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Technologies, Senses, and Augmented/Virtual Landscapes in Contemporary Performance

Evidence from a Comparative Analysis of Recent International Performances

1. Technology Defining the Medium

In the last century and a half, the mass media universe has undergone unprecedented upheavals. No previous era had generated so many media in such a short time span: from the advent of printing in the late 15th century, to the widespread dissemination of photography and cinema from the mid-19th century onwards, and in the 20th century, the rise of radio, television, and the internet. Portable devices, in a progressive process of miniaturization (disks, tapes, cards, chips), and the advent of artificial intelligence are accelerating the vortex-like process of continuous and reciprocal "remediation", as defined by Bolter & Grusin[1], making it increasingly impossible to define the specific limits of each medium. It is as if technological advancement has propelled communication to the horizon of events, precipitating it towards a mass media convergence[2] capable of definitively altering the relationship between languages, technologies, and the conception of human sensory perception.

Theatre, with its practice of representation, has always been the natural habitat for human beings dedicated to hybridization, a natural medium of the media, aimed at exploring the boundary between reality and fiction. This connection was already present in classical antiquity, when significant theatres were built (such as those in Epidaurus in Greece or Elea/Velia in Italy) near areas dedicated to the god Asclepius, where the analysis of dreams was the primary means of investigating an individual's state of health.

The digital acceleration remediated by theatre is now altering the DNA of representation, irreversibly changing the constitutive practices of the *skene*. The change in the mass phenomenon is in some respects measurable and is directly

[1] J.D. Bolter and R. Grusin, *Remediation: Understanding New Media*, Cambridge, MIT Press, 1999.

[2] H. Jenkins, *The Cultural Logic of Media Convergence*, in «International Journal of Cultural Studies», VII, 2004, n. 1, p. 33.

proportional to the speed of data transmission. Over the past twenty years, thanks to the internet and increased data processing speed, the development of virtual performance creations has made a powerful entrance onto the scene.

The first experiments were made possible twenty-five years ago through the use of primitive webcams and internet transmission, such as those used by digital artist Giacomo Verde with the slow ADSL connections of the time, almost playing on the interruption of the line as a dramatic error. His concept of ultra-scenic art led to the first Italian telematic performance, *Connessione remota* (2001, Pecci Center, Contemporanea Festival, Prato). The artist was on a stage set up at the museum, but the performance was also broadcast live on the web, although the connection at the time could not support more than 10 connections. Concurrent and similar performances (1997-2001), with connection and chat for the audience, were online performances by A. Jenik and L. Brenneis entitled *Desktop Theater*, inspired by Beckett's *Waiting for Godot*[3].

Progresses made since then clearly indicate how the experience of representation is now permeated by extreme digital disruption, leading to an unprecedented crossroads of deception and complete disorientation of the sensory perception system: soon, reality and representation will be indistinguishable. Practices and their implementers are changing, as is the very mode of conceiving artistic acts, for a medium that in the last two millennia has considered physical co-presence between at least one actor and one spectator as indispensable, in the most frequently accepted sense as formulated by Grotowski, fifty years ago[4]. Yet today, theatres propose creations without performers, reserved for individual or groups of spectators, projecting them into augmented or virtual landscapes, accessible via technological devices, within or outside the theatrical environment. In 2018, the Prada Foundation presented in Milan, in collaboration with Legendary Entertainment, *Carne y Arena*, a virtual reality installation conceived by Mexican filmmaker A. G. Iñárritu, on the theme of migration.

It was accessible to one participant at a time: the spectator entered an environment where, assisted by a technician, they donned a VR headset and a heavy backpack containing hardware. The participant could move with small steps for 10-15 minutes within a physical space of approximately 30 m². While physically confined, in the virtual world they were immersed in a desert on the border between Mexico and the USA, along with a group of migrants, just in time to be discovered and captured by border guards. While emotionally impactful, the experience had limitations in terms of movement and interaction capabilities.

[3] T. Sant and K. Flintoff, *The internet as a dramatic medium*, in A. Blatner and D. Wiener (edited by), *Interactive and improvisational drama: Varieties of Applied Theatre & Performance*, New York, iUniverse, 2007.

[4] J. Grotowski, *Towards a Poor Theatre*, New York, Routledge, 2002, p. 32.

In 2021, only three years later, *Le Bal de Paris* by choreographer Blanca Li, awarded Best Virtual Reality Experience at the 78th Venice Film Festival, allowed over 10 participants at a time, co-present in a physical space of more than 60 square metres (indoors), to engage in an interactive virtual experience. This was made possible by Backlight Studio VR, a virtual reality production company founded in 2008 by F. Lecompte and J. Tamene.

Here too, in the initial phase of digital attire, with the help of technicians and trained personnel, participants wear the VR headset, a backpack containing a thin laptop with powerful processing capabilities, although susceptible to overheating, which reads movements in real-time and some sensors placed on limbs.

A kind of metaphorical superhero transformation took place, during which each participant became a vector image. Participants entered, as characters, into an animated film, disguised with an animal mask, losing awareness of the identities of the other participants. It was a journey through three different fantastical environments, where the avatars moved in response to the participants' real gestures. The virtual performance, lasting a total of 35 minutes, also included the presence of real (and virtually translated) performers, who were also unrecognizable. These performers engaged the participants in movements and choreographies, gradually leading them to lose their sense of reality.

This was undoubtedly one of the highest achievements in digital performing art, both in terms of duration and the quality of the experience. It highlights how much the role of the computer engineer influences today's performances, no less than the director did in the twentieth century: they collaborate in directing, thanks to technologies enabling sensory interaction at a distance, the final form of the live show.

None of the latest creations described would be conceivable and achievable by a single individual: engineers, digital designers, sound designers, experts in virtual environments, conceive the creation with the theatrical artist, design the software and its response times, study the vector space, design virtual environments for months, calculating movement possibilities with devices, crossing them with the artist's intentions. How far from the image of the twentieth-century director, who, with a script in hand, read the dramaturgy at the table, illustrating its intentions to the actors! Or from the revolutionary transition for actors to the radio microphone, which has replaced diaphragmatic voice acting, allowing movements in the performance space that were previously unthinkable.

An equally significant change has also come for audiences from portable audio playback devices, such as headphones, initially connected via cable to a power source and then becoming Bluetooth-enabled, allowing hearing to be amplified and personalized, with controls for volume, equalization, and even the ability to make audio recordings. If we want to find a measurable data point, we can consider that the first rudimentary prototype of headphones by N. Baldwin dates back to

1891, while the evolution of this sense, from hominids to us, took two million years[5]: in one hundred thirty years, hearing has been personalized. The miniaturization of technological equipment has led to pocket devices capable of playing digital files connected to remote transmission sources: they are no longer bulky fixed stations but agile portable devices.

Any geography can therefore be augmented[6] and become a stage, so much so that the synecdoche "Headphone Theatre"[7] has been coined for headphone performances, identifying an artistic genre with the technology used. Since the beginning of the 21st century, in less than 20 years, we have witnessed the complete digitalization of the scenic form and in some cases the overcoming of the traditionally understood actor figure. Also in this case, we talk about "Digital Theatre", progressively defining the forms of the medium based on technology. If virtual mode is not yet widespread, it is mainly because it is still expensive, technologically demanding in programming, and bulky, though significantly less so than 30 years ago. But laws of technological progression, like those of Moore, suggest its arrival in a few decades, less than the century and a half that separates us from the first rudimentary headphones.

2. Practices in the Age of Mass Digitalization

If the previous concise overview provides, even with some elements of measurability, the extent of the impact of digitalization on the final outcome of the creative process, no less significant has been the impact on what precedes the final performance, namely rehearsals, the individuals involved, and their roles.

Here, we also present some snapshots taken at different times. For instance, consider the complex, almost mystical laboratory practices associated with the actor's self-awareness experiences, spanning many years. Figures such as Jerzy Grotowski and Eugenio Barba immediately come to mind, having become pivotal references for contemporary theatre with a lasting influence. In the case of Odin Teatret, we can refer to a still active, specific structure, while Workcenter of Jerzy Grotowski and Thomas Richards closed in 2022.

In those contexts, often there was not even work on the realization of a perfor-

[5] R. Quam *et al.*, *Early hominin auditory capacities*, in «Science Advances», I, 2015, n. 8.

[6] In the context of augmented reality (AR), we refer to an interactive digital overlay that occurs in real-time on the phenomenological reality, enabling a sensory experience wherein what we currently define as reality is blended with digitally generated content, including computer graphics, text, video, and audio. This occurs through intermediary devices, among which the most common ones are smartphones, tablets and headphones, capable of creating an immersive experience that allows these additional elements to be perceived as natural parts of the environment.

[7] Cfr. R. Klich, *Amplifying Sensory Spaces: The In- and Out-Puts of Headphone Theatre*, in «Contemporary Theatre Review», XXVII, 2017, n. 3, pp. 368-369.

mance; instead, life was given to a «process without a product»[8], an intense experiential practice not aimed at creating a final spectacular event. This change in the process has modified how theatre is studied today in Performance Studies. It has also favoured concurrent experiments in emancipating the actor from the character and in performances lacking a pre-existing dramatic text[9]. In those laboratories, sometimes the actor would work for weeks to perfect even just a specific gesture or posture.

How long do rehearsals for augmented or virtual reality performances last, and what are they aimed at? While there are likely equally long development periods, these are used to study the software's response time to interactions with reality. The time and attention previously dedicated to the physical training of actors, focused on perfecting their gestures, are now directed towards training them in the care and use of software.

In fact, it is possible to think of the realization of a virtual reality performance as a veritable interdisciplinary cybernetic process, scientifically studying the system populated by both natural and artificial elements in a unified manner: a working group is created that includes artists and computer scientists, and from a starting idea, a project workflow is elaborated by specialists aimed at releasing software, to be used through specific equipment (VR, devices, etc.). There are intermediate phases to study the responses of the technologies used to stress tests, within the framework of the hypothesized artistic design, and debugging phases and evaluations of any proposed modifications, to discard those that require implementations beyond the assigned budget or project timelines. Final testing phases are developed, involving performers who are able to test the equipment in an advanced manner.

These creative processes, especially when they involve augmented reality experiences, design rhizomatic artistic forms, sometimes subject to recombination and editing: often set outside theatre spaces, these performances even do without the performer, replaced by spectators who come to take part in the performative event. Participatory mode users are not involved in any of the design phases but bring the performance to life, creating, according to some, a new form of ex-post co-authorship[10].

In 2007, with *Etiquette*, the Anglo-Italian collective Rotozaza developed an adaptation for two spectators/actors of Ibsen's *A Doll's House*. Pairs of spectators were seated at pub tables, receiving instructions via headphones connected to a device nearby, about actions to perform and things to say: once they put on the headphones, they became the performers themselves, intermediating the actor's role. The pub table and some small items provided became a stage and miniature set.

[8] M. De Marinis, *Il processo creativo nel teatro contemporaneo: trionfo e trasmutazioni*, in «Teatro e Storia», n.s., 2014, n. 35, p. 353.
[9] Ivi, p. 367
[10] Cfr. J. Frieze, *Reframing Immersive Theatre: The Politics and Pragmatics of Participatory Performance* and *Participant as Co-designer: Critical Reflections*, in Id. (edited by), *Reframing Immersive Theatre*, London, Palgrave Macmillan, 2016, pp. 27-28.

Significant in a similar perspective was *Domini Públic* (2008) by the Catalan artist Roger Bernat. Arriving at a previously identified public space, participants were involved, also in this case with instructions via headphones, in actions that create the performance itself. Their movements in urban space, guided by the recorded voice, created connections between their presence in the performative environment and each individual's identity within the social structure to which they belong.

In these performances, according to the analytical perspective we are following, we observe these phenomena:

– Replacement of the actor figure in the performative action with that of the participating spectator.
– Elimination of preliminary actor preparation, except for instructions on the use of technological equipment.
– Use of an open and accessible urban geography as the space of representation, augmented by personalized technological equipment.
– Dramaturgy remains substantially unchanged, despite changes in the cities where the performance is hosted: the Milanese spectator/performer executes and enjoys the performance in the same way as the Tokyo citizen.

A digression is also worth opening regarding the availability of time in contemporary performative outcomes. In the laboratories of the Seventies, which we mentioned, relatively stable groups of performers were guided for years by guiding figures, masters holding theatrical knowledge derived from anthropological studies.

This availability of time is now very rare in contemporary theatrical practice: rehearsals for a new production with a written script, human actors and directors (and considering the adjective "human" as necessary is not trivial) typically last between two weeks and a month, at best. Performances remain on stage at production theatres for only a few days, with the number of actors increasingly reduced due to budget constraints. The only temporally extensive laboratory periods are those reserved for the creation of virtual experiences, due to the complexity of computerized project design, or for documentary theatre experiences combined with socio-anthropological paths.

The Argentine artist Lola Arias, for example, has been working with small communities for years, through social investigation laboratories from which final artistic experiences are derived. She has always considered the gestation of the final multimedia outcome passing necessarily through workshops where participating citizens are called upon to share with her an extensive phase of documentation, collection, and reorganization of memories and experiences. The final act of this process is the drafting of a dramaturgy, intended to create a multimedia outcome. This was the case with the video installation *Veterans* (2014), consisting of a series of short films featuring veterans of the Falkland/Malvinas conflict, or for the performance *Mother Tongue* (2021), with a workshop on the theme of "motherhood".

The same workshops were then proposed in other cities around the world, with different communities, yielding results with hybrid actor populations, mixing performers and workshop participants.

Most of the productions by the director Milo Rau have similar documentary foundations, although they are more focused on the realization of the final creation, usually entrusted to actors, than on the experience of gathering information in a workshop setting.

In Italy, the collective Domesticalchimia has been working with this creative model for years, as in the case of the *La banca dei Sogni* project.

In these documentary theatre experiences, which have comparable characteristics, the following typical features are present:

– Preliminary preparation through forms of lab work involving citizens and performers, both separately and together.
– Re-elaboration of the collected materials, to arrive at a conclusive multimedia outcome with "site-specific" characteristics.
– Frequent cohabitation, in the final outcome, of performers and workshop participants.
– Return to the use of a closed space dedicated to hosting the final performance, or multimedia installations.
– The dramaturgy and final outcomes often change based on the location where the performance is hosted.

3. Space in Contemporary Performance: Dramaturgical Environment of Collision Between Reality and Representation

In the early decades of the 2000s, as already considered, written dramaturgy is replaced by an idea of writing that opens up to the interference of the real world. It seems to have come true what was predicted by the director John Smith, in his brilliant short film *The Girl Chewing Gum* (1976), in which a voice-over directs the action of some actors on a busy street. Gradually, it becomes clear that the claim to direction of this street director is pure fiction: in reality, he is simply describing what is happening in front of his eyes and not prescribing anything to anyone. What initially seems like performers executing what the director tells them to do are actually just passersby, whose gestures are described in the very instant they are made, without any connection to the artistic event of which they unwittingly become protagonists.

The consequences of these insights converge with the evolution of participatory performative forms in the following decades, thanks to portable technology. The artistic sign is released into a public space, bi-directionally permeable to the performative event, accepting the risk of colliding the chaos of reality with the order of the artistic idea.

This work focuses on the analysis of participatory theatre experiences because it is undoubtedly the area where technological advancements bring the most significant outcomes for the evolution of language, whereas in more traditional performance forms, they result in increasingly elaborate special effects but perhaps less significant impacts on the evolution of the medium itself.

For instance, in the early 2000s, public space performances[11], characteristic of several avant-garde experiences of the 1970s and 1980s, have reached previously unimaginable forms, thanks to new portable technological equipment.

In addition to Bernat's work, we can consider the later creations by the international collective Rimini Protokoll to further reflect on the implications of introducing portable technology both on the creative process and on dramaturgical writing.

Take, for example, the case of *Remote X*, a famous performance conceived in 2013 and still proposed in many cities around the world. The object of the performance is the transience of life with its ephemeral manifestations, human fragility, and death. An initial meeting is arranged with the participants inside a cemetery area. There, each participant is given Bluetooth headphones connected to a portable transmission device that an assistant moves, following the group along the route. Spectators are guided on an itinerary through the urban environment by a female robotic voice, which provides instructions on specific actions to perform. The creative collective has preconceived a path that starts from the place of non-being par excellence and ends circularly in a hospital, another symbol of the fragility of existence. In the itinerary that connects these two places, participants must geographically and metaphorically traverse, according to the artistic concept, the frenzies, amusements, and anxieties of everyday life. In this creation, the dramaturgical writing harkens back centuries, almost returning to the form of a *canovaccio* or guiding plot[12] to allow for adaptability to each new geography where it is performed. Those who decide to host the performance must, together with Rimini Protokoll's supervisors, identify a path starting from a cemetery and crossing the city via a station, a commercial area, a place of worship, an entertainment area, and ending in a hospital.

The playwrights A. Begrich and J. Männel organized an initial phase of writing, creating more or less stable textual nuclei corresponding to each station. The credits of the show clearly specify this artistic partition, assigning concept, script, and

[11] For a reasoned synthesis of the study relationships between geography and performing arts: A. Rogers, *Geographies of the Performing Arts: Landscapes, Places and Cities*, in «Geography Compass», VI, 2012, n. 2, pp. 60-75.

[12] «Attori, tecnici, drammaturghi, musicisti, responsabili degli spazi, delle strutture e delle luci realizzano sotto la guida del regista o d'un curatore creativo collezioni di opere transitive che si combinano o confluiscono l'una nell'altra, facendo della logica del montaggio la trama-guida che percorre l'intero spettacolo.» G. Guccini, *Alcune corrispondenze fra lessico e teatro: processo, prassi, progetto*, in «Italogramma», 2018, n. 15, pp. 313-329.

general direction to S. Kaegi, while the script and on-site direction are in charge of J. Karrenbauer and A. Rose. The same goes for sound design, which in its general concept is by N. Neecke, but is adapted case by case by a team of nine people. There is an ideal show scenario, from which clones are derived each time, all different but similar, where it is possible for the order of things to change as the geographies vary. The performance is theoretically replicable simultaneously in different locations, although, unlike *Etiquette* or *Domini Públic*, spectators in different cities may find themselves not performing all actions in the same sequence. The show is the same, but it is not necessarily the same show.

This creation has sparked numerous site-specific Headphone Theatre experiences throughout Europe in the following years, with or without performers, often mixed with the population that the spectator has in front of their eyes, never knowing if what they are witnessing is an artistically intended sign or pure chance. Here, the desecration of the classical geo-dramaturgical ritual, traditionally ordered in a sequential manner, is evident: the iconic *Via Crucis*, with its stations arranged along a sequential path, is no longer present: the departure and arrival stations, essential for the technological "dressing" and "undressing" of spectators, retain their importance in the design. On-site, everything is subject to reshuffling and reinterpretation.

However, technology has given a huge boost to immersive theatre, in which the spectator produces and consumes art simultaneously, modifying the traditional creative process. As mentioned, this has resulted in changes to:

– Perspectives and methods of investigation.
– Participants in ideation and design.
– The role of the interpreter.
– The role and form of the text.
– Sensorial activations and geographies in which the show is set.
– The role and involvement of the final audience.

The self-theatrical performative form is the offspring of the possibilities guaranteed by the immediacy and portability of technological equipment. End users do not come into contact in the design phases with either computer engineers who design virtual environments or with those who design the immersive modes of augmented reality shows. However, the creators accept that the *in situ* experience is left to the co-authorship of the participating spectator, directed by some field liaison figures who manage the relationship between the chaos of reality and the guiding plot.

4. The Geo-Sensory Involvement of the Participating Spectator

This final section examines the impact of technological equipment on some digital outcomes from a geo-sensory analysis perspective. An increasingly significant part

of contemporary performativity is realized through the user involved in a process of re-environmentalization and identity transformation with technological dressing to move from reality to the hybrid or virtual environment.

The second decade of the 2000s was important for the spread of immaterial fruitive geography, which then entered disruptively into performativity during the pandemic period. Theatre in the 2020/2021 biennium underwent an acceleration of streaming consumption and production. Silvia Mercuriali, a former founding member of Rotozaza, during the Covid period (2020), created *Swimming Home*, a self-theatrical performance accessible via an app on one's mobile device, allowing access to an audio track to be followed while showering at home. Italian director Michele Sinisi, during lockdowns, created some videos, available via social media, short surreal domestic dramas set in the kitchen, at the table, in front of the open refrigerator, with other family members acting (The *Decreto quotidiano* project).

The shift to online consumption has eliminated the physical presence of actor-spectator co-presence and modified the ways and times of both creation and consumption. According to "Media Naturalness Theory - MNT"[13], the human brain has evolved to facilitate face-to-face communication. The more a communication channel resembles face-to-face interaction, the more it is perceived as natural, requiring less cognitive effort. It is not coincidental that many e-learning platforms developed with AI in recent years present, as a dialogue interface, a virtual tutor with a human appearance, whose face and torso are visible. There are five key characteristics for naturalness:

– Co-location, where participants are physically present in a common space.
– Synchronicity, which allows for immediate and spontaneous exchanges of communicative stimuli.
– The ability to observe and transmit facial expressions.
– The ability to observe and transmit body language.
– The ability to speak and/or listen to speech.

In this perspective, let's delve into some performative proposals from the pandemic years to test their robustness in terms of sensory naturalness in relation to the spectator. For example, *Prometheus* (2021) by the Spanish collective Agrupación Señor Serrano was a web conference performance for children aged 6 to 11. In addition to the young spectators participating from their homes – it was requested that children not be conditioned by the presence of an adult – a narrator was connected live, acting on a small table used as a stage by moving miniature characters, captured by a camera. The performance, in terms of themes and narrative

[13] Cfr. N. Kock, *Media Richness or Media Naturalness? The Evolution of Our Biological Communication Apparatus and Its Influence on Our Behavior Toward E-Communication Tools*, in «IEEE Transactions on Professional Communication», XLVIII, 2005, n. 2, pp. 117-130.

style, was certainly more engaging for an older audience, while interactive participation was more difficult for children aged 6-8. This is not surprising: several studies demonstrate how web conference connection lacks some key characteristics of naturalness and is therefore more cognitively demanding.

During that same period, many attempts were made to overcome these challenges, while remaining in the experimental space of web conferencing. One can recall *TM* (2022) by the Belgian group Ontroerend Goed, where a spectator and a performer meet via the web in a direct dialogue, with a framing that includes the entire torso, thus allowing the conditions of naturalness to occur, albeit online. The dramaturgy of the performance is a psychological questionnaire, aimed at making the participant aware of how most of humanity (*The Mass*, hence the abbreviation of the title) shares positive values. *TM* remains one of the most successful attempts to create emotional connections and attention in video conferencing, precisely because of the effort to convey clear elements of naturalness.

The challenge of naturalness, in the relationship between creative concept, virtual geography, and sensory perception, becomes even more significant in the transition to virtuality. Humans are generally still able to distinguish real experiences from virtual ones[14], based on thresholds of realism derived from concrete experience[15], although artificial intelligence has reached a point of generating content capable of blurring the boundary between reality and fiction. Sensory coherence is therefore a fundamental element for spatial perception and activates the thresholds of realism mentioned earlier.

It has been demonstrated[16] that smells have significant effects on the cognitive and emotional responses of participants, especially when the smell is authentic and matched with congruent visual messages. In *Le Bal de Paris*, for example, the spectator is involved with hearing, sight, and even touch. The sense of smell and taste, however, are excluded, leading to a disconnection between the immersive environment and sensory perception, whose coherence with the environment is a fundamental element in human perception. A significant example is what happens in the scene of the enchanted garden when participants are invited to smell virtual flowers, resulting in a sense of unreality when they do not perceive any specific smell: this signals falseness in stimulation, even though other sensory aspects, such as movement and spatial perception, seem realistic.

Another case of olfactory idiosyncrasy can be found in another product intended

[14] Cfr. M.S. Rana, M.N. Nobi. *et al.*, *Deepfake Detection: A Systematic Literature Review*, in «IEEE Access», X, 2022, pp. 6-7.

[15] Cfr. N. Dijkstra and S.M. Fleming, *Subjective signal strength distinguishes reality from imagination*, in «Nature Communications», XIV, 2023.

[16] Cfr. K. Salminen, J. Rantala *et al.*, *Olfactory display prototype for presenting and sensing authentic and synthetic odors*, in *ICMI 2018 – Proceedings of the 2018 International Conference on Multimodal Interaction*, New York, ACM, 2018, pp. 75-76.

for consumption through VR headsets, created by T.H.E Dance Company of Singapore and titled *PheNoumenon*, a stereoscopic 3D video recording of a dance performance that actually took place and was recorded to be consumed with VR headsets. Here too, there is a moment when a performer brings a smoking container onto the stage, but the digital user at that precise moment does not experience any corresponding olfactory stimulation. The olfactory sensory dissociation in cases like these risks interrupting engagement, conflicting with audiovisual stimulation.

Conclusion

The digital revolution, in its progressive advancement, has substantially modified the form and design of the performative act. An increasingly significant portion of artistic productions is carried out by workgroups that include, in addition to the artist, figures dedicated to increasingly sophisticated computer work. Intense laboratory practices and long rehearsals, which have characterized actor work in the last century under the guidance of directors or in leading theatre companies, are now only found in computer design and documentary theatre experiences. Conversely, as technological equipment becomes more economically accessible and logistically transportable, performative outcomes are increasingly shifting outside the theatre space, setting themselves in augmented or virtual geographies and focusing on the figure of the user, who often replaces the actor in the role of interpreter after a process, even symbolic, of dressing with technological equipment.

New problems arise concerning the idea of presence and self-perception in augmented environments and even more so in virtual ones, complex issues that affect the historical roles and roles consolidated over centuries in theatrical representation. Instead, themes of environmentalization and coherent sensory involvement become central. Analysis of numerous creations that use advanced technological equipment shows how this contributes inexorably to changing the roles, form, and substance of creative practices related to the performing arts, developing modes and structures radically different and distant from those in vogue even just a few decades ago.

At the current stage of digital evolution, the individual is still able to distinguish reality from virtuality because technological equipment does not entirely bridge the gap between live experience and complete geo-sensory environmental immersion in a virtual environment[17]. But this boundary is rapidly thinning and could disappear in the coming decades. At that point, the concepts of representation and reality will no longer exist.

[17] See also evidences from E.B. Nash, G.W. Edwards *et al.*, *A Review of Presence and Performance in Virtual Environments*, in «International Journal of Human-Computer Interaction», XII, 2000, n. 1, pp. 15-16.