artefact with the public. Taking advantage of the possibility that artefacts can be presented in museums, galleries and art fairs, artistic associations, commercial and advertising spaces, educational and recreational spaces, etc. or even in some virtual space on the Internet (Marcos, 2012), and as it is an artefact that aims, in an artistic-playful way and media convergence, to raise awareness and dissemination, especially in the younger people, the experimental exhibition took place in a educational space (Lhanguene University Campus - Maputo / Mozambique), attended mainly by students, teachers and researchers.

It was found that the younger ones preferred to explore the AR interface and the more adults preferred to watch videos on the screen by exploring the Isadora interface. Both manipulated the positions of the *mbila* prototype and verified its effects. Some conclusions were drawn, including the need to work with less heavy audiovisual formats for Isadora interaction, using a PIR sensor to have less diffused rays and to program it to react to smaller distances (Figure 3).

Figure 3. The artefact installed in the experimental exhibition with three users in action



4.2. The Exhibition at the Doctoral Retreat in Digital Midia-Art

The VII Doctoral Retreat in Digital Midia-Art took place in Obidos / Portugal from 23 - 26 July 2019. The artefact exhibition in this Retreat allowed interaction with other enthusiasts, many of them unaware of *timbila*, generating a lot of curiosity. The authors consider that the visitors reaction was satisfactory, collected on a very simple interview sheet. In general, the audience stressed the possibility that they had to interact with the installation, and also the different way to expose a cultural asset and reflect on its preservation, in a clear demonstration of the possibilities of cohabitation between art-culture and digital technologies, pointed out by Arantes (2009) as being an intrinsic relationship between aesthetics, media technologies and society (Figure 4).

Still in the exhibition, the users learnt several aspects about the *timbila* narrative, as its manufacture, the various types that exist, the role of children, the role of men, the role of women, the constitution of orchestras, the dancers' dresses.

In reflection terms, users were led to think about the consequences of human actions on Nature and to search for solutions to reverse the current scenario (disappearance of trees that allow the *timbila* production).

Figure 4. Overview of the installation in Óbidos/Portugal

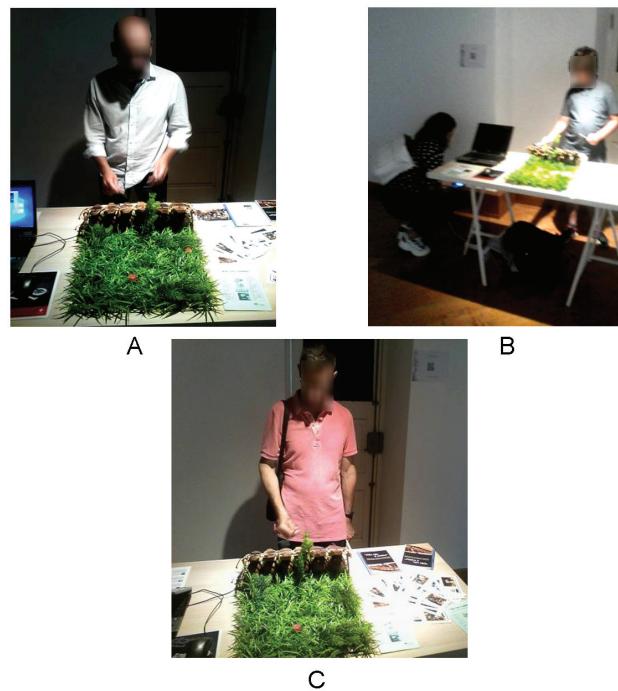


This exhibition also included users' suggestions for improvement such as placing multiple trees to fall, and an indication of where it may or may not touch. These suggestions may help in the next moments, in the reverberation and in the transformations that the installation will deserve (Figure 5).

4.3. The Exhibition and Communication at Scientific Journeys

Within the scope of the XI edition of Scientific Journeys at the Higher Technical School (ESTEC) of the Pedagogical University - Maputo, that took place between 16 and 20 September 2019, a scientific

Figure 5. (a, b, c) Enjoyers experiencing the installation exposed at the doctoral retreat



communication about the role of digital technologies in cultural preservation was delivered. It reflected particularly on the possibilities offered by AR in this regard (Figure 6).

In the same event, there was a showcase resulting from the School's scientific research and technological innovation initiatives. In this show, the artefact was exposed, which promoted another moment for application the media convergence to the cultural dissemination and reflection on the human action consequences on cultural heritage and on Nature.

Figure 6. Scientific communication, ESTEC 2019



Within this exhibition, users got the opportunity to learn several aspects about the *timbila* narrative, such as its manufacture, its types, the children's, men's and women's roles, the orchestras constitution, the dancers' dresses. In addition, users were led to reflect about the consequences of human actions on Nature, and to think about solutions to reverse the current scenario (Figures 7-8).

From the exhibition, some suggestions for improving the artefact were collected, such as the simulation of the need for planting trees and the placement of handling instructions in some places of the artefact.

5. CONCLUSION

Conceiving and developing the artefact / installation up to the present stage was not a linear activity. During the corporatization and experimentation, the initial planning has undergone some changes, mainly due to the users' reactions and the need to improve the experience and interaction with the artefact / installation. The aim was to constitute an artefact that was, as Marcos (2012) said, simultaneously functional and aesthetically appealing, so that the user / enjoyer becomes part of it.

The artefact/installation is an example of how to explore the possibilities for an active use of the arts produced and supported by digital technologies, the media convergence towards social awareness and cultural dissemination, elucidating the role of digital medium-art in solving problems in the field of Humanities.

Figure 7. The author giving explanations on how the artefact works



Figure 8. Users interacting with the installation exposed at ESTEC 2019



In this specific case, through the artefact exhibition, it was disseminated among users/enjoyers and made them aware of the *timbila*'s narrative, its manufacturing process, its sizes and formats, the roles and characteristics of the various actors.

In a relaxed way, users/enjoyers learnt and reflected on the consequences of human actions on the environment and on the culture. At the same time, they were invited to think on solutions to reverse the disappearance of trees that allow the *timbila* production.

Based on the observed findings, on the suggestions received by a short written interview and by conversations with the users / enjoyers and on additional research, it is thought to continue with the process of artefact reverberation and improvement, in order to make it an increasingly appealing, engaging / interactive, dynamic communicative / educational and reflective interface.

For a full exploration of the artefact, the user/enjoyer needs to have a smartphone and some skills on software installation (in this case for the AR software), a fact that would have led more adults to limit themselves on manipulating the *mbila* prototype and the book, while the younger audience also explored Isadora and AR.

The involvement and reflections that the artefact allows, validate the researchers' intentions and can be used for similar initiative as well as adapted to the contexts in which other cultural assets are at risk of disappearance.

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Anamorphic Atmospheres: The New Autonomy of the Digital Image

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ABSTRACT

The principles of linear perspective geometry were applied to both the representation and the form of the Renaissance city to reflect the collective proprietorial ambitions of church and state. Anamorphosis was developed by intellectual dissidents as a drawing mechanism and as a counter to the previous representational constraints imposed by linear perspective. The contemporary city image relies upon on an array of pixels mediated by technology to foster existing relationships between power and place. The paper argues that digital technologies initiate anamorphic viewing conditions that correspond to previous attempts to destabilise the covert ambitions of linear perspective. By presenting digital anamorphic representations of contemporary urban space, it shows how the temporal nature of the image and the pixel-based geometry of the digital array not only contest the promotional city view but multiply the opportunity to understand previously unexplored qualitative, atmospheric properties of urban space.

KEYWORDS

Anamorphosis, Array, Atmospheric, Maignan, Niceron, Perspective, Pixel, Qualitative

INTRODUCTION

The 15th-century development of linear perspective geometry liberated representation from the limited pictorial attempts that had preceded it through a new and highly compelling imitation of the world and an even more compelling interpretation of the metaphysical space beyond it. However, the visual success of this highly organised system of spatial arrangement meant that the viewer was consigned to predetermined image viewing points along a linear projection towards infinite space. The further interchangeability of drawing and surveying instruments that made this kind of pictorial leap possible also ensured that the same principles of spatial organisation became embedded and formalised within the city (Gorse, 1977), underpinned by the collective ambitions of Church and State¹ (Kemp, 1990).

The linear perspective space of viewing had long provoked interrogation. Following other earlier secular explorations by Leonardo Da Vinci and Hans Holbein, in 17th-century Rome, Minim monks Jean-François Niceron and Emanuel Maignan from the Church's own ranks explored and developed anamorphosis as an alternative drawing and spatial mechanism (De Rosa & Bortot, 2019). This technique could simultaneously unravel the *mystery* behind the linear perspective technique and offer the viewer a new autonomous experience of the representational space of the image.

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The contemporary city image is a composite of the many urban snapshots captured by digital visioning technologies dispersed across multiple vantage points in the form of public webcam networks and drones (or unmanned aerial vehicles – UAVs). Relying upon a digital array of pixels rather than a Cartesian grid to form an image, these viewing platforms deliver highly curated urban views that, like their analogue counterparts, uphold existing relationships between power and place. Nevertheless, the ubiquitous nature of this technology and its availability within the public domain has meant that the urban image is now not only released from proprietorial ownership, but importantly, available for further examination and intervention by the individual.

This paper argues that digital anamorphosis is a representational condition fostered by the mobility of modern visioning technology. It is described both by the experiential effects of this technology upon the viewer and its capacity to dismantle any predetermined utopian viewpoint. Positioning anamorphosis as linear perspective's 'interrogator', the paper argues that digital anamorphosis, as did similar techniques undertaken centuries earlier, initiates unique, novel viewing trajectories. It reveals how viewing technology, acting as a surrogate of the body, profoundly repositions the viewer in a new embodied and autonomous spatial experience of the city. Furthermore, the paper shows how the image-processing functions mediated by digital visioning technology present a similar disruptive counter to *utopian* views associated with proprietary interests in the design of urban site design as did their precedents.

However, a significant difference for representation rests in the replacement of the pictorial precision delivered by perspective's Cartesian grid with the atmospheric ambiguity offered by the digital array. As a corollary, the paper presents a series of digital anamorphic representations of contemporary urban space. The series demonstrates how new digital viewing platforms and the modes of representation they initiate extend the viewing experience beyond the constraints of any authorised or predetermined view. It also reveals how the temporal nature of the image made visible along new video axes of space/time, by departing from the formal constraints of traditional representations of the city, multiplies the opportunity to understand its previously unexplored qualitative, atmospheric properties.

CONTESTING PERSPECTIVAL TRUTH

C.D. Brownson's account of linear perspective unites it and Euclid's *Optics* as geometrical systems describing the presentation of appearances at a fixed observation point (1981). The one significant difference is that while the *Optics* is primarily concerned with the investigation of how we perceive things, linear perspective instead is targeted primarily to painters. In this respect, by enabling artists to delimit the spatial field of representation, and therefore to control precisely the configuration and interaction of its content, linear perspective brought new opportunities to impose personal agendas or ideologies upon painting.

The spatial relations of objects can then take on dramatic and narrative significance in a picture, as when one character can clearly be seen to look another directly in the eye across intervening space (p. 192)

An example of this, and one of many similar works, Andrea Pozzo's 1694 perspective ceiling *Apotheosis of S. Ignatius* (Figure 1), according to a reading by Martin Kemp (1990), conflates the Church and infinite space into an indisputable truth.

Furthermore, the portability of the linear perspective technique opened up the possibility for the design of the city to be considered in the same way. Works such as the Urbino Panels (second half of the 15th century) exemplify this (Figure 1), revealing perspective's capacity to integrate ideal with historical form in a seamless, single image, as Hubert Damisch (1994) observes:

Figure 1. Andrea Pozzo, *Apotheosis of S. Ignatius*, 1694 (top); Fra Carnevale, *The Ideal City of Baltimore*, 1484 (bottom) Sources: Pozzo (1694); Carnevale (1484)



[*The Baltimore Panel*] ...offers up a veritable display of ancient and modern architecture, something resembling a repository of monuments – the equivalent of a carefully preserved historic district, though one into which buildings have been introduced that must be qualified as ‘avant-garde’. (pp. 244-5)

This is further exemplified by the Strada Nuova in Genoa, which was literally transformed into a stage through the implementation of the Aristotelian unities of place, time and action. Its architect, Peter Paul Rubens, intended the distribution of palaces, churches and villas in this aristocratic neighbourhood to serve as a projective model for northern European noble patrons (Gorse, 1997). The Strada Nuova was transformed into a *scaena frons* (front of stage) for the Genoese nobility and a courtly centre within the larger city, where it served as a signifier of wealth and social aggrandisement.

However, the geometric underpinnings of linear perspective were interrogated and subsequently manifested in anamorphic representational techniques intended to draw attention to spectator viewpoints. While Hans Holbein's earlier 1553 painting *The Ambassadors* (Figure 2) had already probed the spatial control imposed by linear perspective through the exploration of how the viewer's position in space affects the content of the painting (Chard, 2003), the 17th-century exploration of the theoretical and graphic capabilities of the anamorphic genre revealed hitherto unsurpassed zeal (De Rosa & Bortot, 2019).

Jean-François Nicéron and Emanuel Maignan (among others) used anamorphosis to contest the linear perspective schema² through the formation of an alternative, secondary image or images from an oblique viewing point to the picture plane. A technique already exploited by religious orders³, these images were designed either to reinforce or subvert the content of the primary image. Directly

Figure 2. Hans Holbein, *The Ambassadors*, 1553 Source: Holbein (1553)



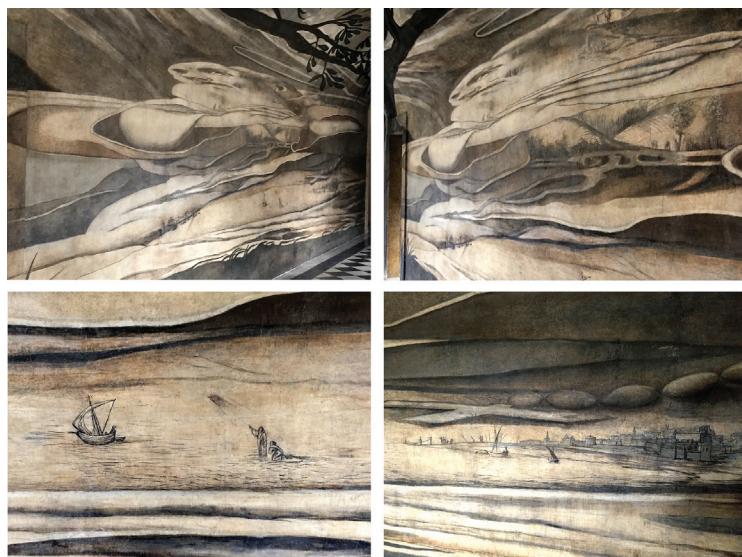
opposing the assumption that the viewer is perpendicular to the viewing frame, this technique had the express purpose of rupturing linear perspective's conflation of real and represented form, as Lyle Massey (2007) notes.

In fact, the anamorphic picture is the antithesis of the Albertian window. If the window provides an analogy for the centred Cartesian subject who surveys the world as picture, anamorphosis turns this illusion inside out, forcing the viewer to see perspectival space as a fiction of geometry and to see the pictorial surface as an object that stares back. (p. 68)

In Niceron and Maignan's new geometric configuration, the superimposition of one fundamental tenet of linear perspective construction, the distance point, upon another, the principal point, seen in *San Francesco di Paola* (in Trinità dei Monti in Rome), profoundly alters the traditional linear perspective viewing schema. Here, the viewer is forced to assume a position of extreme proximity to the physical surface of the picture plane to view the primary image correctly and, while passing along the picture's surface, sees several sub-images unfold. Niceron's grid and Maignan's fresco (Figure 3) offer numerous intact 'sub-images' that respond to the viewer's various viewpoints along its surface. Passing along the picture plane, several micro-landscapes unfold which, in even further contradiction to the projective strategy of traditional linear perspective representation, present entirely discrete local contexts. This fluctuating visual journey, in which the viewer successively occupies and vacates a series of viewpoints, serves as a constant reminder of the actual *space* of viewing and the *act* of viewing itself. "Perspective thus becomes a property of man's movement and trajectory in physical space" (Massey, 2007, p. 109).

In sum, the anamorphic technique opens up a new representational dialogue that, by revealing "the inherent deceivability of sight" (Massey, 2007, p. 39), becomes a mechanism that sets the body back into motion. Anamorphosis removes the constraints of linear perspective by requiring the viewer to pass along the surface of the image to 'make sense of' its content. In so doing, it restores experiential control to the viewer.

Figure 3. Jean François Niceron and Emanuel Maignan's fresco *San Francesco di Paola*, 1642, in Trinità dei Monti, Rome, showing image when viewed from frontal viewing positions (top); and micro-landscapes embedded within the larger image visible from a viewing position perpendicular to the image surface (bottom) Source: Images by author



A DIGITAL IMAGESCAPE

The proliferation of viewpoints fostered by contemporary digital visioning systems complicates the production of any single ‘ideal’ view to an even greater extent than did the anamorphic frescoes in Trinità dei Monti in Rome. By replacing Niceron’s micro-landscapes with a sequential montage of views (Perin & Matthews, 2014), the pan, tilt, zoom (PTZ) function of the webcam and drone either compresses or extends the field of view along a line that is perpendicular to the angle of the computer screen. According to Deleuze (1986), this model is aligned with the natural biological procedures of human vision, which exceeds the constraints of the perspective regime. “...where there are no edges, no up or down, no right or left, no in or out ... [there is only] universal variation ... universal undulations, universal rippling” (McGrath & Gardner, 2008, p. 30). The new mobility of the image-making instrument means that the contemporary ‘imagescape’, as connected fragments, becomes both a condition of modern life and a condition whereby modern life is understood (Beller, 2012). In this respect, because image montage is a cinematic device that influences our natural perception of space and its dynamic properties, it also has implications for the way we engage with architectural space, as Richard Koeck (2013) notes: “If visual theories, film and cinema influence the design of spaces, does this not suggest that we should consider the use of film and cinematic principles as a natural instrument to facilitate engagement with architectural spaces?” (p. 71).

In Cinema 1, Deleuze (1986) introduces the notion of the cinematic selection of “blocks” of space-time from matter-flux, where the block of images is a moment of deliberate intervention, or an “immobile cut” or slice through flowing matter-flux, and standing in contrast to the architect’s traditional “frozen” orthographic representation of static space (McGrath & Gardner, 2008, p. 32). Referring to filmmaker Yasujiro Ozu’s use of a fixed camera to film scenes at multiple right angles in order to establish a sense of architectural space and the complex trajectory of bodies within this space, McGrath and Gardner propose a new hybrid system of architectural drawing. This in turn refers to Deleuzian ideas of infusing the orthographic system of architectural representation with film stills and timelines that map space, time and movement as intervals or blocks of spacetime (McGrath & Gardner, 2008). Furthermore, it is the ability to introduce a cut or slice through matter-flux that, by

shifting the experiential quality of the viewer's trajectory within this space, ruptures the authenticity of the authorised view.

Disorienting Territories

Webcam and UAV trajectories across urban space, like the viewing experience presented by Nicéron and Maignan before them, produce oblique views that can be highly disorienting and profoundly visually distorted (Massumi, 2002). However, what had formerly been a physical journey along the image plane, undertaken in a bid to resolve disorientation, is now replaced by the trajectory of digital visioning systems, manipulated by the viewer using a screen. This results in the production of a new condition, which Marc Hansen (2004) describes as proprioception, in which the viewer's response to the qualitative aspects of the city is heightened: "... proprioception proper designates the body's nonvisual, tactile experience of itself, a form directed toward the bodily production of affectivity" (p. 229).

In *New Philosophy for New Media*, Hansen (2004) refers to "our coupling with the computer" (p. 108) as a new form of "embodied perception" in which the digital transformation of the analogue world has both perceptual and experiential consequences that are entirely specific to digital topography. Hansen illustrates his point using Robert Lazzarini's *skulls*, a sculptural installation composed of four skulls, which draws upon the precedent of anamorphic content in Holbein's *The Ambassadors* to reveal fundamental distinctions between the product of perspectival and digital geometries.

Hansen (2004) asserts that the viewer's failure to be able to assume a 'correct' viewing position to resolve the distorted view of each skull points to a domain of digital geometry whose topology or 'territory' remains largely uncharted, thus having an equally uncharted destabilising effect upon the viewer. In the case of objects in any scene surveyed by digital visioning technology, this experience is magnified because the multiplication of viewpoints correspondingly increases the number of anamorphic views. In addition to this, the viewer's optical surrogate, the zoom mechanism of the camera, by separating the viewer from the real content of the image, shifts the experiential mode of viewing into an even more heightened state of embodied perceptual experience. In this situation, rather than relying upon his or her own perception, the viewer uses the surrogate projectively to navigate and identify the city's form.

... to the extent that our perspectival grasp of the image is short-circuited, we do not experience the image in the space between it and our eye (as in normal geometric perspective); and to the extent that we are thus 'placed' into the space of the image (though without being able to enter into it), our visual faculties are rendered useless and we experience a shift to an alternate mode of perception rooted in our bodily faculty of proprioception. We could say then that Lazzarini's work functions by 'catalyzing' an affective process of embodied form-giving, a process that creates 'place' within our bodies. (Hansen, 2004, p. 203)

As an example of this effect, images of Shibuya Crossing in Tokyo, one of many digitally invigilated iconic global tourist sites, are produced by several local webcams that deliver simultaneous streaming video footage, as do numerous UAV flights in the vicinity. Many of these devices, particularly in the case of the UAV, assign mechanical control to the viewer: the actions of the camera are totally controlled by the user rather than by a central server (Abrams et al., 2010) and, as Mark Monmonier (2000) notes, these "... can present a purposefully selective, highly rhetorical landscape narrative" (p. 57).

Seen in Figure 4, these captured views are mutually informative. With the need for any single ideal view now superseded by a composite city imagescape composed of multiple oblique views, any disorientation, formerly achieved by the interplay between Nicéron and Maignan's distorted principal image and its sub-images, is now experienced by the technological propulsion of the viewer through space. In other words, in a way similar to Holbein's *Ambassadors*' generation of

Figure 4. Simultaneous webcam images of Shibuya Crossing, Tokyo, showing the reciprocity between different oblique views of the same location Sources: Bottom right image – Forrest Brown/Shutterstock.com; Other images – public domain



a condition of disorientation and self-reflection in the viewer through the forced assumption of an oblique viewing point, digital image technology repositions the viewer in a highly accelerated way through the urban space.

Digital visioning technology's ability to offer multiple, rapid oblique views of the same urban location means that the image now develops and changes across a kinematic dimension (Empler, 2017) with the result that complementary viewpoints can be easily and simultaneously accessed online. While this bestows a certain autonomy on the viewer, it also initiates a disturbing spatial and temporal condition. With two computer screens operating simultaneously, the viewers are literally able to observe themselves in the act of viewing in real time. This recalls Nicéron's anamorphic diagram in which the distance point is superimposed upon the principal point. In a corresponding scenario, digital visioning technology enables a similar vi Achieved by Nicéron and Maignan and others before them, the use of the digital image-making instrument 'against itself', as it were, produces an entirely disorienting and eerie experience, which Keith Broadfoot (2002) describes as follows:

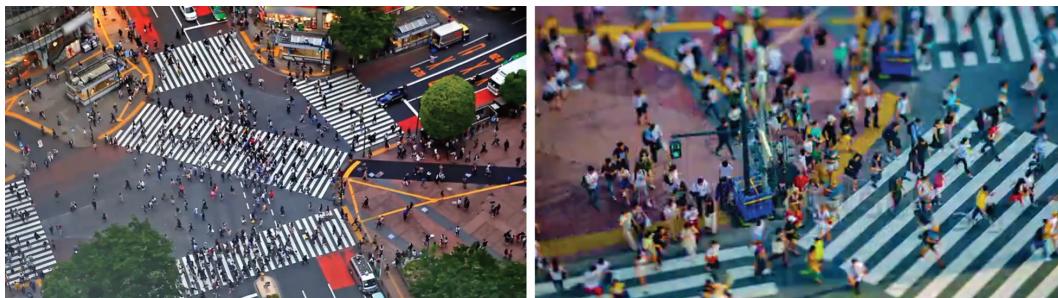
... when the spectator does see the skull, he sees the skull facing towards the place where he was standing in front of the painting. At the moment the spectator sees the image of the skull, there is the retrospective realisation that this image of death was 'always-already' looking at the spectator without the spectator being able to see it. (p. 93)

Qualitative vision

While the proliferation of the viewpoints and the extensive manoeuvrability of both webcams and UAV's multiply the occurrence of principal viewpoints, the secondary landscapes that function as the modern counterpart of Nicéron and Maignan's 'micro-scenes' which explain the larger contextual image, just as did their earlier counterparts, are also multiplied. In this case, it is the camera's capacity to capture fine-grained scales of urban space through its zoom mechanism that enables the viewer to understand the complex digital imagescape of which these micro-scenes are an important part (Figure 5).

While the micro-scenes that unfold as part of the viewer's anamorphic experience in Nicéron and Maignan's fresco are highly legible figural representations, at first glance, many contemporary versions of these are not. Digital technology is accompanied by digital error. While this is considered by owners of city sites used for promotional purposes to be an inconvenient but inevitable technological by-product to be tolerated, it nevertheless can be argued that image artefacts contribute to a richer composite imagescape of the modern city. It can also be argued that they are a legitimate component

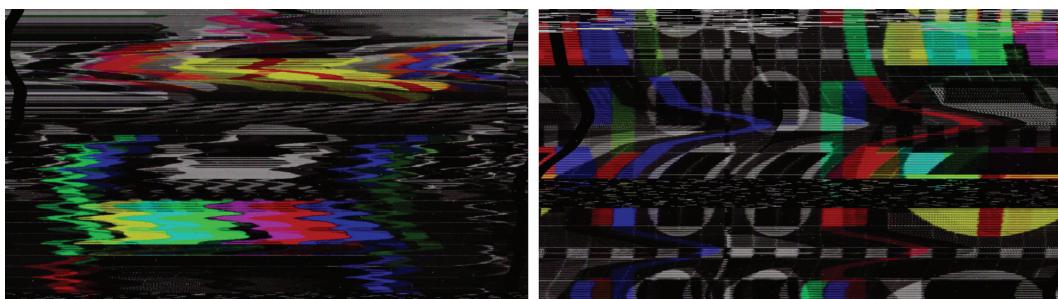
Figure 5. Simultaneous webcam images of Shibuya Crossing, Tokyo, showing the reciprocity between different oblique views of the same location Sources: Left – StockStudio Aerials/Shutterstock; Right – Tokyo Visionary Room/Shutterstock.com



of the digital anamorphic schema. Both the webcam's and the UAV's PTZ camera path give rise to various transmission errors associated with motion and glare (Figure 6).

These so-called image 'errors' are, in fact, new anamorphic presentations of the modern city which, as mechanisms that witness the body's return to motion, albeit virtual, expand the canon of urban representation. By incorporating both highly resolved and artefact-affected images, the contemporary cityscape now becomes one in which the qualitative aspects of the city complement the authorised presentation of urban space. Just as in the case of the fresco *San Francesco di Paola*, the coexistence of both is vital to any critical understanding of the city in which, as Thomas Sheehan (2003) notes, "The vision is common, so all are allowed to see its conditions" (p. 100).

Figure 6. Examples of digital image transmission error showing disrupted content. Source: Image by author; original image – vjbackground, envato market, videohive.net

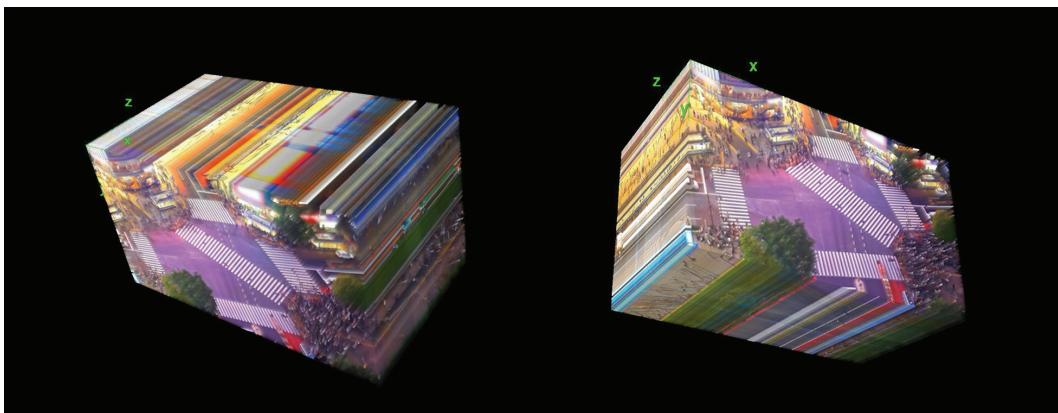


READING ATMOSPHERIC MICRO-SCENES IN THE DIGITAL CITY

The imaging of space across an extended temporal frame not only transforms the nature of the human trajectory within it but, importantly, it is accompanied by access to diverse visualisation software platforms that work as adjuncts to image-capture devices in the reconfiguration of form and movement along a temporal or 'z' axis. As an example of this, open-source Java-based medical image-processing software, ImageJ, has the capacity to organise streaming video footage into visible stacks of space-time (Ferreira & Rasband, 2003). Functioning as part of the mediating mechanism for captured digital video footage, images are assembled as spatially related slices. These extend the image's functionality well beyond the realm of two-dimensional analysis into functions that present the qualitative aspects of urban activity and form by using a temporal or z axis.

Figure 7 shows the different rotational axes of a stack of 500 video images extracted from webcam video footage of Shibuya Crossing in Tokyo. The assembled images clearly show the evolution of spatial modification over a brief timeframe as progressions and variations of image content. Acting in conjunction with the primary authorised civic view that begins and completes each captured scene, the axial representations or ‘elevations’ of space-time are the unseen, anamorphic views of this location. By making visible the space ‘behind’ the primary camera view, these seemingly illegible representations disable the authenticity of the promotional content of the space.

Figure 7. Stack of 500 consecutive webcam images showing rotational axes extracted from webcam video footage of Shibuya Crossing, Tokyo Source: Image by author; original image – StockStudio Aerials/Shutterstock.com

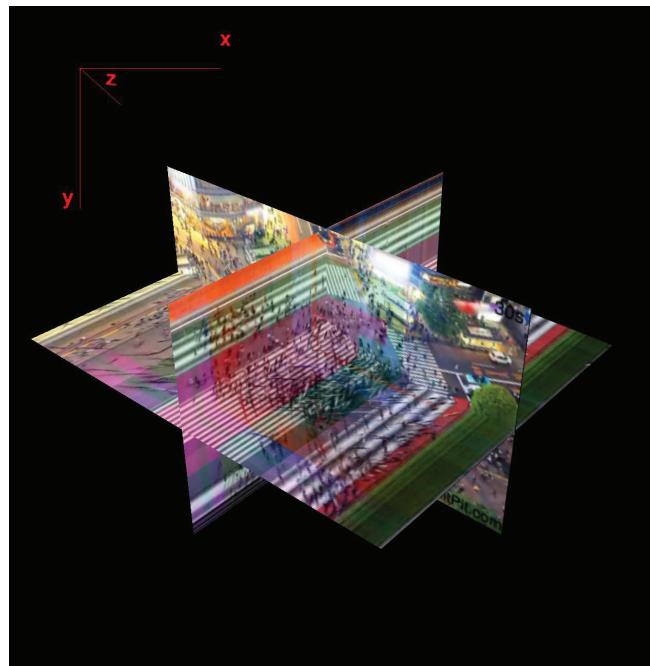


A further insight into the prolific anamorphic capacity of this mode of visualisation can be seen in Figure 8, which shows a single orthogonal slice through the image stack. In this case, the intersection of digital visual data across multiple axes enables specific time-points to be located within a temporal context, revealing transitions in urban movement and form both before and after the selected timeframe. Within any assembly of 500 images, there are therefore the same number of opportunities to avail oneself of this temporal information.

The visualisation of urban space across simultaneously evolving axes means that, in an automated virtual environment, not only is the viewer’s trajectory along the image planes or axes of representation entirely autonomous, but each observable micro-scene within the journey becomes a discrete comment upon the larger promotional, authorised view. However, unlike previous mechanisms of anamorphic representation, these are understood within a new visual paradigm. In a digital environment, represented spatial content is mediated by a digital array in which no continuous line is present and in which pixel geometry and its axial representations offer an alternative reading of a scene through a time-based schema. Furthermore, form and spatial depth are described by pixels, which form an assembly of data packages containing variations in colour and brightness. In a radical departure from the precise geometric delineation of linear perspective, it is the effect of these that describes a new type of atmospheric perspective.

The image stack’s capacity to release anamorphic projections of the city’s multiple viewpoints, and therefore its conditions, in a simultaneous manoeuvre, transforms each axis into a series of atmospheric readings of the city, modified by time. In this respect, the collective correspondence of these new pictorial expressions of colour, brightness and form with their earlier anamorphic counterparts is now seemingly inverted – the micro-scenes are the pictorial elements that require interpretation rather than the principal image. However, the anamorphic micro-scenes of the principal

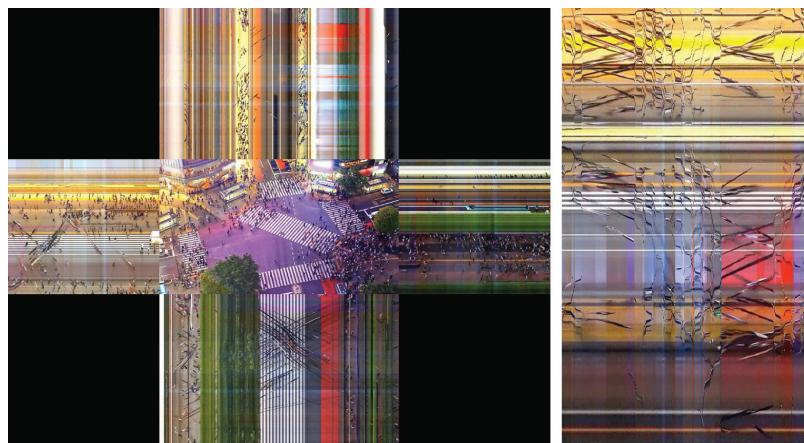
Figure 8. Intersecting orthogonal slices extracted image stack of video footage of Shibuya Crossing, Tokyo, showing multiple axes
Source: Image by author; original image – StockStudio Aerials/Shutterstock.com



view presented by the virtual stack must be interpreted within the pixel's language of colour and brightness if they are to be legible.

Figure 9 describes the temporal extensions of the 'x' and 'y' axes of a block of space-time, showing the principal webcam image at the centre of the montage. Because the pixel privileges properties of colour and brightness over form, the progression of the image stack across the temporal axes is dominated by intervals of intense variations in colour intensity overlaid with abstracted

Figure 9. Left: Image slice extracted from the image stack of combined orthogonal views of the x and y axes along the z axis of the image stack of Shibuya Crossing, Tokyo. **Right:** Enlargement of segment of image slice extracted from ZY axis the same image stack Source: Image by author; original image – StockStudio Aerials/Shutterstock.com



diagonal forms (interpreted as human circulation through a framed scene). The axes therefore rely upon an understanding of atmospheric effect to operate as components of the anamorphic riddle and to ‘comment’ upon the principal image.

So, what do these micro-scenes tell us? The abstraction of image content seen in the axes removes the visual distraction of traditional arrangements and presentations of form within the scene. Given the human visual system’s tendency to prioritise the reading of form over colour and brightness, the forestalling of this optical function allows the viewer to gain insight into what temporal shifts in the qualitative aspects of colour and brightness in a scene actually reveal about the function and use of this space (Boring, 1946; Livingstone, 1988; Norman, 2002). With the viewer’s response to form thus sublimated, and the evolutionary interplay of the scene’s colour and brightness properties foregrounded, the overarching authority of the principal promotional image becomes less compelling. The point here is that the way an urban scene is punctuated by occurrences of various colours and intensities can shed light on the nature operation of the space, or perhaps even call it into question, as Anne Uteck (2009) observes:

Public urban space takes on greater significance as new technologies are moving out of structured and enclosed physical environments into urban spaces. The technological embeddedness shifts the emphasis from abstract information processing to concrete physical space, from clothing and cars to the entire urban landscape. As such, everyday actions and behaviors no longer belong to particular places, and because there is no place—no arena of life which is truly public, private activities can occur in these urban spaces that we may not want or expect to be observed. (p. 96)

Depending upon what the correlation between colour, intensity and their real-world counterparts disclose about the operation of the space, the unveiling of its often unseen or ignored atmospheric properties seen in these axes nevertheless provides previously unavailable insights into the city that either contest or complement the perpendicular principal view.

In the case of the constantly shifting viewpoint of the UAV, the processing of video data using the same analytical platform produces even more extensive formal abstractions and insights into the broader atmospheric properties of urban space than the fixed webcam. With the camera’s field of view unleashed in a constantly evolving and viewer-determined trajectory through urban space, the occurrence of a principal view is multiplied. The further mounting of these images on a processing software platform reveals a corresponding scale of formal disruption accompanied by similar profound shifts in colour and brightness in the axes of the image stack (Figure 10).

Spatial Atmospheres as Generative Techniques

As a corollary of understanding of urban space in its anamorphic atmospheric form, reciprocal opportunities for how these conditions foster new modes of design intervention begin to emerge. While on the one hand the digital visioning environment extends spatial understanding through temporal axes, on the other, the high-speed trajectory of the camera tends to flatten urban space, as Leonard Shlain (1993) observes: “Spatial representations also merge at high speeds. As space is compressed, multiple views of objects are possible from a single perspective because planes and volumes become one” (p. 127). In a reversal of the temporal extension of images along the z axis of the image stack, the conflation of image content produces another anamorphic abstraction, in this case one that privileges brightness. By compressing all visual data in the image stack into a single composition, the image’s formal properties are relinquished in favour of the blurred trajectories of motion and time, here seen as brightness (Figure 11).

With urban conditions now visible as paths of light, the anamorphic puzzle is again explained in pixel-based terms with the temporal mapping of the qualitative performance of any moving element within this space. In architectural terms, this anamorphic function also allows a building’s

Figure 10. Left: Image slice extracted from the image stack of combined orthogonal views of the x and y axes along the z axis of the image stack of Shibuya Crossing, Tokyo. Right: Enlargement of segment of image slice extracted from ZY axis the same image stack Source: Image by author; original image – Xin He, Image Bank Film/Getty Images

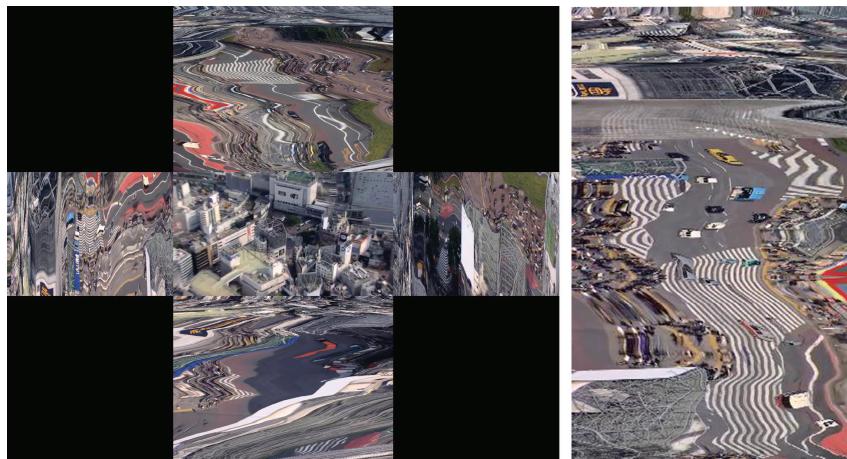


Figure 11. Conflated projection of image stack along z axis according to luminosity Source: Image by author; original image – StockStudio Aerials/Shutterstock.com

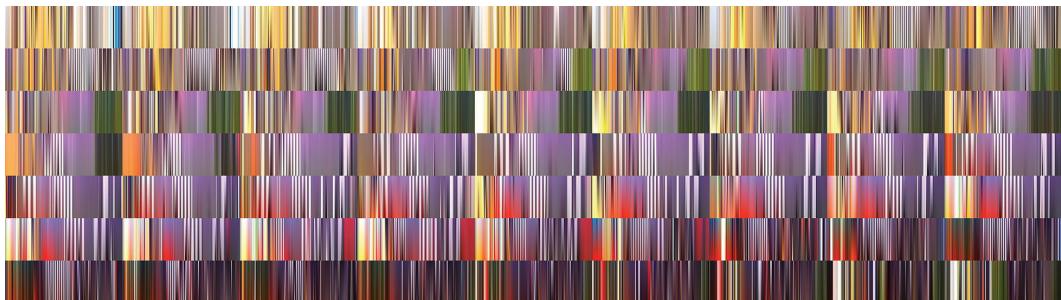


‘performance’ to be predicted projectively, thus presenting a further opportunity for it to be formally contextualised in the urban scene. In other words, the image stack can underpin a design decision that is both qualitative and time-based.

Another opportunity is presented by an alternative type of intervention within the image stack that uses individual instances to explore the atmospheric properties of a specific location with an emphasis on colour and its corresponding relationship to urban materiality and program. Representative of material and programmatic evolution of all kinds, these images provide an insight into how an architectural intervention might respond contextually to a shifting urban context associated with its visibility and its materiality (Figure 12).

A by-product of the axial anamorphic projections of the image stack, the montage of the recomposed urban landscape again asks the viewer to respond to different optical properties in the image. By no longer grouping pixels according to their capacity to enhance linear grouping or any narrative associated with this type of grouping, the urban scene is converted into a series of fragmentary snapshots that together compose the city image. Moreover, the deliberate inclusion of atmospheric artefacts, such as blurring, distance this type of urban picture away from the highly curated properties

Figure 12. A montage of images extracted from an image stack of Shibuya Crossing, Tokyo. Source: Image by author; original image – StockStudio Aerials/Shutterstock.com



of the promotional image, and instead move it towards a common vision of the city, where all are allowed to see its various conditions.

CONCLUSION

The paper shows how new digital viewing platforms and the modes of visual representation they initiate extend the viewing experience beyond the limitations of any predetermined or promotional view, as did their analogue forbears. It reveals how this technology activates a new type of embodiment by projecting the body along now visible video axes of space/time that permit engagement with previously unexplored qualitative, atmospheric properties of urban space.

The series of digital anamorphic representations of the city demonstrates how these modes of digital anamorphic visualisation bring representational tools and techniques into the architectural arena whereby the city is now understood in terms of its qualitative aspects of colour and brightness rather than linear form. The unique digital assemblies and compositions that form the new qualitative representation of the urban landscape connect the architect to correspondingly new and unique types of formal and material assemblies that are informed not by linear but atmospheric properties. They comprise a new experiential visual language that, underpinned by the capture of temporal urban space and the digital array, supplants linear precision with atmospheric ambiguity. In this respect, by offering new opportunities to intervene along its temporal axis, the image is released to a new generative agency as a working drawing for the new digital city.

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ENDNOTES

- ¹ Martin Kemp's reading of Andrea Pozzo's 1694 perspective ceiling *The Transmission of the Divine Spirit* argues that the utopic ideal of the church and the representation of space as infinite form are geometrically conflated into a single indisputable *truth*. The intention of this single-point perspective masterpiece was declared by Pozzo himself in the preface to his treatise, *Perspectiva pictorum et architectorum* (Kemp, 1990).
- ² An interpretation of anamorphosis by Araújo positions it as the primary spatial geometry with linear perspective relegated to the role of its secondary and heavily compromised planar variation (Araújo, 2017).
- ³ In the Baroque period religious orders used this representational technique to transmit hidden messages or allegories using the archaic code of *perspectiva secreta* (De Rosa & Bortot, 2019).

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“Ecoações”: An Approximation Between Post-Digital Art and Portuguese Heritage Expressions

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ABSTRACT

The chapter title comes from the fusion of concepts “echo” and “equations.” “Ecoações” contains, from the traditions, the Algarve handmade textiles, the regional pottery, and the characteristic sounds of the customs associated with these activities; from the theater, scenography and costumes; from the fine arts, the sculpture (of the human figure) and the murals in low relief; from digital media art, soundscape, digital interaction, and video projection. In Ecoações, the scenic space invites spectators to immerse themselves in the theme and to visit another dimension of heritage traditions, presented here under a contemporary aesthetic. The installation as scenography space implies all the theatricality of the visual narrative, hearing and tactile, giving the public the opportunity to explore tradition through the various senses. This article discusses the characteristics of the installation “echoes” that bring it closer to post-digital aesthetics and heritage expression, and the challenges of combining the scenic space, the traditions, and the digital media art.

KEYWORDS

Haptic, Heritage, Installation, Interactions, Post-Digital Aesthetics, Scenography, Soundscape, Textiles, Theatrically

INTRODUCTION

The starting point for *Ecoações* was the desire to unite the Algarve traditions in the areas of handmade textiles, regional ceramics, customs, and sounds characteristic of the Algarve region with the contemporary post-digital installations. The installation’s title comes from the fusion of concepts “echo” (in Portuguese “eco”), and “equations” (in Portuguese “equações”).

This installation keeps, in its genesis, elements of the Algarve traditions, theatre and digital media. Of the traditions, it contains the handmade textiles of the Algarve, the regional pottery and the characteristic sounds of these activities (with the sound of the weaving loom and the potter’s wheel). From the theatre, it brought the scenography and the costumes. Of the fine arts, it contains the sculpture of the human figure and the murals in low relief. From digital media, it contains soundscape information available on the network and activated through qr-codes and video projections.

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Digital media makes it possible to combine elements such as narrative and sound with textiles, giving them a changed expression and potential, but also new hypotheses for teaching and preserving the textile heritage.

The Portuguese textile heritage results from a thorough process of producing a handcrafted piece, wrapped in an “magic” of oral transmission of “know-how”, the passing of knowledge from parents to children, life in community, contact with nature, among many others. It is part of our history and our collective memory.

The scenic space presents the narrative and invites the viewer to immerse themselves in the theme. The textile figures, representing ordinary people from the Algarve region, built with traditional fabrics from the reused region: cotton, wool and linen, produced through weaving, with embroidery and handcrafted knits. Some fabric fragments are centuries old and belong to private collections. The viewer can observe the object, the fabrics, feel the textures and access more information about them by reading the qr-code on the information panel. The bas-relief composed of 38 pieces of regional ceramics contains the digital artifact of integrated soundscape that allows discovering the pieces in a context other than that of their original function, and finding the piece with the sound source listening to sounds from the region, speaking and sayings typical of the Algarve region and its traditions, which refer to memories of a past providing the listener with a feeling of belonging and familiarity with these customs and places.

With this paper we intend to analyse the installation *Ecoações* in the light of post-digital aesthetics, as a result of artistic creation at the intersection of scenic space, patrimonial expression and digital media art.

We organise this paper: 1- theoretical framework that allows to base the installation and sustain the reflection that gave rise to it; 2- a description of the installation, followed by an analysis of the process of enjoyment; 3 - approach to a post-digital aesthetic; 4 - conclusions and bibliographical references.

THEORETICAL CONTEXTUALIZATION

We present this chapter in two ways:

1. The artists and their works
2. Related work

Artists and Works

For this installation, the authors were influenced by several contemporary artists from different creative areas. One of the primary references was Magdalena Abakanowicz (1930-2017). Magdalena created scenic spaces through the special design of sculptural elements, with monumental dimensions, where she explored the surface, texture and organic nature of textiles (Reina Sofia Museum, 2008).

Magdalena Abramowicz was a Polish artist, internationally recognised in the contemporary art scene. “Abakans” was the first grand work, comprising biomorphic and abstract three-dimensional tapestries, which together formed an enigmatic forest. Textiles were a medium, in which the artist became interested in the exploration of its surface texture, nature and duality between organic and non-organic. Abakanowicz recounted that “The Abakans irritated. They were untimely. There was the French tapestry in weaving, pop-art and conceptual art, and here there were some complicated, huge, magical (forms)...” (Kitowaska – Lysiak, 2004).

Hussein Chalayan (b. 1970, Cyprus), although the public knows Hussein primarily as a fashion designer, Chalayan identifies himself as an “immigrant between disciplines”. Chalayan’s artwork reflects the combination of art and consumption, fashion and cinema, heritage and future. This

artist works on themes such as perception and contemporary reality, cultural identity, migration, anthropology, technology and nature.

Chalayan's work can be compared to a narrative, a way of telling stories, incorporating different themes, experimenting with new and innovative materials and less conventional forms of expression. Among his work, we highlight "Airmail Clothing" (1998) and "Afterwords" (2000).

"Airmail Clothing" (1998), refers to distance communication before the Internet. It is a collection in which the user can write, put perfume, wash and even send the dress to a loved one, giving the garment the duality between absence and presence.

In "Cartesia" (1993), Chalayan reflects on when in war situations, many families must leave everything behind and choose only the essentials they can carry. For this installation, the experiences of his maternal family during the 90s inspired Chalayan (Chalayan, 2015). Andres Krisar (b.1973, Stockholm), post-digital artist who works on the border between the real and the virtual in contemporary visual culture (Chalayan, 2020)

Andres Krisar's hand-crafted human sculptures (in classical sculpture materials such as marble, bronze and resin), sometimes look real and other industrial copies of the real (Krisar, 2020).

Nathalie Miebach creates tangible sculptures (some using handcrafted basketry and weaving techniques) from digital data. Nathalie, in her artistic work, addresses the intersection of art and science and the visual articulation of scientific observations. Using methodologies and techniques from both disciplines, Nathalie translates scientific data into sculptures using everyday materials and, primarily, the technique of basket weaving (this weaving technique forms a simple grid which becomes effective for interpreting the data in three-dimensional space (Miebach, 2020).

Marilene Oliver (B. 1977, UK), creates humanoid sculptures based on the results of magnetic resonance imaging and computing tomography. Oliver uses medical images because these are a digital copy of the body, the starting point for data manipulation that will give rise to materializations in materials such as acrylic and steel. Acrylic is the material preferred by the transparency that suggests the image – digital – on-screen: perfect and weightless (Oliver, 2020).

Related Work

Arlindo Machado (2007) designated as media art the forms of artistic expression that use technological resources of the media and the industries of entertainment or diffusion channels. However, as the author pointed out, media art is something more than the mere use of cameras, computers and sensors in the production of an object/artifact. It is also not limited to artistic creation in the television and internet circuits. We can consider digital media art as the art produced by the man of his time, and as an artistic expression that expresses the sensitivity and knowledge of the present man. It takes technology as a tool and as a creative engine for contemporary art production.

In contemporary times, digital culture has infiltrated the various social and cultural areas, including in contemporary art. The key concepts of the areas of computing, such as interactivity, participation and immersion "invade" the discourses of contemporary art, but their technological and scientific nature is not always understood in its fullness.

Following the ideas advocated by Edward Shanken (2015), contemporary art is not limited to conventional historical narratives that suggest linear development. Since the emerging artistic avant-garde in the 1960s (conceptual art, happenings, the Fluxus group, performance, land art, pop art, video art), technology and audio-visual languages have a market presence within the diversity of artistic exploration, and with the rise of immaterial artistic objects, the art market has commercialised both physical and ephemeral artistic objects.

Jonathan Openshaw (2015), in "Post Digital Artisans: Craftsmanship with a new aesthetic in fashion, art, design, and architecture" presents 60 contemporary artists and designers, influenced by technologies, and living in the digital age, working on the importance of the presence and physicality of objects, combining more traditional technologies and artistic tools with innovative digital/computational tools.

The book was partially conceived as a response, or antidote, to all the enthusiasm that lived (lives) around 3D printing, generative design and other automated processes. As Openshaw explains, in the introduction, he considers that today's world has been reshaped with the digital age, digital is intrinsically rooted in our existence. Considering that we are all in post-digital, also in art, material and virtual reflect this, they have merged completely, both in the approaches of the artists and in the experiences of the spectators. Digital technology, with its logic and aesthetics, has become a trend for everything we do and create.

Gilles Lipovetsky wrote about fashion in the late 1980s ("Empire of the Ephemeral", 1987) and returns to the theme in the 2000s. Already "Empire of the ephemeral", Lipovetsky denounced the alienating hegemony of fashion but warned that the fashion studies of the time were limited to regarding the Fashion System as an institution of waste, which promotes consumption and artificial needs.

In the 1990s and 2000s an increase in academic production on fashion emerged, from an interdisciplinary perspective, where the term fashion emerged associated with different expressions such as "fashion studies" and "fashion-ology" (Godart, 2010). Rocamora (2015) agrees that, in fact, fashion has become, in recent years, an important research topic in social and cultural theory, the source of many analyses that have devoted themselves to understanding the fashion phenomenon. Fashion is now seen as a rich platform for reflection on social and cultural issues, from production practices and consumption to political identities, however, fashion studies show some obstacles: "It depends on one's ability to critically engage with a vast array of theories and concepts, often from thinkers who, unlike in some other field of cultural criticism, have not themselves written about fashion" (Rocamora, 2015).

In 2013, Gilles Lipovetsky writes that contemporary fashion combines avant-garde and commercial enterprise, aesthetic innovation and commercial success, a spirit of transgression and social and media recognition. And it is precisely this model that also governs contemporary fashion. We are thus faced with an art-fashion, or as Lipovetsky stated hyper-fashion, an art that aims to be the expression of itself, the visual shock, the sensory experience. A light art such as fashion, which works by reducing dimension to meaning, for the benefit of the spectacular and immediate sensations (Lipovetsky, 2016), the bet on the seduction of the senses and the search for purely aesthetic pleasure.

With contemporary art influenced by the fashion system, we see a trans-aesthetic hybridisation of the avant-garde and commercial avant-garde and fashion system, in a simpler way: many museums are organised, nowadays, according to a logic of the show, in view of the amusement of the public and commercial success, the "show exhibitions" that appeal to theatricality, illusion, seduction, staging are multiplied, the enticing, the spectacular and the playful. In the mainstream of contemporary art, the traditional boundaries between erudite culture and distraction, art and light leisure are blurred (Lipovetsky, 2013).

In 1999, B. Joseph Pine and J. H. Gilmore published "Economy Experience: work is theatre & every business a stage", where they identified the experience with the next economy, after the agrarian economy, industrial economy and the service economy. In the economy of experience, all companies must orchestrate memorable events, where memories and sensations are a fresh source of value (the result of a society too busy).

ECOAÇÕES- INSTALLATION DESCRIPTION

Ecoações is an installation by Acácio de Carvalho and Selma Pereira, presented for the first time in 2015, at Biennal of Contemporary Art in Cerveira - Portugal (Bienal de Cerveira, 2015). The installation explores the relationship between traditions and digital medium-art as a heritage expression. *Ecoações* comprises a space for theatrical and scenic representation that integrates textile sculpture, ceramics, soundscape and video projection (Carvalho & Pereira, 2016).

The installation comprises Figure 1:

Figure 1. Ecoações Source: Carvalho and Pereira, 2015



- Three human figures sculpted with fabrics;
- A 'T' parallelepiped structure, built in an iron tube and lined with transparent acrylic glass;
- One wall contains a bas-relief formed by ceramic pieces.

The digital media component of this installation includes:

- Soundscape (integrated in the ceramic bas-relief);
- Quick response (QR) codes to access information on the internet about the materials used
- Video art projected on the figures and surrounding space.

The 3 life-size human figures are carved in regional fabrics. They are representations of ordinary people, popular, in daily poses, as if they had relaxed on a terrace watching who walks in the street – the movement and expressions were “frozen” as in a photographic moment.

For this installation, the 1 female figure, standing; 2 male figures – one man sitting and one standing, leaning on the chair.

The bodies of the figures were moulded in wire and sponge and were later lined in white cotton fabric. The garment developed with reused fabrics (in cotton, wool and linen), has a contemporary design: such as the knitted wool sweater, shirts and trousers of light fabric, with an application of antique embroidery (about a hundred years old).

The bas-relief comprises a combination of 38 pieces of regional ceramics. It is in this bas-relief that the digital soundscape artifact is integrated. Inside some of these pieces there is a small device (earphone) that allows the viewer, when approaching the piece, to hear the sounds (they are noises typical of craft activities, speeches and fragments of interviews made with artisans active in the region about the techniques and traditions). It thus invites the viewer to explore the mural, to discover the various sounds and the location of their sound sources Figure 2.

The sound was captured, by the authors of the installation, in the Algarve region: the maritime sounds of the Algarve Coast; the sound of the loom in the Serra de Monchique; the sound of the potter's wheel and the talk of the artisans in Loulé.

Figure 2. Detail of Bas Relief Ecoações Source: Carvalho & Pereira, 2015



It transmits the sound through the iPod and diffused through small earphones. Each ceramic piece has two holes, one for fixing and one for passaging sound. The concave shape of the ceramic piece assumes the function of the headphone for the viewer, facilitating the hearing of each sound separately.

The parallelepiped structures, perpendicular to each other, support the figures in fabric and the ceramic bas-relief, creating a space for representation. This device also includes the lighting of the piece and the support for the projection of the video.

The video, with an organic narrative about the acquisition of raw materials, is projected on the textile figures, expanding over the entire surrounding area, until it finds an opaque surface. Through the immateriality of the projection, the entire surrounding space, including passers-by and the spectators who explore the installation, are transformed into screens that are part of the installation.

Ecoações, thus, invite the viewer to visit the story and enter the narrative that makes up this scenic space. The sound design (dialogues, machine noise and surroundings) sends listeners to memories and memories of specific places and places. In *Ecoações*, soundscape is a way to lead the viewer to the past, to history and, perhaps, to awaken in the listeners a feeling of belonging and familiarity to those same places. The scenic space becomes a visual, auditory and tactile narrative.

CREATIVE PROCESS – FROM THE INITIAL IDEA TO THE MATERIALIZATION OF THE INSTALLATION

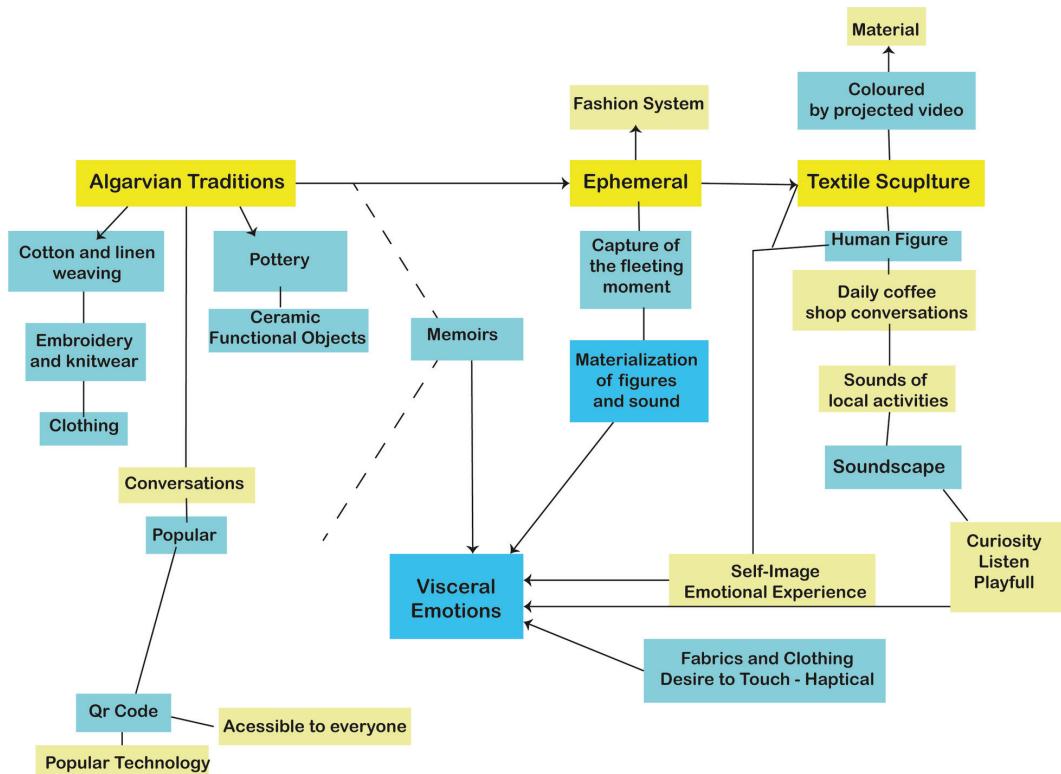
From traditional Algarve handicrafts, we select textiles (weaving, knitwear and embroidery), pottery in creating utilitarian ceramic pieces in red clay. To the craft, the authors added the lifestyle of the popular inhabitants of the region – conversations, talks, sea sounds, noises of the sierras, weaving loom and potter's wheel. The authors' aim was to materialise, in this installation, the fleeting moment, the ephemeral, and associate it with the ubiquitous digital media in our daily lives.

Through the construction of the scenic space, the authors recreated three textile figures, represented with visible seams, outer hems and visible aligns, showing the imperfections and asymmetries proper to the common human body. The relaxed, expressive, imperfect postures lead the viewer to identify himself, becoming self-images.

The textile figures, of familiar aspect, with vulgar materials, and applications of fabrics that the spectators probably find in the chests of grandparents, associated with the ceramic pieces and the characteristic sounds of the region, awaken, in the spectator, memories, sensations, feeling of belonging and arouses their curiosity.

Ecoações, thus, invites the viewer to visit the story and enter the narrative that makes up this scenic space. The sound design (dialogues, machine noise and surroundings) sends listeners to memories and memories of specific places and places. In *Ecoações*, soundscape is a way to lead the viewer to the past, to history and, perhaps, to awaken in the listeners a feeling of belonging and familiarity to those same places. The scenic space becomes a visual, auditory and tactile narrative Figure 3.

Figure 3. Conceptual Process Source: Selma Pereira



PROCESS ANALYSIS OF USE/ENJOYMENT

Ecoações is a space of representation, in which the viewer can walk in the surrounding acrylic structure to touch and interact with the elements that make up the installation: feel the fabrics of the textile figures, observe the details, touch and look for the sound sources in the ceramic pieces of the bas-relief, touching your ear Figure 4.

When approaching the installation space, the viewer sees the acrylic structure surrounding the textile figures. The video projected on the figures, has an organic narrative that reflects the process of acquisition of raw materials. The sound serves as a sound framework for the installation.

In the bas-relief, the spectator / listener has to look for the ceramic pieces that are sources of sound and bring his ear closer to the piece to hear and, therefore, identify the sound. The sounds are speeches and noises characteristic of the Algarve region and activities linked to pottery and textiles, which intend to refer spectators / listeners to memories and memories of places.

To allow the installation to provide more specific information to the spectators and, simultaneously, to allow them to access that information later, and elsewhere, a blog was created with information

Figure 4. Details of textile figures - *Ecoações*, Acácio de Carvalho e Selma Pereira Source: Carvalho&Pereira, 2015



about the characteristics and history of the textile materials reused in the figures *Ecoações*, and links to websites where the viewer can find more content. I do access to this blog through the qr-codes on the informational poster. Each of the three figures corresponds to a qr-code and a different page about the reused materials. We can also access the blog through the web address, but the user only has access to this web address after accessing one of the qr-codes on the informational poster Figure 5.

APPROACH TO A POST DIGITAL AESTHETIC

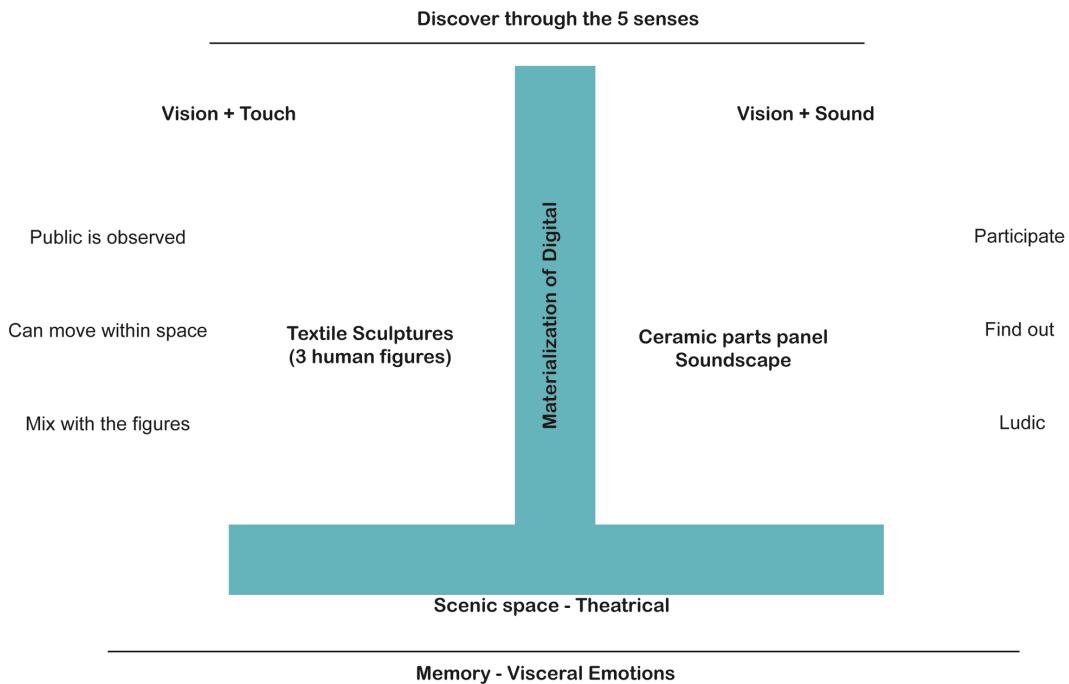
In recent years, opinions have emerged, in the sense of seeing technology as a commonplace in today's artistic and cultural panorama. "Post-digital" appears, thus, as one denomination that has been discussed and accepted by many researchers of the matter, although it is still the subject of disagreements in relation to its interpretation. New terms also appear, such as "post-internet", "new-aesthetic", "post-media", which try to perceive and delimit the immersive and disorienting experience of computational infrastructures as they expand and intensify (Santaella, 2016; Lipovetsky, 2016).

The importance that digital and computational artifacts play in our contemporary culture encourages the search for recent concepts and experiences in a quest to understand and define the present.

Following James Charton's line of thought, "Post-digital" can be understood not only as a reflection on what comes after digital, but as a re-thinking about materiality, a revision of the artistic, conceptual and dematerialising practices of the years 1950 and 1960 (Santaella, 2016). We interpret "Post-digital" as an "expanded" field of Digital Media Art. This "expanded" Media-Art gains new aesthetic dimensions, extrapolates the screen and gains ground in the theatrical (scenic) space, it is a form of artistic expression that mixes various media and supports, exploring the senses, emotions and the freedom of enjoyment and viewed interaction.

The daily experience of living in a "computational society" encourages the search for new concepts and experiences, or possible "formal indicators" in an attempt to understand, delimit and define the present. "Post-digital" highlights that digital and media-art are not limited to works that live only on screens and projections, much less mere experiments with sensors, cameras and technological innovations. Following the thought of James Charton, postdigital can be understood not only as a reflection on what comes after the digital, but as a re-thinking about materiality, a re-examination of the conceptual and dematerializing artistic practices of the 1950s and 1960 (Santaella, 2016). It is commonly thought that contemporary art is associated with a production rich in ideas about art

Figure 5. Experience Diagram Source: Selma Pereira



and society, with tangible, material artistic objects created by an artist and with a value in the art market. In turn, Digital Media Art appears related to immaterial, experimental works, where new technologies are explored, produced by teams of engineers. These considerations are far from being in line with the current situation.

Today, theatricality gains a deserved highlight. Both the performing arts and the fine arts approach theatricality as a vehicle for articulating the relational issue, carrying characteristics and promoting situations where the viewer becomes an actor and an accomplice in an event, even if he does not know his vocabulary.

The transversality of the theatrical language in contemporary art is an essential tool in the visual message, in the reflection and in the interpretation of the current artistic proposals. The metaphors of representation, in their intimate relationship with space, illusion, time, reality or simulacrum offer the viewer this enchanting possibility - *trompe-l'oeil* - summoning, over time, the means, the modes and the objects (Carvalho, Pereira & Marcos, 2017).

If we think about digital media art, in a post-digital perspective, we combine digital / computational technology and aesthetics with tangible materials and ways of producing manuals. Technology and digital aesthetics remain as matter, theme or channel of diffusion, but creativity gains supremacy, another ways of increasing immersion and interactivity are tested and we discover dimensions, such as the induction of social criticism and patrimonial expressions (Pereira, 2018).

The presence of fashion artefacts in the contemporary art panorama flourished with the post-digital aesthetic. Its haptic dimension, the daily aspect of the garments that appeals to the imaginary, but above all because of its ease of attracting a wide audience because of its critical, sometimes even

revolutionary character. Fashion invades contemporary art with its objects that transform themselves into agents that induce critical thinking.

However, we must not lose sight of the fact that fashion, long before the digital age, already contained the dimensions of criticism. Quoting Lipovetsky (1987), fashion allows the widening of public discussion, greater autonomy of thoughts and subjective existences, it is the supreme agent of individualistic dynamics in its various manifestations.

In 2016, Lipovetsky considered that fashion, as a system, governs contemporary art, calling it art-fashion or hyper-fashion art, which focuses on sensory experience and the search for purely aesthetic pleasure. Alerting to light art that, like fashion, makes sense in brackets or reducing its dimension to the advantage of the impressive and the immediate sensations (Lipovetsky, 2016).

With the internet and collaborative platforms to support humanitarian projects, projects have appeared in the last decade we use in which digital media art with a critical nature. Documentaries, reports and other digital artifacts were produced that severely criticise the fashion system, show the backstage, the effects of fast fashion production and, simultaneously, gain strength / voice worldwide activist movements that defend ecology, fair, collaborative work, away from the harmful effects of the fast fashion system that dominates the globalised world.

Ecoações also contains a critique of digital art itself and the intrinsic need to interact. We base this criticism on the essay "Aesthetics of silence" by Susan Sontag (1987). In *Ecoações* the viewer immerses himself in the scenic space, observes, listens, touches the objects but is not invited to take part, in the sense that his activity and decisions will not alter the work, he can interact but if he does not, the work continues to exist Figure 6.

Figure 6. Detail of *Ecoações* Source: Carvalho & Pereira, 2015



We base the metaphor of silence on Susan Sontag's theory; it is not a silence in the literal sense, nor an absence of the message, nor of sensory stimuli. Metaphorical silence is a release from interacting, it is a subtle way of capturing the viewer's attention, arousing his desire, seducing him, arousing his desire to look and take part. The silent work must exist on its own, with no public interaction, which can happen spontaneously or not at all.

CONCLUSION

Aesthetic capitalism brought together, breaking frontiers and distances, fashion, art, entertainment, heritage, economics, entertainment, technology, education and seduction. It approached the erudite, popular culture, leisure, the light, the distraction, forcing artists, theorists and the public to rethink what surrounds them, the new contexts, roles and places previously stipulated. History, heritage and the safeguarding of collective identity and memory become fashionable, added value to boost tourism and culture, influenced, positively and negatively by the fashion system and world culture. The preservation of the natural, built and immaterial heritage is urgent, more than a study of the immediate time and the history of material wealth, it is essential to know, understand and care for the cultural values of peoples and regions. Aesthetic sensitivity is one of the fundamental elements for the enjoyment and understanding and for the development of the critical and interpretive capacity of art and cultural heritage.

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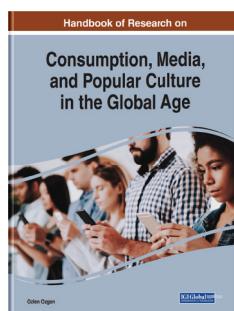
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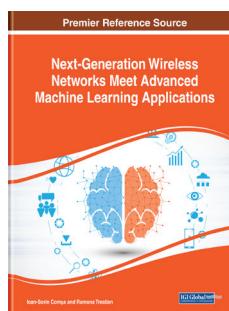
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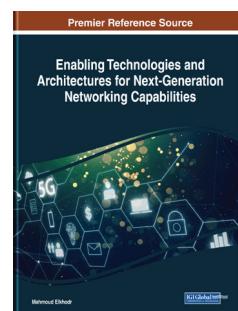
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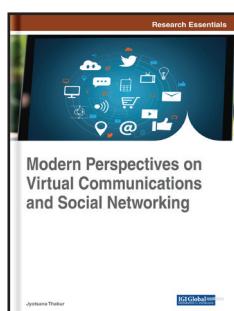
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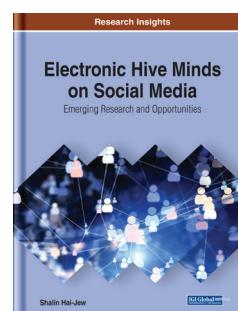
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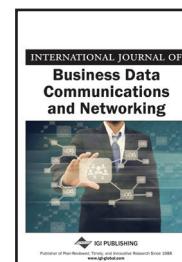
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